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E-Proceedings International Conference on Innovation in Education:
Opportunities and Challenges in Southeast Asia

Co-presented by the United Board for Christian Higher Education in Asia and Soegijapranata Catholic University

Editors:
Cecilia Titiek Murniati, M.A., Ph.D
Dr. Heny Hartono, S.S, M.Pd.

Steering Committee:
Kevin Henderson, Director, Digital Content and Programming, United Board, New York
Dr. Nancy Chapman, President, United Board, New York
Dr. Ridwan Sanjaya, Rector, Soegijapranata Catholic University

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FOREWORD

The advancement of technology has tremendously transformed today's teaching and learning. Teachers have a plethora of ways to keep students engaged and empowered. Technology allows both students and teachers to interact better and more effectively. Changing student demography, changing teaching paradigms, and changing needs of today's students necessitate the integration of technology in the universities. Universities undoubtedly have to seek innovative methods in delivering courses to increase students' engagement and to attain their teaching goals.

This proceeding is a collection of papers presented in the International Conference on Innovation in Education: Challenges and Opportunities in Southeast Asia. Co-presented by the United board and Soegijapranata Catholic University, the conference discussed the unique challenges and opportunities facing the Asian region, with sessions designed to highlight the innovative ways in which colleges and universities leverage technological advances for the promotion of whole person education.

The themes in this conference centers around massive open online course, online, distance, virtual, and augmented reality learning, faculty development and digital pedagogy, social media and social networking in education.

In the first part of the proceeding, the papers focus on various online, distance, virtual, augmented reality-based methods used to engage students in the classrooms. In the second part of the proceeding, the papers center on the innovative ways to deliver course materials. The papers in the last part of the proceeding highlight how social media and social networking are adopted in the classroom.

We hope that the insights and ideas put forward in this proceeding will greatly contribute to the scholarly discussions of how digital technology is adopted to meet the needs of today's young generations and teachers in the universities.

Editors

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CONTENTS

C. Social Media & Social Networking in Education

A.

MOOC, Online, Distance, Virtual, and Augmented Reality Learning

Using Actor-Network Theory to Conceptualize Cybernetic Space for Quality Education

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Abstract: The paper is to propose a new foundation in responding the fast growing ICT at one hand and the valuable authentic and face to face interaction at the other hand for improving the quality of education. Drawn from Actor-Network Theory's ontological assumption that a reality is comprehensively perceived as a hybrid interaction involving human as well as non-human entities or actors, the paper sketches the so called cybernetic approach as an appropriate framework in developing ICT mediated learning. Such framework brings some new consequences, as will described in the 'implication' section. This proposed framework provides benefits as well as challenges to all stakeholders of an education system. For students, this proposed framework will facilitate and strengthen their life environment that is digitally enabled. However, at the same time it also provides opportunities to facilitate them in having a more meaningful and authentic relationship for it concerns equally to the healthy physical life as opposed to lonely and alienated one. To education management, this framework provides a strong foundation not only on how to equally pay attention both physical and digital infrastructure but also on how to integrate them meaningfully. To lectures or teachers, this framework will help to end the debate whether ICT will ruin or improve our education system especially on its goal to develop our students to be a whole person.

Keywords : Cybernetics, Actor-Network Theory, quality education, ICT mediated learning.

INTRODUCTION

Many teachers/lecturers are anxious about allowing or prohibiting their students to use gadgets in the classroom. Those educators who prohibit

them argue that students should fully focus on the teaching and learning in the classroom and gadgets are thought to be a distraction in this education process. Meanwhile, those who allow their students to use gadgets assume that they have become an inseparable tool in the life of the new generation that is always connected with virtual space/cyberspace (via the Internet). This generation is called as the X generation, Net generation and recently classified as *homo-connecticus*. The presence of this generation brings many complicated consequences to education circles and worsens some of continuous learning problems, namely deficits in 'belief/assumption' and culture gaps between educators and learners.

Before the Internet existed, this gap was only related with different contexts and computer experiences of learners. However, this gap currently involves two different 'worlds'. Educators, especially the seniors have limited experiences and knowledge concerning the cyber-generation while the post Internet learners now spend most of their time on the cyberspace and social media. For this so-called new species, *homo-connecticus*, their real world is in their hands because in the present reality, '*everything is just a touch away*'.

For all of the daily activities that are related with this cyber-space, either they are related with the advantages, or they are challenges and various consequences from its existence which becomes more intense and wider. In the education field, the benefits of the Internet are believed to increase the quality of the learning results because of its ability to create rich and more interesting learning spaces. This belief becomes the main reason for the emergence of various Internet-based learning systems, which are generally called e-learning classes. Many virtual universities begin to operate with the development of *e-learning*. However, in fact, *e-learning* is not proven to fully increase the quality of learning results (Clark et al., 2008). This dilemma is of course surprising considering that the Internet is able to store, transmit, and display data information and current knowledge. The fundamental question for this research is: Is the Internet really efficient, easy and cheap? What then are the problems with virtual learning?

The paper is to propose a new foundation in responding the fast growing ICT at one hand and the valuable authentic and face to face interaction at the other hand for improving the quality of education. Drawn from Actor-Network Theory's ontological assumption that a reality is comprehensively perceived as a hybrid interaction involving human as well as non-human entities or actors, the paper sketches the so called cybernetic approach as

an appropriate framework in developing ICT mediated learning. Such framework brings some new consequences both for teachers, leaners, and school management.

As will described in the 'implication' section, this proposed framework provides benefits as well as challenges to all stakeholders of an education system. For students, this proposed framework will facilitate and strengthen their life environment that is digitally enabled. However, at the same time it also provides opportunities to facilitate them in having a more meaningful and authentic relationship for it concerns equally to the healthy physical life as opposed to lonely and alienated one. To education management, this framework provides a strong foundation not only on how to equally pay attention both physical and digital infrastructure but also on how to integrate them meaningfully. To lectures or teachers, this framework will help to end the debate whether ICT will ruin or improve our education system especially on its goal to develop our students to be a whole person.

THE ONTOLOGICAL ASSUMPTION OF ACTOR-NETWORK THEORY (ANT)

Using the metaphor of heterogeneous network, the core assumption made by ANT is that realities are all effects generated by networks or relationship of diverse entities (Law, 1992). All human and non-human involved in this network are labeled as actors or actants. This network is constructed in the mind of the researcher and there is more than one possible network. The constructed network depends on the researcher's concern that affects which actors are to include and which are not. It also affects the kind of relationship that ties the actors in this network. In this respect, "social reality is constructed by particular social actors, in particular places, at precise times. We always operate in local situations in the context of interactions." (Harrison & Laberge, 2002, p. 501).

In understanding reality as an actor-network, ANT makes assumptions that include three aspects, namely agnosticism, generalized symmetry, and free association (Callon, 1986; Michael, 1996; Doolin & Lowe, 2002). Meanwhile, Castree (2002, p.117) discusses the ontological assumption of ANT in a more detailed manner and, therefore, he includes also the aspect of conceptualizing actors and action, and a "de-centered" understanding of power. In addition, Castree (2002) relates the issues of binarism/dualism,

asymmetry, and actors to refer the ontological assumption given by Callon (1986) respectively. Although the issues of action and power are consequences from those three ontological assumptions given by Callon (1986), Castree (2002) provides description how to understand them appropriately. For this reason, the four issues given by Castree (2002) will be discussed in the following section.

1.1. Binarism/Dualism

ANT holds basic ontological assumption that social reality is a complex network of relationship that always involves human and non-human entities/ actors (Law, 1992). There is no purely social or purely technical world but rather a socio-technical one (Law, 1992). ANT rejects dualism by leveling the "Great Walls" that separate between the social (human) and the technical (non-human). ANT offers ontology to transcend this dualism by postulating that strict separation of human and non-human entities should be ignored. Alternatively, ANT argues that there is neither purely human nor purely non-human because reality consists of hybrid entities. Latour (2005) claims that ANT is a response to the limitation of social theories of modernity and variations of postmodern that tend to divide nature and society into two incommensurable poles. Modernity assumes that nature is only observed and never human-made whereas society is only made by humans. ANT brings the hybrid reality of nature and society into its analytical domain. ANT aims to show that the separation introduced by modernity and postmodern is artificial (May & Powel, 2008 p.139). It is because reality is "simultaneously real, like nature, narrated, like discourse, and collective, like society" (Latour, 2005 p.6).

1.2. Asymmetry

ANT has no a-priori assumption on the superiority of humans or non-humans in determining the stability of phenomenon as an actor-network. Therefore, ANT moves beyond the asymmetrical approach to non-humans (nature) by recognizing humans (the society) and nature as co-constructive within a myriad of networks. This symmetrical assumption does not mean that the natural entities and the social entities exist independently of each other. Rather, it is an understanding that it is possible and necessary to attend to the "ontological, causal and moral particularities of natural entities...*without* reverting to the notion that nature is, should or could be a/social" (Castree, 2002, p. 120). In this light Latour (1999 p.308) comments that nature "is not

considered as the commonsense external background of human and social action but as the result of a highly problematic settlement."

1.3. Conceptualizing Actors and Action

Because ANT rejects dualisms and focuses on co-construction, agency is then a relational effect generated by interacting components whose activities are constituted in the networks of which they are parts (Castree, 2002). Consequently, ANT does not focus on acting as a human-centered activity. The approach attempts to accept actors as being a combination of both social and natural, calling "for a conception of action and actors which is multiple, contingent and non-essentialist" (Castree, 2002, p. 121), where action is conceived of not requiring "speech or intentionality as we normally understand it" (Castree, 2002, p. 121). This allows agency to be conceptualized in such a way that opens the possibility to include, or at least consider, diverse forms of action and, in turn, diverse actors.

1.4. Power

Since agency is a relational effect then ANT conceptualizes power as "a *shared* capacity, involving myriad natural actants as much as social ones, which is thoroughly *decentered* in different networks" (Castree, 2002, p. 121). Power does not come from an actor somehow "possessing" it, but rather from his being able to enroll, enlist and convince other actors to allow the initial actor to represent them (Murdoch, 1995).

To integrate the separate domains of nature, language and society, ANT grants actor status to human as well as to non-human entities in which they are integrated into networks and sometimes encapsulated in black boxes (May & Powel, 2008 p.139). These networks can be read through the inscription in the intermediaries, which circulate within those networks. The resulting form of these networks varies. It can be an organization, a technology artifact, an information system, or an e-government system.

CYBERNETIC SPACE

Responding to the questions raised in the introduction section and adopting ANT ontological assumption on reality, the paper outlines the notion of *cybernetics* approach. With this approach we will discuss its implication in education. This approach uses the assumption that the Internet is not yet

successful in increasing the quality of learning results because we do not appropriately place the essence of the Internet either in education or in daily life. Cybernetics refers to the similarity principle that the analysis towards the whole system should be done by looking at the context of the relation or connections among its subsystems (Mitra & Schwartz, 2001) as used by ANT.

Meanwhile, *cyberspace* is a computer-created landscape in the form of an imaginary room of computer networks which relate people, information and institutions in which people can easily maneuver in that landscape. This landscape is created because of the existence of the global-scale computer network. The network itself is called the Internet which literally means *inter-network* or network among computer networks. Its existence then vastly boomed in 1995 and sometimes we are not aware that it forces us to renegotiate our physical life. The Internet has changed the way we understand identity, community and relationships. We are forced to renegotiate because we are demanded to adjust our physical reality with the new reality that is an imaginary reality which promises not only new ideas and new ways of living, but also really a whole new world and a new life. In the film titled The Net (1995) there is a saying from an actor who was on his holiday on a beach, "huh...we are sitting on one of the best beaches in the world but what we are thinking about is how to activate the modem so that we are connected with the Internet..."

Meanwhile, it is impossible to leave our physical reality because that space has become the main framework about identity, relation, and the way we act and move for ages. Furthermore, the physical location also functions as the indication that we are part of bigger and more complex classifications, namely political, social, religion, and citizenship systems. Physical space has become a political boundary that finally and geographically emphasizes our identity whether we are Americans, Indonesians, or Malaysians.

Identity ultimately limits people to move because in order to enter other countries we need to have a passport or permission. Although the Internet is developed based on this physical space as reflected in the name of the domain ended with *id* for Indonesia, *my* for Malaysia, *jp* for Japan, etc., it does not limit the movement. The naming of the Internet domain becomes a smart joke in Malaysia when they try to give reasons towards their claim related with Indonesian arts. They can easily say that it is theirs because in Malaysia, everything is ended with •*my*.

How far will the dependence towards the Internet influence our traditional understanding about space and place? Although this question is not the monopoly of the Internet because some other technologies also have changed our conception about space, such as the TV and telephone. These two technologies offer new experiences related with space and presence (Lombard & Ditton, 1997), but what the Internet gives us is greater than what these two technologies have given.

Because more people spend much of their time with their computer or smart gadgets, there are more things that we need to understand differently. One of the things is related with the concept of "working room." This room should be made not merely physically which is a space limited with walls. We will understand working room or even other "rooms" as an unlimited room because physical boundaries have been permeated with computers or other gadgets that are connected with the Internet. We even become to be accustomed with this unlimited room when we are in the kitchen or in the bedroom. This unlimited room has become the new framework of our existence. Therefore, it is not appropriate if the existence of *cyberspace* is merely understood as an additional room which is separated from physical rooms because it has shaken our conception and the meaning of our daily physical room.

Although we are in a comfortable restaurant, we do not feel meaningful when we are not connected to the Internet. It happens in all public places like airports, hotels, *pos ronda* (traditional security house), *waroong* (shops), and even more in the classrooms. This situation is so continuous that we want to be free from physical and location boundaries and dream about a more comfortable life in the other world, namely *cyberspace*. Now we do not need to be surprised to see a couple in a date, but then when they enter and sit in a restaurant, each of them is busy with their own smartphone. I am in fact curious with whom they are connected. They may be connected with a third person or parents. But, it will be more surprising if they use their gadget to communicate with their partners who are physically in front of each other. This is one of main contradictive phenomenon in the perspective of *homo non-connecticus.*

This contradictive phenomenon also happens in this smart gadget itself. Smart gadgets with the GPS (Global Positioning System) help us and other people to determine where we are but after that the same gadget also facilitates us to ignore the location itself because soon the most important

thing is that we are able to do many things without being dependent to the location. Smart gadget and the Internet are able to make people act like "ghosts" who are free from the boundary of space and time.

We can accept this contradiction by considering *cyberspace* as *discursive space* in which text and computer networks are the main components (Mitra & Schwartz, 2001). With this point of view, *cyberspace* is different from physical space although many aspects are associated or connected with each other. Physical space is atomic-based, while *cyberspace* is bit/byte (code 0 and 1)-based in which its movement is actually more limitless compared with the atom. We are atomic-based physical objects who are in an atomic-based room, but our brain and feelings can work and move in the bit-based discursive space. There have been many futuristic movies that illustrate people who are trapped in this bit-based space such as the Matrix Reloaded, Transcendence and SYNC. In fact the presence of digital social media like Facebook, Tweeter, and WhatsApp have massively trapped people in this other world.

The people being trapped in this bit world have brought another contradiction that has been long studied in a research by Carnegie Melon University. At the beginning of the development of the Internet, this research concluded that the use of the Internet could encourage the emergence of social isolation and disconnect the real social relationships (Kraut et al., 1998). Meanwhile the Internet together with smartphones makes it so easy to develop this disconnected social relationship. This finding seems not in line with the promise of *cyberspace* which will give a 'better quality of life' as long as we are connected to it.

Concerning the causes for the emergence of the problems above there is our tendency to idolize *cyberspace* and to ignore the physical space. It can be seen from our intention to be free from the physical boundaries so that we can easily enter the *cyberspace*. Meanwhile, in the *cyberspace*, the real *care* which becomes the source of depression and alienation is fake, temporary, and easily manipulated. 'Friend' status can be changed into 'unfriend' in a second. Because of the low quality of this *care* although quantitatively abundant, *cyberspace* worsens the old illness of modern people, namely social depression and alienation.

One of the comprehensive solutions to overcome the problems above is by embracing ANT's ontological assumption, especially its symmetrical

stance. Therefore, considering that either *physical space* or *cyberspace* has the same position in the sense that we do not necessarily consider that one is more important than the other. The interaction between the physical space and cyberspace brings a new space, namely the combination of both which never happens before. This new space is called *cybernetic space* (Mitra & Schwartz, 2001).

Finally, we need to understand reality as the unity of cyberspace and physical reality without assuming that physical reality is better that cyberspace or the other way around. Our attention is then on how these two spaces work and become meaningful. Looking at cyberspace as a separate component is only partial because reality happens in the cybernetic space as the combination of cyberspace and physical space. The cybernetic point of view offers a new relationship between the real and the virtual reality giving people new ways to live with and within this hybrid cybernetic/physical space.

The physical space entity such as geographic, nationality and migration status becomes less important in cybernetic space because we live in the real and virtual world at the same time. The thought about citizenship becomes less essential because we can be in a certain place but at the same time we are connected with other virtual communities (Mitra, 1996). Therefore, identity which is related with real or virtual only becomes more limiting and less productive. Identity is the now the result of the alliance of these two spaces in which we are partly binding with the real space and the other part is related with *virtual* space, i.e. universal spatiality.

IMPLICATION FOR EDUCATION

The concept of cybernetic space can become the main framework to understand and rearrange the practice of our modern education. This framework gives guidelines at least in four core areas of education, namely the identity of teachers and students, the relation of both, the knowledge and values that become the interest of both parties, and the 'room' in which this relationship might take place. Those central areas are interconnected so that it is impossible to discuss them separately.

The identity of teachers and students needs to be negotiated because day by day it is hard to defend the status that teachers are the knowers and the students are the ones who less know. This fact is disappointing for teachers

when it is related with cyber knowledge. '*Kebo nyusu gudel*' [Javanese: the old learn from the young] becomes real and maybe everywhere. The identity of teachers and students probably will be more comfortable when they select a friendship relationship. This friendship is not for the sake of maintaining the honor of each status but it is for the sake of having warm and close relationships in cybernetic space instead.

The identity of teachers and students as the beings in cybernetic space will make our friendship relationships change not only in the physical way but also in time and place. Generally, the cybernetic framework will force teachers and students to be prepared to be new citizens with new ways of relationship. In this cybernetic new world, home address becomes as important as email address. Working rooms of teachers/ lecturers become as important as our Facebook account. Virtual and verbal as well as formal and informal communication models become equally important as an internet-citizen or netizen.

Teachers/lecturers might not be ready to enter this cybernetic space and force their students to live and learn in their physical space only. When it happens, this will disadvantage all parties because education will lose its chance to negotiate its physical space to be part of cybernetic space. While physical space has some advantages such as authenticity, certainty, and authentic warmth as well as permanence. Meanwhile, for homo *connecticus*, physical spaces should be as easy and comfortable as cyber space. Therefore, physical space should become an alternative for the occurrence of a more intense and warm relationship compared with cyber space. This coalescence brings many consequences beginning from the rearrangement of canteens, classrooms, laboratories, and the library. Those rooms should be rearranged so that it becomes a cybernetic space in which the availability of physical facilities is as important as the availability of digital facilities.

Cybernetics in particular will force teachers/ lecturers to reconsider the concept of lectures as well as their stages. Classrooms are not the only meeting place anymore. Even, the physical presence does not spontaneously indicate the students' presence because although the students are physically present in the classroom, they can be digitally present in the other places which are miles away. Therefore, classrooms should become rooms which present authentic *care* and are meaningful for the students. Ideally, this *care* is not merely suiting students' attention shift but as much as possible it becomes the shared reality in cybernetic space. It means authentic care

will be better to be manifested and developed in the format and language of cybernetic space. Watching together then discussing a video from youtube. com in the classroom using high quality audio facilities in the classroom is one of the examples of how to facilitate learning in cybernetic classrooms.

Knowledge and values that are important aspects in education will become the most important factors to reconsider in this cybernetic space. This matter becomes more complicated when we fully understand knowledge and values in term of its authority, ownership, source of knowledge, or authority of educators. The Internet has destroyed this copyrighted principle because information and knowledge has now become open-access, free, and abundant, with the principles of copyleft and shared common attribute license.

One of the possibilities for placing knowledge in cybernetic space is by negotiating the stage of the educators to become a physical stage complete with digital media in the form of either blog or LMS (Learning Management Systems). With these facilities, educators have chances to place the physical stage as the part of cybernetic stage. With blogs or LMS educators can help students provide appropriate, accountable and accessible knowledge and information. Meanwhile, the physical stage, i.e. the classroom will become a warm and meaningful discussion room through explanation and discussion about knowledge presented in students' blogs. In this place, educators will really change and transform to become facilitators and learning will shift to be more student-centered rather than teacher-centered. Educators will take their role as motivators and mentors to motivate and encourage independent learning.

Finally, the Internet should be seen more from the side of how it is used and interpreted more than merely seen from the technological development. Understanding the role of the Internet in learning is more important than seeing it as a mere facility to enter cyber rooms to access knowledge. In other words, the Internet is not only a facility to enter cyber space but should also be placed as a means of living in cybernetic space. This point of view brings the consequence that *e-learning* does not spontaneously replace *traditional learning* in the form of face to face meetings. This fact also explains why the success of e-learning in increasing the quality of learning results is not yet significant (Sun et al., 2008). Therefore, web-based or Internet-based learning systems should be developed in the cybernetic perspective especially in considering its *non-virtual* problems, such as motivation, acceptance, supports and togetherness.

CONCLUSION

Inspired by symmetrical assumption used by ANT in defining reality, the paper conceptualizes the notion of cybernetics space as a potential foundation for developing education ecosystem. In essence, cybernetics approach embraces a similar assumption of symmetry in which modern education ecosystem most appropriately viewed as an integral reality involving both physical space and virtual one. However, such perspective bring many consequences but in return will provide a strong foundation to manage quality education where its tenet is a whole person development.

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E-learning for Industry 4.0 and Its Effectiveness in Improving Students' Learning Motivation

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Abstract: Industry 4.0 requires people not only to master their field of knowledge but also to master the latest technology. E-learning which combines the teaching and learning process with the use of technology such as internet is the appropriate method to be applied to meet the challenges of industry 4.0. Learning motivation is one of the factors that may influence the students' achievement. Thus, this quasi experimental research was aimed to know the effectiveness of e-learning in improving the students' learning motivation. This research was conducted in March-August 2019 toward 15 students of third year of Bachelor of Nursing Study Program on English for Nursing 3 Course. This samples were taken by using purposive sampling technique. The data was collected by using two questionnaires given before and after the treatment. The questionnaire was adapted from Keller's Instructional Materials Motivation Survey (IMMS) which measures motivation through each elements of ARCS model (Attention, Relevance, Confidence, Satisfaction). Then, the data was analyzed by using descriptive statistics, paired samples t-test, and Wilcoxon test. The result showed that t stat (12,68) > t table (2,16). Moreover, Wilcoxon test revealed that there were significant increases in all elements of ARCS. Thus, it can be concluded that e-learning is effective to improve the students' learning motivation. So, it is recommended that should a new teaching method applied, affective skills such as motivation and the current need of industry need to be considered in order to optimize the outcome.

Key words: industry 4.0, e-learning, learning motivation, ARCS model

INTRODUCTION

Internet or digital media is not currently something new or strange for most people in the world. The dramatic increase of digital literacy, characterized by the worldwide influx of internet connection and its varied users including children, adult, and also elderly, shows that we have gone to industrial revolution 4.0. Puncreobutr define industry 4.0 as the combination of technology automation and cyber (Puncreobutr, 2016). The concept of industry 4.0 includes Industrial Internet, Internet of Things (IoT), Smart manufacturing and Cloud-based Manufacturing (Erol, Jager, Hold, Ott, & Sihn, 2016).

One of the effects of industry 4.0 is the process of digitalization in all aspects of life in which all things can be done through web, for example online shopping, online public transportation, and also online education. In education 4.0, the role of digital technology is highly important. To create competitive graduates who can survive in industrial era 4.0, there are at least three new literacies that should be mastered; they are data literacy, technology literacy and humanity literacy. In addition, Puncreobutr states that the competences to be mastered in this industrial 4.0 era are leadership, collaboration, creativity, innovation, critical thinking, digital literacy, effective communication, emotional intelligence, entrepreneurship, global insight, problem solving and teamwork (Puncreobutr, 2016).

To master all those competencies, traditional teaching methods is no longer relevant with the current development era. E-learning offers a solution to meet the challenges of education 4.0. E-learning refers to a teaching method utilizing electronic media, especially web system, which enables interactive long distance learning without any time and place limitation (Aparicio, Bacao, & Oliveira, 2016). The characteristics of this teaching method are: a) the use of electronic technology, b) the use of individual learning material, 3) the use of Internet of Things as the main tool, and c) the ease in accessing schedule, curriculum, learning result, et cetera (Anshori, 2016). Meanwhile, the requirements for applying this learning method are: a) the availability of internet connection for learning, b) the availability of facilities supporting self-learning such as IT laboratory, textbook, and other teaching media, c) the availability of facilitators who can help the students having difficulties directly face to face or through online interaction (Tarus, Gichoya, & Muumbo, 2015).

Having all those requirements, Harapan Bangsa University, a university in Purwokerto, is rapidly developing its quality, includes the quality of the human resources, the quality of teaching and learning process, the quality of its graduates, and the completeness of its facilities. One of the facilities supporting teaching and learning process is SCALSA (Student Centred Activity and Learning of Harapan Bangsa). SCALSA is a MOODLE based Learning Management System used to share academic information intern Harapan Bangsa University communities, upload teaching materials, be an evaluation media, and also provide discussion forum among students and lecturers.

English for Nursing (EFN) is a subject taught to Nursing Students in the second to fourth year. It belongs to English for Specific Purposes in which the teaching material is not English in general but depends on needs of the course participant (Richard and Rodger, 2001). Because EFN is intended for Nursing Students, so the materials are about health and nursing care and its schedule is also adjusted with their clinical placement. Thus, e-learning is believed as the right solution for teaching English for Nursing since the learning does not need strict schedule, the learning sources are unlimited meaning the students may have self-individual learning, and it combines the knowledge and digital technology as the requirement of industry 4.0. The combination of knowledge and digital technology, as the new method for the students, may increase the students' motivation in learning because something new usually triggers the students' curiosity and make them motivated in learning.

Motivation plays an important role in achieving the learning goals. Motivated learners commonly learn better than unmotivated learners (Lai, 2011). Motivation may come from within oneself and from outside factors, or it is called intrinsic and extrinsic motivation. Intrinsic motivation refers to behaviours emerging naturally for interest and happiness, meanwhile extrinsic motivation means behaviours coming in order to achieve something such as rewards and appreciation or to avoid negative outcomes (Reiss, 2012). It is believed that intrinsic motivation is the learners' self-responsibility since teacher cannot control it. However, the poor learning design may demotivate them to learn (Margueratt, 2007). Thus, teaching method, belongs to extrinsic motivation, should be modified in such away to promote the students' learning motivation.

This research was aimed to investigate the effectiveness of e-learning

delivered through SCLASA as the teaching method in teaching English for Nursing in order to improve the students' learning motivation. It was assumed that e-learning would give new experience to the students in the way of learning and further it would improve the students' learning motivation.

LITERATURE REVIEW

A. Industry 4.0

The revolution on industry becomes the beginning of industrial age. It was characterized by the transformation on the economy which previously focused on agrarian to the industry that utilized manufacture. This phenomenon led to a new pattern of economy. Industrial revolution was the period when many works that used to be done manually in houses became happening in industries with the use of machine (Lele, 2019).
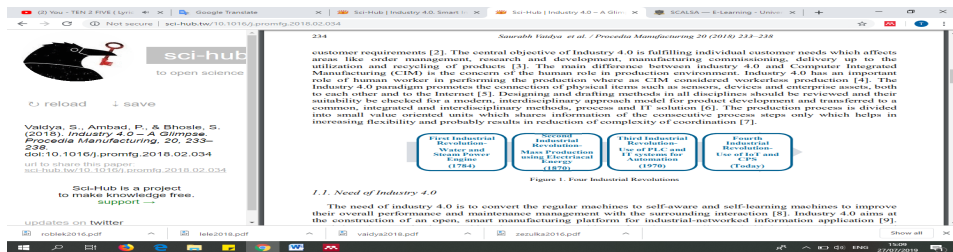
Picture 1. The Stage of Industrial Revolution (Vaidya, Ambad, & Bhosle, 2018)

During the revolution of industry, there have been four stages of revolution happened as described on picture 1. The first stage happened in 18th century characterized by the invention of the steam machine in goods production. Besides, steam machine was also used in transportation, especially sea transportation that caused colonization and pollution. The second revolution began in the beginning of 20th century. The invention of electricity signed the beginning of this era. The electronic tools added significant improvement in industry and the production of cars. The third revolution characterized by automation in many fields with the use of Programmer Logic Controller (PLC) and Information Technology (IT). In this era, many works were done by using computer or robot. Finally, the industrial revolution which currently becomes the hottest topic to discuss is the fourth industrial revolution (Vaidya et al., 2018).

The Fourth Revolution becomes very interesting phase because it was in the middle of the blurring of the real world with the technological world which is coming to reality (Lele, 2019). In addition, Lele states that at the heart of Industry 4.0 is the concept of 'smart factories. These factories are much more than intelligent machines and robots communicating through an innovative software invention (Lele, 2019). In Industry 4.0, mobile computing, cloud computing, and big data play an important role. Its importance lies in the provision of services, which can be accessed globally via the Internet. So that, services can easily be integrated and used (Roblek, Meško, & Krapež, 2016).

There are four main elements of industry 4.0. They are Internet of Things (IoT), Industrial Internet of Things (IIoT), cloud based manufacturing and smart manufacturing which transform the process of manufacturing into fully digitized and intelligent one (Vaidya et al., 2018). Although the internet transformation of the digital industry is still in progress, the artificial intelligence, big data, and connectivity indicate the certainty of a new round of digital revolution. It also believed that industry 4.0 will have an important influence on the complete transformation of industry (Schlechtendahl, Keinert, Kretschmer, Lechler, & Verl, 2015).

B. E-learning

1. E-learning Definition

E-learning becomes new trend in Education in Indonesia as the effect of industrial revolution 4.0. There are some sources define the concept e-learning, one of them is Clark and Mayer in their book entitled *E-Learning and the Science of Instruction, Proven Guidelines for Consumers and Designers of Multimedia Learning* as follows:

> We define e-learning as instruction delivered on a digital device that is intended to support learning. In e-learning the delivery hardware can range from desktop or laptop computer to tablets or smart phones, but the instructional goal is to support individual learning or organizational performances goals. (Clark & Mayer, 2012)

In the definition above, there are two main components, namely instruction and digital media proposed to support learning process. In

addition, some other definitions are:

a. E-Learning is the utilization of online technology to plan, convey, choose, deliver, and elaborate learning (A. Ali, 2013)

b. E-Learning is the combination of learning process and the Internet (A. Ali, 2013)

c. E-learning refers to learning equipped and supported by the use of ICT. (Tarus et al., 2015)

d. E-learning means all forms of electronic based teaching and learning. (Behera, 2013)

Based on all definitions above, it can be summed up that what means by e-learning is the use of information and communication technology as the media of learning including internet and all electronic media. However, it is necessary to consider that the purpose of using the media is to support the learning process. It means the use of conventional media such as textbook, whiteboard, and so on, is no more well-matched with the current development of digital era. (Tavangarian, Leypold, Nölting, Röser, & Voigt, n.d.)

2. Characteristics of E-learning

Nursalam explains the characteristics of e-learning (Nursalam, 2017) as follows:

a. Use of electronic / ICT technology
b. Use of digital media and internet.
c. Use of self-learning materials that are uploaded to the web to access it anytime and anywhere.
d. The report on timetable, syllabus and teaching is flexible and can be controlled through the internet at any time.

3. The Advantages of E-learning

E-learning has many advantages compared with traditional learning method, such as:

a. The use of multimedia-based facilities enables the material given being easier to be understood.

b. The efficiency of the expense can be maximized since it does not need

full time instructor and the learning process can be done individually anytime and anywhere.

c. The materials become more concise because it straight forward to the point and the students may choose the topics learnt based on their needs.

d. The level of the achievement depends on the motivation and commitment of the learners' itself, that can be monitored and tested through online test. (L. Tjokro,2009:187)

4. The Weakness of E-learning

Although e-learning has many advantages, still it has some weaknesses. Nursalam (2017) and Kumar (2013) summarize the weakness of e-learning as follows:

a. It is needed a knowledge and skill related to information and communication technology in which not all people have it.

b. There is not direct interaction between teacher and learners. But, it can be solved by using online chat.

c. It needs some equipment such as computer, laptop, LCD, and so on that are usually costly.

d. There are still some internet non-coverable areas.

e. By using this learning method, there is a lack of social contact between the learners and the environment or the other learners.

B. Learning Motivation

1. Definition of Learning Motivation

Motivation is a construct theoretically used to explain, initiation, direction, intensity, persistence and quality of behavior (Buckley & Doyle, 2016). The term motivation in learning context refers to which the individual works or strives to learn the language because if an intension to do so and the satisfaction experienced in this activity (Oroujlou & Vahedi, 2011).

2. Types of Learning Motivation

Basically, there are two types of motivation, intrinsic and extrinsic motivation. Intrinsic motivation is most commonly defined as "doing something for its own sake," as when a child plays football for no reason other than because that is what he wants to do. Extrinsic motivation, in contrast, refers to the pursuit of an instrumental goal, as when a child plays football in order to please a parent or win a championship (Reiss, 2012).

3. Factors Influencing Students' Learning Motivation

Generally, there are three aspects that play an essential role in the learners' motivation; they are intelligence, self-efficacy, and achievement goals. On the other side, John Keller describes the students' interest of learning and learning motivation has four main components, attention, relevance, confidence, and satisfaction or ARCS (Keller, 1987). These different components of motivation are closely linked to self-regulated learning, facilitate and influence various self-regulatory strategies. Therefore, they promote and sustain academic achievement (Mega, Ronconi, & De Beni, 2014).

Some factors are considered as the factors influencing the students' learning motivation, those are students' idea, the ability and capability of the students, students' condition, environments, dynamic aspects in the learning and teaching process, and the role of teacher to motivate students (Dimyati & Mudjiono, 2006). The major key to motivation is the active involvement of students in their own learning. Thus, it is better to get students involved in activities, group problem solving exercises, helping to decide what to do and the best way to do it (R. Ali & Ahmed, 2010).

4. Assessing Students' Learning Motivation

Learning motivation cannot be observed, otherwise it can be measured. There are some ways to measure motivation (Notoadmodjo, 2010):

a. Projective Test

One of the well-known projective technique is the Thematic Apperception Test (TAT). During the test, the client is given a picture and the client is asked to make a story from the picture. In Mc Leland's theory, it is said that humans have three needs namely the need for achievement (n-ach), the need for power (n-power), the need for affiliation (n-aff). From the

contents of the story, it can be examined the client's underlying motivation based on the concept of needs above (Notoatmodjo, 2010).

b. Questionnaire

Questionnaire is a special instrument that is commonly used in descriptive research survey techniques. In educational research, questionnaire is one of the most basic and popular data collection instruments used. As an instrument, the questionnaire is very flexible and relatively easy to use. A questionnaire usually consists of two main parts, namely the introduction and the content (Azwar, 2013). The introductory part consists of an explanation of the questionnaire and a letter of recommendation from the authorities. While the contents section consists of the respondent's general identity and the main questions.

c. Behavior Observation

Another way to measure motivation is by creating a situation so the clients can come up with behaviors that reflect their motivation. For example, to measure their desire toward achievement, the clients are asked to produce origami within a certain time limit. The observed behavior is whether the client uses the feedback provided, makes risky decisions and attaches importance to quality rather than quantity of work (Notoatmodjo, 2010)

A. Research Hypothesis

The hypothesis was formulated considering the background of the study and the purposes of the research. In this research, it is assumed that the implementation of e-learning is effective in improving the students' learning motivation.

METHODOLOGY

A. Type of Research

This research was a quasi-experimental research. Experimental research is a research aimed to test and idea, practice, or procedure to know whether the treatment influences the result or not (Ingwarni, 2015). There are at least two variables in this kind of research, independent variable and dependent

variable (Oktaviandi, 2012).

There were two variables in this research, e-learning using SCALSA as independent variable and learning motivation as dependent variable. Furthermore, the group previously taught by using conventional teaching method was taught by e-learning during the research. Then, their motivational behavior was observed.

B. Research Subject

The subject of this research was third year students of Bachelor of Nursing Study Program. From the total population of 103 students which was divided to two big classes, A and B, it was taken 15 students from class B as the experimental group to be taught by using e-learning. The samples of this research were taken by using purposive sampling technique, the technique of choosing sample with certain consideration. The consideration to choose class Intermediate 6B as the subject for this research are: 1) they were taught English for nursing at that time, 2) they were intermediate students which is the highest level of English class in Harapan Bangsa University, so it will be easier for them to be given treatment rather than the other levels.

C. Research Procedures

This research was conducted in March-August 2019 in Harapan Bangsa University. There were four steps in this research; those were preparation, implementation, data processing and analyzing data, and also evaluation. In preparation, the researcher did a pre-research through observation to know the background and formulate the problem. The researcher also studied the related literatures, prepare the lesson plan, teaching media and all instruments needed for the research. The implementation step was the phase when the research conducted. The researcher applied the teaching method, e-learning and took the data. Then, the data was processed and analyzed to get the result of the research. In evaluation stage, it was drawn a conclusion whether the research objective was met or not, whether the hypothesis was accepted or rejected.

D. Data Collection

The data was collected by using two questionnaires which were given before and after the treatment. The questionnaires were adapted from the Instructional Materials Motivation Survey (IMMS) developed by Dr John

Keller, Copyright © 1993, John M. Keller which was designed to measure the objective of ARCS (Attention, Relevance, Confidence, Satisfaction) learning model (Loorbach, Peters, Karreman, & Steehouder, 2015). This learning model is a problem-solving approach to design the aspects of motivation and learning environment that support the students' motivation in learning (Khoiri, 2018).

The first questionnaire was used to collect the data on students' learning motivation toward the conventional learning method. Meanwhile, the second questionnaire was used to collect the data on students' learning motivation toward e-learning. Both questionnaires were consisted two parts, an introductory section addressing students' demographic and content section containing 36 questions using a Likert-type scale to measure learner motivation. The response scale ranges from 1 to 5. Ten out of the 36 questions were formed negatively in order to strengthen the questionnaires. Thus, the negative items have to be reversed before they can be added into the response recapitulation. Scores are determined by summing the responses for each subscale and the total scale. The questions in each questionnaire were altered only to the extent needed to fit the lesson structure used in this research. The questions in the second section of both questionnaires were identical.

Table 1:
Items Distribution of IMMS

Attention	Relevance	Confidence	Satisfaction
2	6	1	5
8	9	3 (reverse)	14
11	10	4	21
12 (reverse)	16	7 (reverse)	27
15 (reverse)	18	13	32
17	23	19 (reverse)	36
20	26 (reverse)	25	
22 (reverse)	30	34 (reverse)	
24	33	35	
28			
29 (reverse)			
31 (reverse)			

E. Data Analysis

The data collected from the questionnaires was analyzed by using paired sample t-test conducted on the total scores for questionnaire 1 to those of questionnaire 2. Paired sample T-test is a test used to compare the difference between the two means of two paired samples with the assumption that the data is normally distributed. Paired samples come from the same subject, each variable is taken during different situations and circumstances. This test is also called the T-test (Advernesia, 2019).

The change in the means of the total scores obtained in the two questionnaires is considered to have been influenced by changes to the independent variable, e-learning. Then, the dependent variable, learning motivation, which is associated with Keller's ARCS elements was measured by conducting Wilcoxon statistical test. This test is a kind of non-parametric test that can be used to determine whether two dependent samples were selected from populations having the same distribution.

RESULTS AND DISCUSSIONS

A. Results

1. Descriptive Statistics

The data obtained from questionnaire 1 and 2 were presented by using descriptive statistics in order to compare both samples. The data were described based on each components of ARCS (Attention, Relevance, Confidence, and Satisfaction) and the total of each questionnaire as presented in table 2.

Table 2:
Descriptive Statistics

	Questionnaire 1	Questionnaire 2
Attention		
Mean	3,22	3,91
N	15	15
Standard Deviation	0,99	0,73
Std Error Deviation	0,25	0,19

Relevance		
Mean	2,96	3,89
N	15	15
Standard Deviation	0,79	0,78
Std Error Deviation	0,2	0,2
Confidence		
Mean	2,84	3,92
N	15	15
Standard Deviation	0,8	0,75
Std Error Deviation	0,2	0,19
Satisfaction		
Mean	3	3,5
N	15	15
Standard Deviation	0,82	0,78
Std Error Deviation	0,21	0,2
Total		
Mean	3,02	3,85
N	15	15
Standard Deviation	0,88	0,77
Std Error Deviation	0,23	0,2

Roughly compared, the mean of each ARCS component in questionnaire 2 is higher than those in questionnaire 1. It means that the treatment given to the subject made differences toward the dependent variable. In order to know the significance of the difference, the statistics should be completed with Paired Sample T-test.

2. Paired Sample T-test

Paired sample T-test is a test of two pairs of samples. Paired samples are the same subject but given different treatments. This test is used to know the influence of independent variable (e-learning) towards the dependent variable (learning motivation). The difference is significant if t-calculated is higher than t-table. If it is not, the treatment does not have any influence on the dependent variable.

Table 3:
Paired Sample T-test

Paired Samples Statistics	Questionnaire 1	Questionnaire 2
Mean	3,005952381	3,888888889
Variance	0,028748643	0,028490028
Observations	14	14
Pearson Correlation	-0,184580804	
Hypothesized Mean Difference	0	
Df	13	
t Stat	-12,68722724	
P(T<=t) one-tail	5,34276E-09	
t Critical one-tail	1,770933396	
P(T<=t) two-tail	1,06855E-08	
t Critical two-tail	2,160368656	

Table 2 shows some important data related to paired sample t-test calculation. Since t Stat (12, 68) is higher than t Critical two-tail (2,16), it means that H_0 was rejected and H_1 was accepted. It can be concluded that the implementation of e-learning gave significant difference toward the students' learning motivation.

3. Non-parametric Two Related Samples Wilcoxon Statistical Test

Non-parametric test or distribution-free test is a test whose model does not specify condition about parameters of the population from which the sample was drawn. This type of test was used in this research because the data obtained from the questionnaire was in the form of ordinal variable or a rank. Moreover, the sample size in this research which was 15 respondents was too small to run a parametric test (Hintze, 2015).

The hypothesis of this research states that the implementation of e-learning influences the students' learning motivation. To test this hypothesis, Wilcoxon Statistical Test was applied to each components of ARCS. This test is one kind of non-parametric test which is used to compare two related samples, matched samples, or repeated measurements on a single sample to assess whether their population mean ranks differ.

a. Attention

Table 4:
Wilcoxon Test of Attention Element

Q1-Q2	N	Mean Rank	Sum of Ranks
Negative Rank	14a	8,5	119
Positive Rank	1b	1	1
Ties	5		
Total	15		
Legend	**Test Statistic**		
a: Q1<Q2	Test Statistic		1
b: Q1>Q2	Critical Value		25
Q1: conventional learning Q2: e-learning	Level of significance		0,05
Conclusion	TS<CV=1<25		H_0 was rejected, H_1 was accepted

The number of responses in which the attention value of Q2 is higher than Q1 is 14, it indicates that the students' attention was increased when they were taught by using e-learning. The result of the test shows that test statistic (1) is lower that critical value (25) on the level of significance 0,05. This analysis proves that H_1 which mentioned that e-learning implementation has positive influence toward the students' attention on learning is accepted.

b. Relevance

Table 5:
Wilcoxon Test of Relevance Element

Q1-Q2	N	Mean Rank	Sum of Ranks
Negative Rank	15a	8	120
Positive Rank	0b	0	0
Ties	9		
Total	15		
Legend	**Test Statistic**		
a: Q1<Q2	Test Statistic		0
b: Q1>Q2	Critical Value		25

Q1: conventional learning Q2: e-learning	Level of significance	0,05
Conclusion	TS<CV=0<25	H_0 was rejected, H_1 was accepted

Tabel 5 compares the level of relevance of the learning materials presented using conventional learning (Q1) and e-learning (Q2). All respondents showed negative rank of Q1-Q2 meaning that conventional learning was less relevance rather than e-learning. The result of the test, TS< CV=0<25, reveals that H_0 is rejected, H_1 is accepted. In conclusion, the implementation of e-learning significantly increases the relevance element of the ARCS model.

c. Confidence

Table 6:
Wilcoxon Test of Confidence Element

Q1-Q2	**N**	**Mean Rank**	**Sum of Ranks**
Negative Rank	15a	8	120
Positive Rank	0b	0	0
Ties	7		
Total	15		
Legend		**Test Statistic**	
a: Q1<Q2		Test Statistic	0
b: Q1>Q2		Critical Value	25
Q1: conventional learning Q2: e-learning		Level of significance	0,05
Conclusion		TS<CV=0<25	H_0 was rejected, H_1 was accepted

As well as Relevance element, the students' responses toward Confidence element of ARCS also showed negative value on Q1-Q2. It means that the students felt more confident when they were taught by e-learning rather than when were taught by using conventional learning. The hypothesis test also reveals that H_0 is rejected and H_1 is accepted. So, the difference between the students' confidence when were taught using e-learning and that when were taught using conventional learning was significant.

d. Satisfaction

Table 7:
Wilcoxon Test of Satisfaction Element

Q1-Q2	N	Mean Rank	Sum of Ranks
Negative Rank	14a	8, 36	117
Positive Rank	1b	3	3
Ties	9		
Total	15		
Legend	**Test Statistic**		
a: Q1<Q2	Test Statistic		3
b: Q1>Q2	Critical Value		25
Q1: conventional learning Q2: e-learning	Level of significance		0,05
Conclusion	TS<CV=3<25		H_0 was rejected, H_1 was accepted

On table 7, there is only one respondent giving positive response toward the comparison of Q1-Q2. Thus, most students agreed that they had positive satisfaction feeling when they were taught by using e-learning. The hypothesis test shows that on the level of significance 0,05 the test statistic (3) is lower than critical value (25). it can be concluded that e-learning significantly influenced the students' satisfaction on learning.

B. Discussion

The purpose of this research was to know the effectiveness of e-learning implementation in improving the students' learning motivation. The result of measurement using descriptive statistics described the data distribution of the questionnaires. The mean scores of each elements of motivation in Questionnaire 1 is lower than those in questionnaire 2. It meant that the implementation of e-learning to teach English for Nursing 3 influenced the students' attention, relevance, confidence, and satisfaction toward learning process. However, it was necessary to know whether the influence was significant or not. Thus, paired samples t-test was applied to the total score and Wilcoxon test was applied to each element of motivation (ARCS). The result of paired sample t-test revealed that the implementation of e-learning

gave significant difference toward the students' learning motivation since t Stat (12, 68) was higher than t Critical two-tail (2,16) or H_0 was rejected and H_1 was accepted. In line with this test, Wilcoxon test which was applied to each elements of motivation (ARCS) also showed positive result that the alternative hypothesis of this research was accepted.

In other word, this research revealed that e-learning was effective to increase the students' learning motivation. As stated by Keller that the students' interest of learning and learning motivation has four main components, attention, relevance, confidence, and satisfaction or ARCS (Keller, 1987), there were some factors that made this possible. First, instead of the utilization of technology which made e-learning different, e-learning gave the students new experience in learning. The learning materials were presented via online and easy to be accessed at anytime and anywhere. Those materials were packaged in interesting activities such as videos, games, quizzes, assignments, etc. which were easily attracted the students' attention toward learning. Second, although the materials were presented in English, the contents were basically in line with their background of knowledge which is nursing. So, it was relevant with the knowledge they have ever got. Third, e-learning was flexible. The students may manage their own learning strategy and because the major key to motivation is the active involvement of students in their own learning (Reena, 2010). Moreover, the learning goal, the language focus, the learning guideline and the assignment were clearly explained on the students' guideline. Thus, the students felt confident that they could pass this course easily. Fourth, most of their assignments were submitted via online in SCALSA, YouTube and social media. It was an interesting way to show their English skill to public. The feedback might come not only from the lecturer but also from the viewers. That is why, there was a kind of satisfaction when they were able to finish the assignment perfectly.

In conclusion, e-learning influenced all elements of ARCS model which referred to students' learning motivation positively. So, it was considered to be effective in improving the students' learning motivation.

CONCLUSION

Since learning motivation is one of the factors that influence the students' achievement, it is important to consider that the teaching method used can increase the students' learning motivation as well as their achievement. This research concludes that e-learning may significantly increase the students' learning motivation. Moreover, it utilizes technology to meet the challenge of industry 4.0. Thus, it was recommended to be applied to teach the other subject besides English for Nursing as required by the era of industry 4.0.

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APPENDICES:

Part 1: Introduction of the Questionnaire

<div align="center">

COVERING LETTER
Learning Motivation Questionnaire
By Tri Pujiani
English Education Department of Social Science Faculty
Harapan Bangsa University

</div>

Dear my beloved students,

As a lecturer, conducting research is one of the Three Laws of University that must be carried out. At present, I am working on a research concerning on students' learning motivation.

The purpose of my research is to know the effectiveness of e-learning in improving the students' learning motivation. To test the hypothesis, I have to take the data of students learning motivation toward conventional learning and e-learning that will be applied in your class this semester.

Accompanying this covering letter are two questionnaires that will form the basis of my research into the area of learner motivation. You are being requested to complete each of these questionnaires in support of this research.

Your participation in this research is entirely voluntary. The very act of returning a completed questionnaire is taken as an indication of your consent to participate. Your participation or lack of participation will in no way affect your grades on this course. Furthermore, your responses will be kept strictly confidential and will not be shared with anyone else.

On completion of the questionnaire, you are requested to email the questionnaire as an attachment to tripujiani@uhb.ac.id.

The following gives the details of the two questionnaires:

1. The first questionnaire should be completed in the beginning of this semester before the teaching and learning process started. The questionnaire consists of 36 questions and should take about 10 to 15 minutes to complete. Please circle the number ranks from 1 to 5 with

5 is the most agree that best reflects your thoughts about Conventional Learning.

2. The second questionnaire is identical to the first and should be completed only after you have finished this semester in which you will be taught by using e-learning method. Again, the questionnaire consists of 36 questions and should take about 10 to 15 minutes to complete. Please circle the number ranks from 1 to 5 with 5 is the most agree that best reflects your thoughts about e-Learning.

The results of this survey will be included in my research paper. The confidentiality of your participation is assured. Your name will never appear in the results of this research. Only the researcher and researcher's assistant will see your responses.

Thank you for your participation in this study.

Warm regards,
Tri Pujiani
English Education Department
Faculty of Social Science
Harapan Bangsa University

Part 2: Content of the Questionnaire

QUESTIONNAIRE OF STUDENTS' LEARNING MOTIVATION

Questionnaire 1*/ 2**

The following questions are adapted from the Instructional Materials Motivation Survey developed by Dr John Keller,1993.

Instructions

There are 36 statements in this questionnaire. Please think about each statement in relation to conventional learning*/ e-learning** and indicate how true it is. Give answers that truly applies to you, and not what you would like to be true, or what you think others want to hear.

Think about each statement by itself and indicate how true it is. Do not be influenced by your answers to other statements.

Please circle the number that ranks from 1 to 5 that mostly represent yourself.

1   = Not true
2   = Slightly true
3   = Moderately true
4   = Mostly true
5   = Very true

*= questionnaire 1 given at the beginning of the semester to know the students' learning motivation toward conventional learning.
**= questionnaire 2 given at the end of the semester to know the students' learning motivation toward e-learning.

Statements

1. When I first looked at the syllabus, I had the impression that it would be easy for me.

           1   2   3   4   5

2. There was something interesting at the beginning of each lesson that got my attention.

           1   2   3   4   5

3. This material was more difficult to understand than I would like for it to be.

           1   2   3   4   5

4. After being explain about the course description, I felt confident that I knew what I was supposed to learn from the lesson.

           1   2   3   4   5

5. Completing the assignment for this course gave me a satisfying feeling of accomplishment.

           1   2   3   4   5

6. It is clear to me how the content of this material is related to things I already know.

           1   2   3   4   5

7. Many of the meetings had so much information that it was hard to pick out and remember the important points.

<div align="center">1   2   3   4   5</div>

8. The presentation of the materials is eye-catching.

<div align="center">1   2   3   4   5</div>

9. There were stories, pictures, or examples that showed me how this material could be important to some people.

<div align="center">1   2   3   4   5</div>

10. Completing this course successfully was important to me.

<div align="center">1   2   3   4   5</div>

11. How the materials presented in handout, power point or video helped to hold my attention.

<div align="center">1   2   3   4   5</div>

12. The lessons are so abstract that it was hard to keep my attention focused on the material.

<div align="center">1   2   3   4   5</div>

13. As I learned last semester, I was confident that I could learn the content.

<div align="center">1   2   3   4   5</div>

14. I enjoyed this course so much that I would like to know more about this topic.

<div align="center">1   2   3   4   5</div>

15. The delivery of this course looks dry and unappealing.

<div align="center">1   2   3   4   5</div>

16. The content of this material is relevant to my interests.

<div align="center">1   2   3   4   5</div>

17. The way the information is arranged on the pages helped keep my attention.

<div align="center">1   2   3   4   5</div>

18. There are explanations or examples of how people use the knowledge in this course.

<div style="text-align:center">1   2   3   4   5</div>

19. The assignment in this course was too difficult.

<div style="text-align:center">1   2   3   4   5</div>

20. This course had things that stimulated my curiosity.

<div style="text-align:center">1   2   3   4   5</div>

21. I really enjoyed studying this course.

<div style="text-align:center">1   2   3   4   5</div>

22. The amount of repetition in this course caused me to get bored sometimes.

<div style="text-align:center">1   2   3   4   5</div>

23. The content and style of material presented in this course convey the impression that its content is worth knowing.

<div style="text-align:center">1   2   3   4   5</div>

24. I learned some things that were surprising or unexpected.

<div style="text-align:center">1   2   3   4   5</div>

25. After working on this course for a while, I was confident that I would be able to pass the final exam.

<div style="text-align:center">1   2   3   4   5</div>

26. This course was not relevant to my needs because I already knew most of it.

<div style="text-align:center">1   2   3   4   5</div>

27. The assistance I received during this course helped me feel rewarded for my effort.

<div style="text-align:center">1   2   3   4   5</div>

28. The variety of reading passages, exercises, illustrations, etc. helped keep my attention on the individual lessons.

<div style="text-align:center">1   2   3   4   5</div>

29. The style of the materials is boring.

<div style="text-align:center">1   2   3   4   5</div>

30. I could relate the content of this course to things I have seen, done, or thought

about in my own life.

1   2   3   4   5

31. There are so many new words on each meeting that is difficult to understand.

1   2   3   4   5

32. It felt good to successfully complete this course.

1   2   3   4   5

33. The content of this course will be useful to me.

1   2   3   4   5

34. I could not really understand quite a bit of the material in this course.

1   2   3   4   5

35. The good organization of the content helped me be confident that I would learn this material.

1   2   3   4   5

36. It was a pleasure to work on such a well-designed course.

1   2   3   4   5

Are we ready yet to flip our classes? Analysis on students' and lecturers' use of technology

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Abstract: As flipped learning seems to offer potential benefits in improving students' engagement, developing problem-solving skills and enhancing learning outcomes, more research on this area is required to gain more insights on its implementation in different contexts. In the context of Universitas Sanata Dharma, flipped learning seems to help realize the goal of the institution, which is to nurture competence, conscience, and compassion. Thus, this study was conducted to evaluate the readiness of lecturers and students to undertake flipped learning. SAMR framework (Puentedura, 2013) is used to evaluate the level of technology integration. From the results, it can be seen that the most dominant level of technology use by the lecturer was Substitution, which comprised 39.7%. It was then followed by Modification (27.6%), Augmentation (24.1%) and Redefinition (8.6%). The results may serve as part of needs analysis which becomes the basis upon which of the University proposes their strategic plans.

Keywords: flipped learning, SAMR, ICT integration

INTRODUCTION

As technology has permeated numerous aspects in education, there is a growing concern on its affordances. The integration of technology in teaching and learning is expected to give a positive impact on students' learning. As a result, educational institutions are trying to keep up with the development of educational technologies by not only providing teachers and students with infrastructure but also offering training and professional development for the teachers. Various technological tools have then been employed activities in and outside the classroom. The activities may include planning, teaching

and learning instructions, as well as assessment and evaluation.

However, to realise quality education, technological tools should not merely regarded as a stand-alone element infused in the curriculum. Instead, the integration should be accompanied with appropriate teaching methods which will help the 21st-century learners learn best. In this vein, studies have been conducted to investigate how technologies can be adopted in various teaching and learning methods, such as blended learning (Sandanayake, 2019), mobile learning (Mobinizad, 2018; Koohestani, Arabshahi, Ahmadi, & Baghcheghi, 2019), and flipped learning (Schaffzin, 2016; Tsai, Shen, Chiang, & Lin, 2017; Ünal & Öztürk, 2017; Merlin-Knoblich, Harris, & Mason, 2019; Phillips & O'Flaherty, 2019).

Among all the previously mentioned methods, flipped learning seems to offer potential benefits in improving students' engagement (Merlin-Knoblich, Harris, & Mason, 2019; Phillips & O'Flaherty, 2019), developing problem-solving skills (Tsai, Shen, Chiang, & Lin, 2017; Ünal & Öztürk, 2017) and enhancing learning outcomes (Schaffzin, 2016). Thus, more research on this area is required to gain more insights on its implementation in different contexts. In the context of Universitas Sanata Dharma, flipped learning seems to help realise the goal of the institution, which is to nurture competence, conscience, and compassion. Flipped learning is hoped to help lecturers accommodate whole-person education in their teaching and learning.

Having discussed the trends in educational technologies as well as the context in Universitas Sanata Dharma, the researchers are interested in conducting a preliminary study to see the readiness of lecturers and students to undertake flipped learning. SAMR framework (Puentedura, 2013) is used to evaluate the level of technology integration that has been initiated by lecturers.

LITERATURE REVIEW

A. SAMR Framework

Technology instruments can extend learning in effective ways when incorporated efficiently into the curriculum. When technology is used to support the curriculum objectives and help learners to achieve their goals efficiently, successful technological integration is accomplished. In order to help teachers integrate technology in the classrooms, the SAMR Model was

constructed by Ruben Puentedura (2013) as a framework to evaluate the use and technological inclusion levels in schools.

The four-level SAMR model comprises "Substitution, Augmentation, Modification, and Redefinition" (Puentedura, 2013). This model represents a way of shifting teaching and learning to the more meaningful and innovative through different grades of technology integration. The different levels in the SAMR model show certain classifications of ICT integration that have been defined as enhancing or transforming learning. "Substitution" and "augmentation" are viewed as ways of enhancing learning tasks, while "modification" and "redefinition" are seen as transforming the learning process. The SAMR model is illustrated in the following figure.
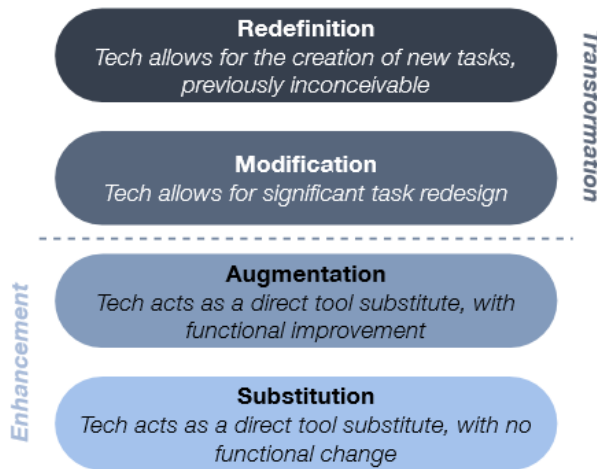

Figure 1. SAMR model. Source: Puentedura 2013.

1) Substitution Level

At the stage of substitution, technology serves as a direct replacement for traditional tools but does not improve the function fundamentally. Puentedura has indicated that technology could be used to replace traditional ways of instructions directly. The substitution level, therefore, is considered as the simplest level in the ICT integration where technology is used only to replace another tool without any modification. Examples of this level is the

use of Microsoft Word, PowerPoints, PDF reader as the media to present lesson materials in the classroom instead of using paper and pen.

2) Augmentation Level

Examples of SAMR augmentation learning tasks go beyond substitution level, providing some types of functional improvement over traditional instruments. The use of mobile DVD players by Pfeiffer et al. (2009) increases the teaching context for a marine biology course. The added video and audio linked the students with the reference that is closer to the fish in a real context, which offer a more situated experience of learning. The learners who used the realistic guideline via their handheld DVD players indicated to experience more learning benefits than the learners who used a static guideline.

3) Modification Level

In this level, technology modifies learning activities or meaningfully re-designs them. This is demonstrated by the use of technological devices and online communication. Online communication promotes cooperation and analytical thinking, while technological devices promote participation of students in the learning process enabling them to interact and engage with each other more easily. A study conducted by Wang, Yu and Wu (2013) is considered as the ICT integration in modification level. They developed a module for speech and debate class using social media apps. Lessons have been given on Facebook, LINE, WeChat, Google Hangouts and YouTube, which are the most frequent mobile social apps in support of group communication. It shows how mobile apps can connect individuals through the addition of technology and encourage learners to think about how to maximize the function of mobile social application in their classes.

4) Redefinition Level

Technology allows the learners, at the redefinition stage, to engage and work together as professionals but with the additional skill of communication for a wide array of audiences enabling students to experience the sense of audience in completing the tasks given. The implementation of technology at this stage has a transformative impact on learning because it encourages the development of new learning tasks. Liu and Tsai's (2013) case study provides an illustration of a redefinition stage, since students engage in instructional activities that would not have been possible without the existence of mobile

devices. They created an augmented reality cellphones application to assist Chinese learners to learn English. The result of the study revealed that mobile learning with increased reality can enhance the efficiency of language learning. The SAMR level and sample activities can be seen in the following table.

Level	Definition	Example	Example
Substitution	Technology acts as a direct tool substitute, with no functional change	A word processor is used as a paper and pencil replacement.	Instead of a paper-pencil test, Google Form exam is used
Augmentation	Technology is a direct replacement for an instrument that improves its functionality	Using spellcheck to correct spelling errors enhances the function of the task	Automatic grading for Google Form exam
Modification	Technology enables important redesign of tasks	The use of Google docs to collaborate or leave comments for each other	A project which requires creativity such as making a movie
Redefinition	Technology makes it possible to create new and previously inconceivable tasks	Writer of a blog post to share the world and add multimedia to it creates an unprecedented task	Creative project with audio feedback

Table 1. Instructional design/SAMR Model. (2018) from https://en.wikiversity.org/w/index.php?title=Instructional_design/SAMR_Model&oldid=1877819.

The SAMR model should be considered as a continuum to comprehend how to set an instance for each stage. The substitution level occurred if a lesson can proceed with or without a technology tool. However, if a technology instrument facilitates a lesson or improves a lesson, then this is considered augmentation. While to transform a lesson, it can not happen without the technological instruments. Technology must be present for alteration to allow the tasks to work. The prevalent classroom is substituted in the stage of redefinition with a cooperative setting that concentrates on students and technological instruments.

The model provides a structure for educators to evaluate the use of technologies and to determine the level of inclusion in their schools. Furthermore, the model reiterates that effective technology integration is more

than just selecting and using some classroom apps. Successful technological integration should be geared towards supporting and enhancing student learning by utilizing computers, mobile phones and the Internet connection. In other words, technology should be integrated into lesson purposefully and efficiently using appropriate apps which can augment and alter the learning experience. The following table presents some applications used in each level of the SAMR model.

SAMR LEVEL	APPLICATIONS
Substitution	Wikipedia, Pages, iBooks, Adobe PDF reader, Simplemind, Collage Creator, Calculator, Dictionary, Notes, Microsoft Word, Microsoft PowerPoint, Microsoft Paint
Augmentation	Google Doc, Evernote, Word Cloud, Google Form, Adobe Acrobat Reader, Blogger, Twitter, Prezi
Modification	Skype, Keynote, Mindmeister, Canva, Edpuzzle, QR Code Reader, Edmodo, Survey Monkey, PDF Expert Flipboard, Dragon Dictation, Comic Strip, Quizizz, Kahoot
Redefinition	Storybird, Nearpod, Padlet, Windows Moviemaker, Flipgrid, iMovie, ClassDojo, Google Hangouts, Quizlet, YouTube

Table 2. SAMR Model Application (adapted from Imamah, 2019)

The SAMR model does not appear hierarchical (Kirkland, 2014), although the often-presented approach frequently gives the impression that the aspirational objective is "redefinition". Most importantly, technology use should be strongly related to the purpose of learning and the anticipated results in order to enhance the learning experience.

Several previous studies have been conducted either to measure ICT integration using SAMR framework or implement SAMR model in the learning activities. The first study was conducted by Jude, Kajura and Birevu in 2014. The study entitled "Adoption of the SAMR Model for the Assessment of Pedagogical Adoption by the ICT University" reveals the failure to use a

number of ICTs in educational processes at institutions primarily due to lack of a powerful unit which is capable of driving educational technologies into implementation, limited knowledge on how to use ICT, the non-accessibility of the appropriate technology infrastructure and lack of policies implementation in the field of education technology.

A study conducted by Floris and Renandya (2018) provides practical thoughts on how the SAMR model can be used to teach listening and reading in language classes. Through the article, they try to inspire educators to integrate technology to improve their teaching experience and to attain pedagogical objectives in their learning courses, realizing the huge potential that technology can offer.

B. Flipped Classroom

The flipped classroom has been increasingly prevalent in tertiary education in recent years. This includes teaching learners the fundamental material of a course autonomously, often by viewing or reading a video-based lecture instead of listening to a classic lecture in classrooms, and providing more time in the class for group analytical tasks, simulations, experiments, questions and responses, and further interesting learning experiences (Saitta & Morrison, 2016).

The flipped classroom is adjustable to the teaching style, techniques and conditions; teachers have the option of personalizing their own personalized version of flipped classroom for their learners and (Bergmann & Sams, 2014). Educators began to progressively re-organize some of their contents outside of the lesson in higher education. Time was therefore freed up for further exploration inside the classroom (Wulandari, 2017).

In the flipped classroom model, the role of the teacher in the classroom has changed. The teacher is no longer the presenter of the information, but they will have the tutorial role (Sams & Washington, 2012). Based on Demirel (2016), the most crucial step that is done by the teacher to start flipping the class is deciding the content and the material and planning the learning process. The material can be given in the form of video recording of the teacher himself or he can also embed a related video, or in the form of online exercises that can be done by the students before the class started. Hence, in the flipped classroom, the students will use the class time to discuss the material more in-depth by having a questions and answers session with the teacher, doing peer or group activity, or having a presentation about the

material instead of spending the entire class time watching and listening to the teacher (Roach, 2014).

In order to implement successful flipped classrooms, some components need to be involved. Bergmann & Sams (2014) elicit five components to apply in flipped classrooms, namely collaboration between teachers and students, students' initiatives to learn, optimized learning facilities, support from policymakers and support from the IT department in the university.

C. Technology Integration in Indonesian Context

There have been many factors influencing the inclusion of ICT in education. Traditional approaches to learning are less likely to be suitable to prepare students to participate in contemporary workplaces. The other reasons focus on the pedagogical impact that ICT may have, such as developing higher-order thinking skills (OECD, 2001), increasing levels of participation and collaboration (Davies & Merchant, 2009; Reeves, Herrington & Oliver, 2002), and amplifying creative teaching strategies (Lih- Juan, Jon-Chao, Horng, Shih-Hui, & Chu, 2006).

Indonesia is recognized as a densely populated nation (more than 250 million people), with a wide range of populations on 17,500 islands. Based upon this, the capacity of education research to depict Indonesia as a whole is usually restricted. For instance, between Java and the Eastern Indonesian provinces, there is a significant gap between education and Internet access. Research involves looking at the connectivity between Indonesian schools, Indonesian educators and Indonesian students.

Besides the accessibility of the internet, Karmila Machmud (2011) revealed the other barriers encountered by educators in Indonesia. Findings of her research show that technology accessibility and availability were not the only obstacle in integrating technology in Indonesia. Another constraint faced by educators was the insufficient knowledge on how to integrate technology effectively into their teaching process.

In this vein, Harendita (2013) argues that the absence of digital literacy in Indonesia may be related to some cultures that are typically marked by compliance. She also claims that alternative pedagogies concerning ICT use in classes conflicting with previous approaches to the classroom. Resistance can spring from teachers' unreadiness to accept new ideas. Those are in line with Ertmer (1999) who projected a framework that elicit "first-

order" obstacles and "second-order" obstacles for integration of technology in education. The first obstacle to technology integration involves some external variables, such as the absence of sufficient access and facilities, time, training and institutional support. The "second barrier" is more intrinsical to teachers, which encompasses pedagogical beliefs of the teacher, technological conviction and a willingness to change by teachers. Those elements could hinder the integration of technology in classes.

Despite a limited inquiry on ICT integration in Indonesia, some studies in this area indicate that teachers, with appropriate support and adequate time, are capable of implementing an innovative stance as a basis to provide students with whole-person education. Therefore, it is exceptionally advisable to nurture innovative thinking of the teaching staff by providing training and professional development program necessary to apply innovative technology integration in the instruction.

METHODOLOGY

This research employed a quantitative research methodology. The study was undertaken at 33 departments of Sanata Dharma University involving 593 students and 63 lecturers. The lecturers were aged between 26 – 75 years. The data was collected using an online questionnaire generated using Google Form that follows the Substitution, Augmentation, Modification, Redefinition (SAMR) theorized by Puentedura (2013). Data gathering was conducted from March-May 2018.

RESULTS AND DISCUSSION

For the purpose of this paper, data in the findings will be divided into two sections: from the viewpoint of the lecturers and from the viewpoint of the students. In both parts, it consists of the reasons for IT integration, the SAMR level and activities, and their suggestions regarding IT integration in Sanata Dharma University in order to achieve whole-person education.

A. Lecturers' data

a. Lecturers' age range

The majority (31 percent) of respondents were over 45. Those aged 31 and 35 years old accounted for 23%, and those between 26 and 30 years old represented 20%. Sanata Dharma University could tape from this age characteristic to adopt an ICT-led pedagogy.
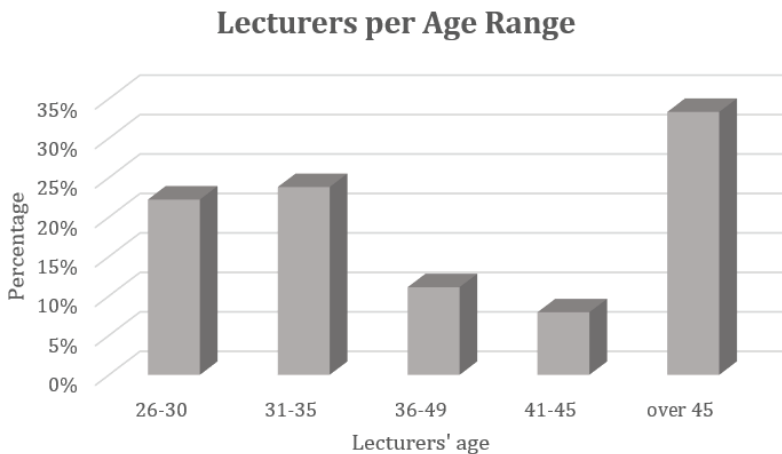
Lecturers per Age Range

Figure 2. Age distribution of the lecturers

The analysis found that most of the respondents were older than 45 years. The senior level is what Prensky (2008) identified as "digital immigrants" or persons with technological skills and knowledge who do not previously own the skills. Nevertheless, the data also shows that the number of lecturers from 26-35 years of age dominates the overall number of teaching staff involved. They are viewed as more technically competent regarding technology integration in educational context. Prensky (2001) notes that younger generations are more ICT-related and have a higher affinity than their relatively old counterparts. Therefore, Sanata Dharma University has a fertile ground where pedagogical ICT use can flourish.
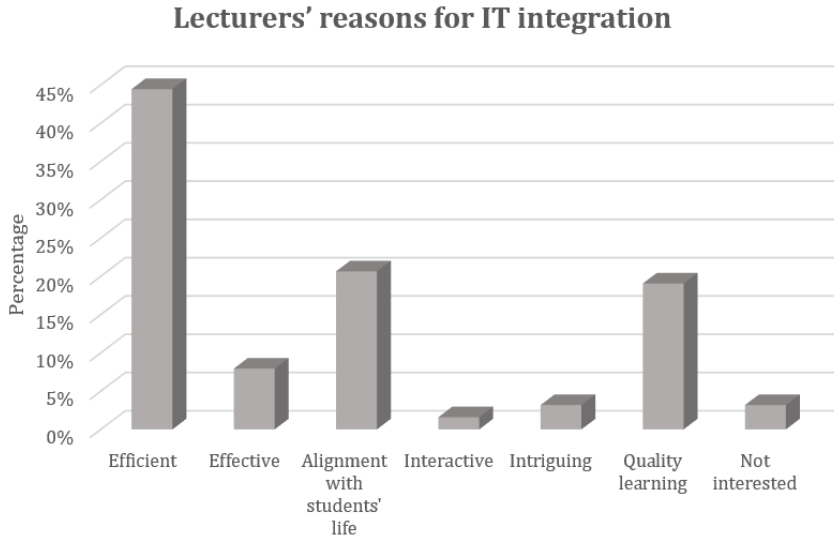
b. **Lecturers' reasons for IT integration**

Figure 3. Lecturers' Reasons for IT integration

The result shows that, due to its efficiencies, teachers favored the use of technology. Student evaluation is one of the most tedious and time-consuming activities in many universities. One approach to addressing workload challenges can be the use of pedagogical technology.

c. **Lecturers' SAMR level and sample activities**

To assess if the teachers used ICTs in various teaching and learning tasks, they were asked to mention the use of specific ICTs for different pedagogical processes. The researchers used Puetendura's (2013) SAMR model to determine the level of ICT integration. According to Puetendura (2013), ICT use in educational institutions can be found in four different levels, namely, Substitution, Augmentation, Modification and Redefinition. It defines the stages of ICT pedagogical integration and was built based on the teaching and learning cycle which is the focus of this research. The following sections address the level of ICT integration based on the SAMR Model lens at Sanata Dharma University.
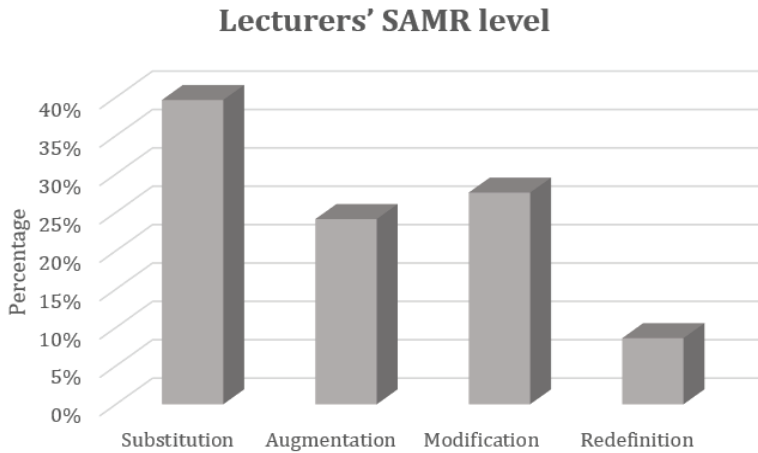
Figure 4. Lecturer's SAMR level

As evaluated by SAMR, Substitution, which comprises 39.7% was the most dominant level of technology employed by the lecturer. This was then followed by Modifications (27.6%), Augmentation (24.1%) and Redefinitions (8.6%). The table below shows the types of work undertaken by the lecturers.

Level SAMR	Sample Activities
Substitution	1. Using PPT to display material 2. Upload and download learning material from LMS 3. Prepare lecture note using MS Word 4. Upload assignment to LMS
Augmentation	1. Automatic grading for quizzes in LMS 2. Automatic grading with Kahoot 3. Online forum discussion 4. Using spelling and grammar checker
Modification	1. Peer reviewing process 2. Making infographic poster 3. Video conferencing with guest lecturers
Redefinition	1. Upload video as learning materials in YouTube 2. Collaboratively creating mind map 3. Collaboratively write blog posts 4. Making story book

In Substitution level, lecturers attempt to replace conventional lessons with ICT-based methods without any practical enhancement, for instance with the use of a word processor to substitute a typewriter or with PPT to display teaching materials instead of merely using whiteboards. Lecturers also use the institutional learning management system, *EXELSA*, to upload their teaching material and assignments.

The Augmentation level presupposes that the pedagogical information and communication technology are used to replace traditional methods of education and learning but with some changes in operation. For example, a lecturer with the aid of a word processor can use a spell checker to erase typos from his lecture notes.

From the data, the most common modification ICT is enabling interaction among students via the internet, for instance conducting peer-review process as one of the steps in writing classes. In this stage, lecturer assigns students to upload their work to LMS, and then encourage them to review and comment on each other's posts. Peer review is in line with Vygotsky's constructivist learning.

At the redefinition stage, technology allows for the creation of new tasks previously inconceivable. This level ranked lowest in the chart showing lack of readiness of the lecturers to innovatively create learning experience with the assistance of technology. We may infer from the data that Sanata Dharma University has to make a great effort to increase ICT use as instruments to redefine the teaching and learning process.

d. **Lecturers' suggestions to improve IT integration**

Four key areas were suggested from the findings, which could enable institutions to incorporate the SAMR Model into their educational process. These are: 1) training related the improvement of skills and knowledge in educational technologies, 2) equipment and infrastructure 3) updated LMS, and 4) educational technology policy.
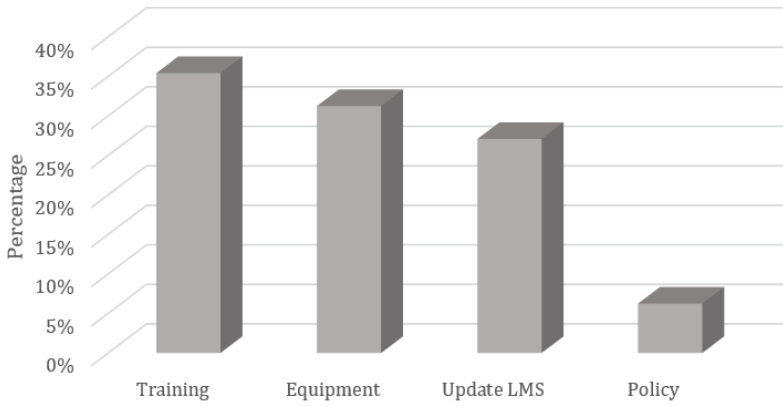
Figure 5. Lecturers' suggestion to improve IT integration

A lack of knowledge on using educational technology or ICT is the most frequent cause for the non-users of technology. The University should mobilize lecturers who have additional know-how in educational technologies to train other lecturers. There should also be concerted efforts to improve facilities, to sustain and upgrade institutional LMS systems and to enforce educational technology policies to recognize educators who use learning technology in an innovative way.

B. **Students' data**

a. **Students' reasons for IT integration**

Figure 6. Students' reasons for IT integration

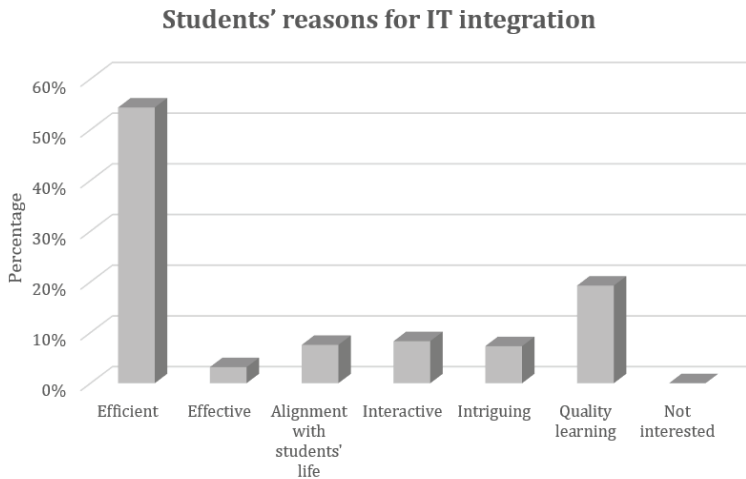The findings among the students also show the same results as those reported for IT integration by the lecturers. The main reason why students are interested in using technology is because technology allows their learning to become more efficient.

b. **Students' SAMR level and sample activities/tools**

In comparison to the SAMR rate of the lecturers, students' most prevalent level of technology was Augmentation that accounted for 43%. It was then followed by Substitution (31%), Modification (18%) and Redefinition (7%). The following graph shows the SAMR level distribution of the students.
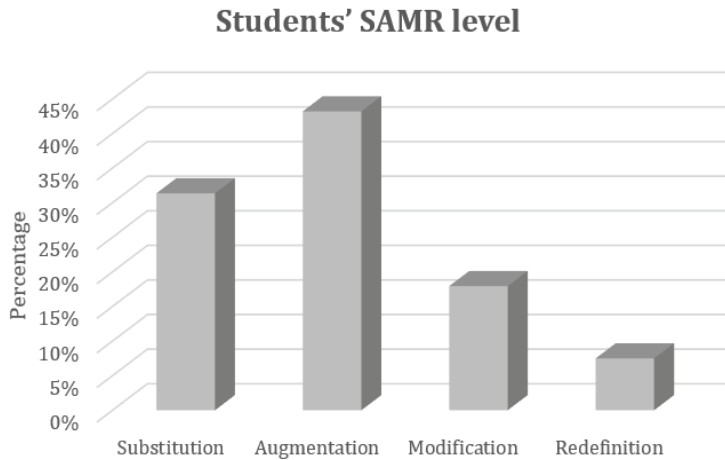

Figure 7. Students' SAMR level

The following table shows the types of activities done by the students.

Level SAMR	Sample Activities
Substitution	1. Upload and download learning material from LMS 2. Reading online resources (e-journal or e-book) 3. Submit assignment to LMS

Augmentation	1. Doing online quiz 2. Online forum discussion 3. Exploring virtual lab
Modification	1. Participate in auto-graded quiz like Quizizz or Kahoot 2. Peer reviewing process 3. Spreadsheet processing
Redefinition	1. Collaboratively creating mindmap 2. Digital video processing 3. Using Google Classroom 4. Online publication in Youtube or Wordpress.

c.   **Students' suggestions to improve IT integration**

Students' suggestions to improve IT integration
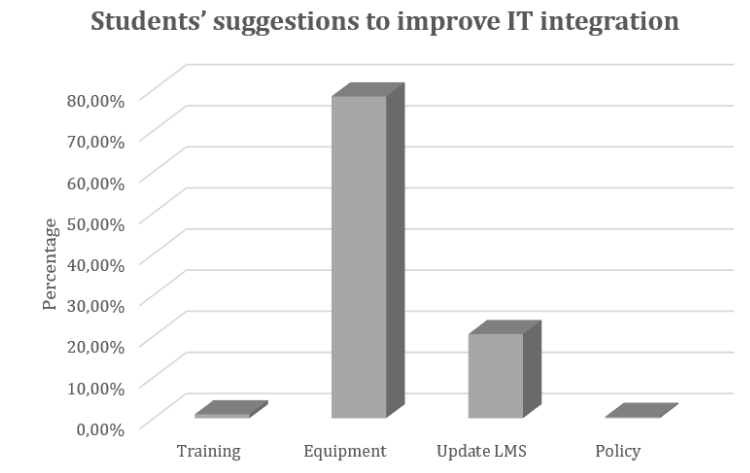
Students, as digital natives, are typically attached to technology. They do not wish to have trainings in order to upgrade their skills related to ICT use. They expect more on high bandwidth and better internet access. Technology's significance in autonomous learning should be sensitized by the institution. Priority should be given to the improvement of ICT infrastructure for both students and lecturers. If ICT integrations are to be enforced, the budget line for ICT resource mobilizations should be prioritized. The use of personal computer systems, such as laptops, mobile phones, tablets etc, should be encouraged and Wi-Fi hotspots should also be effectively expanded and improved.

CONCLUSION

From the results, it can be seen that the use of technology was preferred by the students and the lecturers mostly due to its efficiency. As analysed using SAMR framework, the most dominant level of technology use by the lecturer was Substitution, which comprised 39.7%. It was then followed by Modification (27.6%), Augmentation (24.1%) and Redefinition (8.6%).

The findings also suggest that since most of the lecturers still used technology on Substitution level without any task modification, there need to be workshops to upgrade the lecturers' competence in order to embed the use of technology more powerfully to create a meaningful learning experience. The results may serve as part of needs analysis which becomes the basis upon which of the University proposes their strategic plans. Some programs that may help the institution to augment their ICT adoption include running workshops and other professional development schemes. In addition, compared to short training and workshops, long-term and continuous assistance and programs are more likely to be fruitful.

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ONLINE TEACHING AND KI HADJAR DEWANTARA'S PATRAP TRILOKA EDUCATION

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Abstract: The purpose of this research was to answer this question: is Patrap Triloka (PT) of Ki Hadjar Dewantara complementary to Online Teaching? The research investigated the PT, an educational local wisdom, and its application in Online Teaching (OT). It was conducted at Widya Karya Catholic University (UKWK)**,** a private University in Malang, Indonesia, which has practiced OT in recent years. The researcher conducted interviews to 8 lecturers who have practiced OT and sent to questionnaire their 27 students. The data obtained were analyzed with a qualitative approach. The result is that both lecturers and students have mutual-supportive opinions that the implementation of OT at UKWK demonstrates the principles of PT, which contains of "giving examples in front, giving motivation in the middle and giving encouragement from behind". It also indicates that the enthusiasm of the lecturers to focus on students' self-development, building-relationships and variety of teaching method are important factors to make PT supportive OT.

Keyword : Online Teaching, Patrap Triloka, Education Technology.

INTRODUCTION

In this paper Online Teaching (OT), Online Learning (OL) and Distance Education (DE) are used interchangeably. OT refers to courses that are offered completely online, meaning there are no or less on-campus classroom session. The courses are designed for variety of students and participants. This includes correspondence courses, telecourses, CD-ROM courses, and mobile learning [1]. OT is an advantageous instrument for education and teaching process. It is more virtual and less direct or face to face interaction between teachers and students.

Joshua Stern [1] has mentioned OT benefits: convenience (24/7 access), enhanced learning, leveling of the playing field, interaction, innovative teaching, improved administration, saving, maximized physical resources, and outreach. However, OT has also some disadvantages [2]: (1) There is no face to face interaction with classmates, friends and teachers, (2) If the computer is faulty and the student has no IT background it can lead to the class being cancelled, (3) There are no personal relations between the teachers and the students, (4) Students without computer knowledge cannot take online courses

Patrap Triloka (PT) is trilogy values of leadership which consists of *Ing Ngarso sung Tulodho*, *Ing Madyo Mangun Karso and Tut Wuri Handayani*, meaning „giving example in front, building spirit in the middle, and providing motivation from behind" [3]. It was introduced by Ki Hadjar Dewantara (KHD), the first Minister of Education of Republic of Indonesia who got a diploma of teaching in the Netherlands and was inspired by Froebel [4]. KHD describes that education is to take place in a natural environment. He takes "garden" (*taman*) to name educational environment. PT is a method of education where teachers interact directly with students at the same location and play role as leaders. They give example in learning, inspire their students and encourage them. The face to face and direct interaction between teachers and students plays a crucial role because both parties stay at the same location while the teaching process occurs. They may share information, experience and emotional feelings. This method facilitates students" character formation, which is essential part of education. KHD also describes that education is more than transfer of knowledge. It is a cultural process [5].

PT indicates the three main principles of teacher's leadership role which include action leaders when he/she is in standing before (leading), in the middle and standing behind [6]. When teachers are interacting with students in a process of education or teaching they stay in those three positions. Teachers must give example in learning, motivate students to learn and encourage those who have lost their motivation. Although these roles were formulated years ago, they are relevant and supportive to the process of teaching such as OT. Having found that PT is supportive to education, we would like explore the possibilities of combining it with OT. The goals and objectives of the project are as follows: (1) To explore the OT and the PT as instruments of education process, (2) To compare the two and to find advantages and disadvantages of each method, (3) To raise awareness of local method of education (PT) and its relevance to OT, (4) To encourage college

teachers to combine PT and OT in their teaching process.

OT has attracted the millennial students, and teachers have practiced it in recent years. It seems that it will become a more practical method of teaching. Our campus is in great demand by students from various islands of Indonesia, especially those who are in favor to the principle of Catholic education based on discipline and compassion. In addition, Malang is a dream city for many high school graduates outside the island to study, because of the comfortable weather and well developed infrastructure. As the only one Catholic campus in Malang City, we want that their desire to study on our campus to be realized. OT can be a reasonable solution for the distance problems and reluctance of the students to be separated from their families. OT can also be a solution for the desire of the working students to pursue higher education on our campus since their desire is often hampered by a difficulty of adjusting work and class schedules.

PT will be meaningful and useful to apply to our University Vision which is *To Be a Qualified Academics Community by Applying Science, Technology and Art through Works based on Catholic values and Pancasila* (5 Indonesia''s Principles). PT has the same principles with the vision of our university which puts forward humanity and compassion in developing science guided by the Catholic and Pancasila values. In relation to science and technology, OT is a concrete application for the use of technology. In the other words, OT and PT are manifestations of our academic Vision Statement.

OT and PT will promote and challenge Whole Person Education (WPE). Firstly, OT has more technical and practical dimensions of teaching. It will lose face to face interaction in the process of education. Secondly, PT promotes human interaction which is an important part of education. Finally, while OT has a lot of difficulties in promoting whole person education, PT has some strengths to promote it. PT as a local wisdom will become a pillar of teaching that shapes the character of Indonesian people as a whole and has a personality that will become a role model for next generations. The use of OT cannot be prevented as a part the digital transformation; however, the WPE must be considered and maintained. OT highly focuses on the acquisition of new knowledge and expertise, whereas in the concept of the WPE, teaching process has to develop good attitudes and behaviors as well, so the students has the ability to synergize positively on society.

The concept of modern teaching that develops along with the

advancement of digital platforms is feared to be further away from the goodness of Whole Person Education. This is the main reason for implementing PT as an alternative solution to teaching good attitudes with intense teacher-student interactions, which usually become OT weakness. This project will be very useful to find out the best teaching models that are relevant to build OT Process and WPE principles. The model will make our lecturers well-developed in the modern teaching, but at the same time it will prioritize the principles of local wisdom. We believe that local wisdom such as PT is a valuable national heritage that needs to be promoted to build generations of learners.

METHOD

The method of the study is qualitative. Questionnaires were distributed to participants and interviews were conducted to find out experiences and general opinion about PT and OT practices among 8 lecturers and their 27 students.

A. Type of Research

This qualitative research aims at providing a detail understanding about human behavior, emotion, attitudes, and experiences. The reason is that many research studies on "cutting-edge" technologies only focused on proving the "effectiveness" of technology, while failing to address the more important issues such as "in what ways, in which contexts, for whom, and why" technology facilitates learning. They argued that relevant and quality research on educational technology must do more than simply presenting the empirical findings on how well a technology application worked, but should also be able to interpret why it worked. Some researchers attribute the problems in educational technology research to the philosophical assumption behind how science is defined in the field [7].

The following are examples of questions that we addressed to the lecturers. Total of 15 questions were compiled based on the principles of PT. In order to apply PT principle of giving example in front (*Ing ngarso sung tuladha*), we asked; "how have you been giving inspiration through e-learning, using online teaching continuosly, and updating learning resources for online teaching?" In order to apply PT principle of building spirit in the middle (*Ing madya mangun karsa*), we asked "how have you have

been giving motivation through online, trying to recognize student potential and abilities, and trying to increase student creativity through e-learning?". In order to apply PT principle PT principle of providing motivation from behind" (*Tut wuri handayani*), we asked "how have you been trying encourage student to learn by utilizing e-learning technology, trying to increase student enthusiasm in using e-learning, and trying to overcome student boredom in using e-learning?"

The contents of the questionnaire with the answers to the Likert scale of students are similar, but we arrange it with statement based on PT, not question sentences. It consist of 15 statements that explained in Results and Discussion section.

B. Participants

Research subjects were 8 lecturers and 27 students at UKWK who had lectured and studied using e-learning. Firstly, in-depth interviews were conducted with the head of the software developer who was also e-learning initiator to obtain an overview of the OT implementation by lecturers. Secondly, in order to collect data, a set of open-questionnaires link was sent to 8 lecturers and another close-questionnaires was sent to those 27 students. Both questionnaires consist of 15 similar questions based on the 3 principles of PT, each 5 statements in every principle. The difference is; the lecturers were asked to answer on essay, but the students were asked to answers with a 5 likert scale.

RESULTS AND DISCUSSIONS

Lecturers

Lecturers has been explaining the development of technology and the benefits of learning in an effort to inspire, motivate and encourage students to learn. The lecturer has involved students in the search for new sources and learning methods before organizing online discussion, as an effort in students" personal development. It has stated by Danang, one of lecturer correspondent, who said "I have been trying to update references for e-learning and students have instructed to be actively in finding new references from libraries, e-books, journals, and tutorials. One of the advantage of OT is the ease of access and anytime in order to score

assessment which is stated by Fery, an Information System Studies lecturer, who said "I want to use OT continuosly because it really helps the learning process with flexibility. However objective for each material can be effectively delivered". His collegue, Agung supported the opinion in using OT because of „its accessibility and flexibility". In addition, e-learning provides greater convenience in monitoring the delay task submission. This is an evaluation point for lecturers to analyse student discipline, as an important element in soft skills. Students can also control lecturers punctuality in scoring, based on deadline.

In e-learning process, the lecturers have been consistently optimized software features in online assessment, evaluation, and development, but on the other side they still carry on face-to-face teaching to establish better relationships with students. Lecturers have also tried to develop variations in learning methods to keep enthusiasm for learning. Galuh, an Accounting Lecturer said that ".. to keep students enthusiasm, I have been giving evaluations every week then give some comments, input and also appreciation". Lecturers have been using various kinds of communication media to provide advices on student"s learning problems. If the problem is quite general, the lecturer uses online discussion feature to share advices in the online platform for all class members. The lecturers have received a lot of feedback from students, so that they are now able to develop an interesting and effective learning method. Student"s boredom in learning as often experienced in class can be minimized with the use of video tutorials, software and various other platforms. Lecturers have been encouraging students to continue the use of e-learning by explaining of current trends in career development that greatly utilizes internet-based technology.

Students

Students, as e-learning class participants, gave a good appreciation to OT process. This is very clearly seen through the lowest average answer in 15 questions asked. All questions were answered with the predominance of number 5 on the Likert scale. This study approach is qualitative which is supported with numbers to provide a brief overview, and it can be seen from the section below.

Table 1.
Student Answers.

Statement 1		Score				
		2	3	4	5	
1	Lecturers have been giving inspiration through e-learning.	0%	11.1%	18.5%	22.2%	48.1%
2	Lecturers have been using online teaching continuosly.	0%	0%	33.3%	18.5%	48.1%
3	Lecturers have been continuing to optimize the use of e-learning features.	0%	3.7%	18.5%	18.5%	59.3%
4	Lecturers have been updating learning resources for online teaching.	0%	3.7%	18.5%	14.8	63%
5	Lecturers have been giving evaluation to my assignments that submited online.	0%	0%	11.1%	29.6%	59.3%
6	Lecturers have been giving motivation through online.	3.7%	0%	22.2%	25.9%	48.1%
7	Lecturers have been trying to recognize my potential & abilities through e-learning.	3.7%	7.4%	14.8%	22.2%	51.9%
8	Lecturer have been trying to approach me online when I found difficulties.	0%	11.1%	22.2%	22.2%	44.4%
9	Lecturers have been trying to increase my creativity through e-learning.	0%	0%	25.9%	11.1%	63%
10	Lecturers have been using a variety of learning methods with online media.	0%	0%	18.5%	18.5%	63%
11	Lecturers have been trying encourage me to learn by utilizing e-learning technology.	0%	0%	7.4%	22.2%	70.4%
12	Lecturers have been trying to increase my enthusiasm in using e-learning.	0%	0%	22.2%	25.9%	51.9%

13	Lecturers have been guiding everytime I get confused in using e-learning.	0%	3.7%	14.8%	18.5%	63%
14	Lecturers have been giving appreciation everytime I take an initiative in e-learning.	0%	7.4%	11.1%	29.6%	51.9%
15	Lecturers have been trying to overcome my boredom in using e-learning.	0%	7.4%	7.4%	25.9%	59.3%

Likert scale answers above with the following meanings

    5 = Strongly Agree   2 = Disagree

    4 = Agree   1 = Strongly Disagree

    3 = Slightly Agree

The lowest number 5 answer is 44%, can be found on the statement " Lecturer have been trying to approach me online when I found difficulties.". While the question "Lecturers have been trying encourage me to learn by utilizing e-learning technology" got higgest 5 scale answers (70.4%). It can be concluded that likert scale student"s answers are suitable with lecturer"s essay answers. Answers with the most low scores (scale 2), i.e 11.1%, can be found in the statement of "Lecturer have been trying to approach me online when I found difficulties". It can be concluded that the role of lecturers in approaching and inspiring still needs to be improved. The answer to the statement "Lecturers have been using online teaching continuosly" gets the highest scale 3 answer (33.3%). It is assumed because some lecturers and student opinions said face-to-face lectures will not replaced by technology. The sustainability in e-learning needs to be balanced with offline learning.

The questionnaire was designed to get questions" anwers that describe the 3 principles of PT as follows:

Statements that describe the PT principle of giving example in front (Ing ngarso sung tuladha)

1. Lecturers have been giving inspiration through e-learning.
2. Lecturers have been using online teaching continuosly.
3. Lecturers have been continuing to optimize the use of e-learning features.
4. Lecturers have been updating learning resources for online teaching.
5. Lecturers have been giving evaluation to my assignments that submited online.

Statements that describe the PT principle of building spirit in the middle (Ing madya mangun karsa)

6. Lecturers have been giving motivation through online.
7. Lecturers have been trying to recognize my potential and abilities through e-learning.
8. Lecturer have been trying to approach me online when I found difficulties.
9. Lecturers have been trying to increase my creativity through e-learning.
10. Lecturers have been using a variety of learning methods with online media.

Statements that describe the PT principle of providing motivation from behind (Tut wuri handayani)

11. Lecturers have been trying encourage me to learn by utilizing e-learning technology.
12. Lecturers have been trying to increase my enthusiasm in using e-learning.
13. Lecturers have been guiding everytime I get confused in using e-learning.
14. Lecturers have been giving appreciation everytime I take an initiative in e-learning.
15. Lecturers have been trying to overcome my boredom in using e-learning.

The lecturers" role to give example in front explained in the first PT principle (*ing ngarso sung tuladha*), has been demonstrated by providing comments, advice and score on the tasks that uploaded by students. The lecturers also continuosly give inspiration to students in maximizing the use of technological advancements for self-development by giving examples from several recent case studies. Those show consistency of being a role model for the students. 59.3% of student correspondents stated that they strongly agreed that the lecturers always gave evaluations in OT. Futhermore, 48.1% of students also gave a maximum score (5 scale) to give appreciation of lecturers" way in providing inspiration. It can be concluded that the answers of these students are in line with the lecturers" opinions.

The lecturers claimed that they have been given a challenging task adjusted to students capacity. The lecturers utilize features, software, platforms to facilitate the OT process. E-books, journals and video tutorials are also updated regularly as a source of references to arouse students" enthusiasm in renewing knowledge. As many as 51.9% of students think they strongly agree on the statement of "lecturers have been trying to recognize my potential & abilities through e-learning". The lecturers have claimed to make various efforts to increase curiosity, analytical thinking and argument building skill.

This is relevant to the teachings of "*Ing madya mangun karsa*" in PT, which means building spirit in the middle. Lecturers consider their trigger to push students" interaction in expressing arguments is very important to arouse learning enthusiasm.

A very absolute percentage of scale 5 answers are found in students' answers regarding the role of lecturers to encourage students in using OT (70.4%). In addition, students also feel very appreciated if they have willingness to use OT continuously. As much as 59.3% of the student correspondents, stated that they strongly agreed that the lecturers have made an effort to overcome their boredom. This steps are in accordance with the third PT principle which says "*tut wuri handayani* (providing motivation from behind)", by keeping students away from boredom. The lecturers also claimed that they always tried to open for discussion and consultation, so that students felt they were always encouraged to make progress.

This finding supports previous research in "E-learning in Postsecondary Education"[8] which states; The wide range of various technology advancements used by universities" online programs may enhance the interaction between students and instructors, and among students at large [9]. The nature of the anonymity in the online environment may allow more students, who otherwise do not want to attend face-to-face classes because of their shy personality, to participate in online education where they do not physically see each other [9]. The methods carried out by lecturers at UKWK to encourage students through software, to give feedback, to find the latest references and to evaluate lectures, are also in line with the previous research finding. It has stated the upgraded technology and software may allow instructors, students, and university administrators to collect data, feedback, and evaluation regarding their online experiences.

UKWK lecturers already have the awareness and initiative as stated in previous research; "Issues and Challenges for Teaching Successful Online Courses in Higher Education: A Literature Review".[10] The study result stated that in order to be effective in the classroom, instructors of online classes must be great listeners and communicators as well as take the time, and extra effort to create community and engage students with thought-provoking questions to help move discussions along. Instructors must be able and willing to provide immediate feedback and enforce a safe environment where students feel valued and able to.[10] The actions of the UKWK lecturers in the series of roles above were also appreciated by students.

UKWK students often say that the superiority of the University is in the harmony and interactive relationship between lecturers and students. This advantage was reflected in the answers to the survey and could be assumed as an important foundation in the application of PT. It seems that OT can be very successful in supporting PT if the lecturers still uphold local wisdom such as a familiarity in teaching, rather than focusing on technological features only.

CONCLUSION

In general, the results show a similarity between lecturers and students" answers. Essay responses from lecturers are supported by the student likert scales responses. The finding is very positive because most of answers indicate ideal conditions in the OT process. On one side, the weaknesses of OT (there are no personal relations between the teachers and the students) [2] are not proven in this study. Both lecturers and students claim to have a good communication and relationship in OT process, as an impact of the lecturers' focus on developing students who are creative, innovative and critical. On the other side, some lecturets express that giving motivation to students in OT is quite challenging. They say that student motivation, assessments, potential exploration, and relationship building must be supported by direct interaction. Offline teaching is still an important part for the lecturer in order to give good examples, to build enthusiasm and to encourage. However, the lecturers have been able to provide three principles of PT to their students in OT process. The lecturers" have been successful in giving example in front, building spirit in the middle, and providing motivation from behind.

The application of online teaching has not reduced the patrap triloka value of wisdom. Online teaching has supported the better application of patrap triloka in the digital era. However, further research should be done. A shared commitment is needed to carry out ongoing evaluations to increase the positive impact of the implementation of OT.

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Students' Attitudes Toward The Online Learning Program: A Case Study of National Certification Program

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Abstract: The fact that in-service teacher professional development is important to improve the education quality, national certification program is designed by Directorate General of Learning and Student Affairs, Ministry of Education and Culture of the Republic of Indonesia. One of the programs is served in form of online learning program. In general, the programs have been running well, but evaluation upon the program, which is considered essential part of a program, has not been carried out to measure the quality and students' satisfaction upon the program. Referring to this condition, this study attempted to evaluate the *Program Profesi Guru* in English Education Department, in particular to find out students' tendencies across the program. Mixed method was employed to measure whether the students possess a positive attitude towards the online learning program. Questionnaire and Focus Group Discussion (FGD) helped to identify the students' attitudes. The data analysis was conducted by calculating the percentage. Meanwhile, the qualitative data were transcribed and interpreted. The results reflected that students had positive attitudes towards the online learning program.

Key words: students' attitudes, online learning program, national certification program.

INTRODUCTION

Continues professional development should serve as the main agenda for teachers' career. They need to update their knowledge through both

formal and informal ways so that they will not be left behind by the students who have curiosities towards many things happen in sourroundings and to keep abreast with the advance and development in education field. In informal way, teachers are free to self-explore things experienced in their day-to-day teaching. In Indonesian context, the formal professional development might take place in the forms of trainings, workshops and seminars held by the institution or the ministry of education. The professional development program contains teachers' learning and how they apply their knowledge or theories in practice to support pupil learning (Avalos, 2011 as cited in Postholm, 2012). One of the the formal professional development programs facilitated by the government for teachers quality improvements is through certification, known as *Program Profesi Guru (PPG).* The program is organized by the ministry of education and culture in corporation with the ministry of research, technology, and higher education based on the Constitution No.14 Year 2015 about Teacher and Lecturer. Article 9 & 10 of the Constitution stated that teacher constitutes a professional educator and therefore must be qualified with Bachelor/Diploma Degree and hold a professional teacher certificate (obtained by *PPG*).

The national certification program constitutes three stages, namely participants selection, trainings, and national certification exam which comprises tests of teaching knowledge and skills. Pertaining to the training stages, participants undergo online learning, workshop, and teaching practicum at schools.

Among seventy-four institute of teachers' education, Faculty of Education and Language, Atma Jaya Catholic University of Indonesia is one of the appointed institutions to conduct the national certification program. This study is going to focus on the national certification program held in English Education Department. The program has been running since 2018 and there have been 6 batches. In general, the programs have been running well. However, evaluation upon the program, which is considered essential part of a program, has not been carried out to measure the quality and participants' satisfaction upon the program. Referring to this condition, this study attempts to evaluate the *PPG* in English Education Department, in particular to find out participants' tendencies across the program.

According to Kirkpatrick (1998), evaluation on training and education program embraces four different stages, i.e. reaction, learning, behaviour, and impacts. The first stage, which is reaction, measures participants' initial

reaction to gain an understanding of the training program and valuable insights into material quality, educator, and more. For the purpose of gaining information about students' attitude towards the training program, this study serves as a preliminary evaluation stage. Nevertheless, this study is limited to the online learning, as part of trainings in *PPG*, disregarding other stages since online learning becomes the introductory program that covers pedagogy and teaching skills. Therefore, this study aims to investigate students' attitudes toward the online instructional materials of national certification program, including the factors of course content & instructional design, learners support, assessment and feedback, environment and ICT. In order to reach the goal, this study is going to answer the research question: What are students' attitudes toward the online instructional materials of national certification program?

Furthermore, investigating students' attitude towards the online instructional materials in the national certification program indeed gives significances for the university and instructors. The online learning of the national certification program is perceived as one of the factors leading to students' satisfaction towards the program, which then has important role to find out the students' attitudes during the online learning. This situation directly affects the universities that run *PPG*, in this case Atma Jaya Catholic University of Indonesia, on how the department provides the online instructional materials with regards on the content, learners support, assessment and feedback, and technology. Therefore, this study will be also relevant to other universities as *PPG* organizers. Through this study, the university might also be able to have preliminary evaluation of the online education system for the professional development course, i.e. the national certification program. In addition, knowing students' attitudes will be beneficial for the instructors in analyzing or identifying the strengths and weaknesses of the online instructional materials so that the instructors can adjust with the students' needs, which finally will enhance both students' satisfaction toward the program and teaching skills. Obtaining the students' attitudes towards the online learning is expected to improve the program quality and provide better professional development materials that support in-service teachers.

The other significances may touch the teacher ethics and whole person education related to this study. Teacher professional development program contains morality, which is the universal value that every person might follow. Morality itself can be represented by performing profession

ethics of being teacher. Through the national certification program as one of the teacher professional development programs, teachers are expected to embrace profession ethics, which is an integral part of the concept of a profession, and manifest it in teaching-learning process. Since the online learning has become part of the *Program Pelatihan Guru (PPG)* in the national certification program, the in-service teachers, as students of this program, will be able to actualize the profession ethics during the online learning process. Besides, online learning in *PPG* must lead the students through a series of steps to ensure that they make thoughtful decisions based on evidence and experience that result in a sustainable and comprehensive training system. By investigating the students' attitude towards online learning or online instructional materials of *PPG*, the students will represent accurate information about their qualifications of undertaken course. Furthermore, this project will also address to whole person education in which every information or response obtained from the students' attitudes is a chance to a great extent, to provide a better instructional materials, particularly in the online learning of national certification program.

Pertaining the study on students' attitude in online learning, similar studies have never been conducted. Wasserman and Migdal (2019) conducted a study on professional development, specifically about teachers' attitudes in online and traditional training course. This study aimed to compare attitudes among teachers enrolled in online and traditional training course in "Pisgah" teaching staff development centers in Israel. They indicated four factors related to teachers' attitudes: Effectiveness and Application, Environment, Course Assignments, and Attitudes towards ICT (information and communication technology). Another study was conducted by Haqiqi (2013) about the online learners' attitudinal tendencies among different levels of proficiency in an institution in Iran. The results showed that the course was effective generally. Haqiqi stated that there was a sinificant difference between EFL learners' in term of their attitudes towards materials while disregarding the other factors. The similarities of the present study with the previous studies are the attitudes towards online learning and the use of questionnaire to gather the data. Meanwhile, the difference is the scope of the present study will be only for online learning in the national certification program held in Atma Jaya Catholic University of Indonesia. The emphasis is on the course content & instructional design, learners support, assessment and feedback, environment and ICT.

LITERATURE REVIEW

A. Students' Attitudes

Studies of attitudes have been broadly conducted across the world. Yang & Kwok (2017) conducted a study on students' attitudes towards using ICT in social constructivist environment. This study aimed to examine the students' attitudes towards using information and communication technology (ICT) in problem-based learning (PBL) among polytechnic students. Based on the results, perceived usefulness and perceived ease of use were found to be significantly and positively correlated with attitudes towards using ICT. Another study was done by Farooq & Javid (2012) which aimed to identify the attitude of learners towards e-learning for learning English. The participants of this study were undergraduate students at the English Language Centre, Saudi Arabia. The results reflected positive attitude towards e-learning in language learning since the participants acknowledged that e-learning not only reinforced their knowledge of language learning but also helped them to develop their understanding in an effective way. As the previous studies analyzed the students' attitudes towards online learning, this current study also laid on the similar field undergone during the national certification program. If the previous studies involved undergraduate students as participants, in-service English teachers would be the participants.

Attitude has been invested in the construction of investments designed to assess various social attitudes (Ajzen, 1993, pp. 41). Ajzen stated that

> attitude is an individual's disposition to react with a certain degree of favorableness and unfavorableness to an object, behavior, person, institution, or event – or to any other discriminable aspect of individual's world. (1993, pp.41)

Broadly speaking, the characteristic attribute of attitude is its evaluative dimension, that is how individuals become part or user of an object then doing object evaluation. Likewise, Thurstone (1928) conceptualized an attitude as a combination of an individual's evaluative judgments about a given object. Abreast with the implementation of the national certification program, research on attitude would be beneficial to evaluate the program. In addition, attitude, which has been frequently cited as one of the primary factors in successful second language acquisition (SLA) is defined by Sonda (2010) as beliefs, emotional reactions and behaviors which gives the learners a stance on a situation. Thus, it is perceived that attitude directly affects success in online courses.

B. Online Learning

Online learning constitutes a method that is developed rapidly by institutions. The existence of online learning raises the effective learning point of view in which learning can be done anytime and anywhere. This idea is in accordance with Bartley & Golek (2004) and Evans & Haase (2001), as cited in Nguyen (2015), who stated online learning is "a form of distance learning or distance education, which has long been a part of the education system, and it has become the largest sector of distance learning in recent years." Online learning also brings some benefits, and of them is as professional development (Bartley & Golek, 2004). Directorate General of Learning and Student Affairs, Ministry of Education and Culture of the Republic of Indonesia designs a professional development program for in-service teachers in national scale teacher qualification improvement, namely national certification program. An online learning is provided as the initial stage of the entire program.

Elements of online learning are adapted from the study conducted by Brown & Voltz (2005) and Chen, Bastedo, & Howard (2018); those are course content and instructional design, learners support, assessment and feedback, and environment & ICT. Course content and instructional design rely on having tasks for students to undertake that provide an experience likely to lead them to meaningful learning (Brown & Voltz, 2005). Learning takes place in the student's mind and body; thus the activity needs to be considered from their needs or perspective of the actions and challenges it affords the student, rather than the complexity of the materials. Then, the learners support deals with information provided before and during the online learning and IT support officer service. For example, contact information, tutorial, and links are available. Regarding the assessment, online learning emphasizes on the use of online formative assessments, such as online quiz, discussion, and weekly assignment, followed by feedback to enhance and maintain student engagement (Chen, Bastedo, & Howard, 2018). Lastly, learning environment encompasses technology used. On the effect of technology condition, Goldhaber (2002) and Sanders (2000) assert that such factor as educational attainment plays a role in students' interest in online learning.

C. Online Learning Program in National Certification Program

The teacher certification program for in-service teachers is conducted by selected universities across country in one semester. The learning system is

designed using the Hybrid Learning system which consists of online learning program, workshops (offline learning) and teaching practice in schools. The conduct of the Hybrid Learning System itself aims to produce outstanding graduates (in-service teachers) who possess national character and values and who are eager to continuously keep abreast with the advance of the industrial era 4.0 so as to produce qualified students.

The online program, in particular, is carried out within three month period and is basically the initial stage of the entire certification program (it will be followed by a three-week workshop and three-week teaching practice at the appointed schools). The participants take part in the material enrichment of the hybrid learning model in Brightspace and ID-REN platform accessed through SPADA website. In the platform, various learning modules have been prepared by the national team in accordance with the teachers' fields of study. They are uploaded into the Indonesian online learning system (SPADA) as a Massive Open Online Course (MOOCs). Broadly speaking, there are 3 groups of modules to be studied and mastered, namely (1) pedagogy, education and teaching profession modules; (2) professional modules (on the fields of study bases), and (3) teaching-learning instrument development module. The topics presented in the first module relate to theories and pedagogical aspects in teacher education, including: 21st century learning, teacher professional development, learning theory, student development, curriculum and learning strategies, and learning evaluation. Unlike the pedagogical module, professional modules vary according to the fields of the study. For English education, the module embraces materials which concern English for Personal Communication, English for Social Communication, English for Entertainment, English for the Media, English for Academic Communication, and English at Work Place.

The online program in the teacher certification program requires the participants to get involved and actively participate in myriads learning activities. Its major activities include those that demand participants to do autonomous learning where they study the materials provided in the module independently, work on learning tasks, make reflections on their own learning, complete the final assignment and do the summative tests. Additionally, there are online discussions in the discussion board that allow participants to exchange and share experience, ideas and opinions upon particular subject matters and relevant topics. They mainly serve as a means for the in-service teachers to interact not only with the instructors, but also with other fellow teachers from various schools of origin. Eventually, the

foremost activity in the teaching-learning instrument development module is in the form of constructing three lesson plans of three different levels of students (grades 7, 8 and 9 of junior high school or grades 10, 11, and 12 of senior high).

METHODOLOGY

A. Type of research

In order to reach the objective, mixed method research was employed. Mixed-method research was adopted in this study since this study looked for involvement of the participants in data collection and sought to build rapport and credibility with the individuals (Creswell, 2003). It was considered appropriate to obtain students' attitudes towards the online learning since the quantitative data would be the main information and the qualitative data as well.

B. Research subjects

The respondents for the questionnaire were 134 students of national certification program in Atma Jaya Catholic University of Indonesia. All students are in-service English teachers who mostly teach secondary schools. Then, FGD was conducted to 1 batch of students who are randomly chosen.

C. Research procedure

1. Data gathering

The actual methods of data collection used were questionnaire and Focus Group Discussion. The questionnaire was adapted from Haqiqi (2013) digging the students' attitudes toward course content and instructional materials, learners support, assessment and feedback, environment and ICT. It employed Likert scale with 1-5 points from totally disagree to totally agree. The expert validation was conducted before distributing the questionnaire. Then, the FGD guideline was developed based on the result of the questionnaire in accordance with the underlying theories.

2. Data analysis

From the questionnaire, the percentage of each degree of agreement

in every statement was calculated to figure out students' attitudinal tendencies. Meanwhile, the results of FGD were transcribed and coded based on the source of information. After gaining all data, the data were firstly sorted into different type depending on the source of information. Secondly, the researchers read through all the data to obtain the general sense and made the lists of the detailed information. Finally, the data were interpreted.

RESULTS AND DISCUSSIONS

Descriptive statistics are discussed first, followed by the responses from the Focus Group Discussion (FGD). All 134 respondents stated their degree of agreement in the questionnaire. Almost all of the respondents put their decision into agree and totally agree. In other words, the agreement tendency towards each statement was more than 50%. Therefore, the students' attitudes towards the online learning program in the national certification program was positive. The positive attitude was also supported with the students' responses during FGD in which they agree with the idea that the course content and instructional design, learners support, assessment and feedbcak, environment and ICT had been served proportionally. The detailed explanation of each aspect will be divided into four parts: course content and instructional design, learners support, assessment and feedback, environment and ICT.

a. **Course Content and Instructional Design**

The results of the quantitative data will be presented in the table below.

Table 1:

Percentage of Course Content and Instructional Design

NO	Statement	Totally disagree		Disagree		Doubt		Agree		Totally agree		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
1	The course objectives and goals are measurable	0	0%	0	0%	11	8.2%	68	50.7%	55	41%	134	100%
2	Topics are identified	0	0%	1	0.7%	2	1.5%	64	47.8%	67	50%	134	100%

NO	Statement	Totally disagree		Disagree		Doubt		Agree		Totally agree		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
3	Content is sequenced logically	0	0%	0	0%	14	10.4%	60	44.8%	60	44.8%	134	100%
4	Course content is up to date	0	0%	0	0%	17	12.7%	44	32.8%	73	54.5%	134	100%
5	Course content is appropriately designed to fulfill students' needs	0	0%	1	0.7%	9	6.7%	59	44%	65	48.5%	134	100%
6	Enough resources are available (e.g. useful links)	0	0%	2	1.5%	9	6.7%	56	41.8%	67	50%	134	100%
7	The workload for each unit is appropriate	0	0%	4	3%	19	14.2%	76	56.7%	35	26.1%	134	100%
8	Each lesson includes a lesson overview, content and activities, assignments and assessments	0	0%	0	0%	8	6%	57	42.5%	69	51.5%	134	100%
9	Language of written material is clear	0	0%	3	2.2%	10	7.5%	71	53%	50	37.3%	134	100%
10	Clear directions are given for each task or assignment	1	0.7%	5	3.7%	17	12.7%	54	40.3%	57	42.5%	134	100%
11	Meaningful learning experiences are encouraged in the course	0	0%	2	1.5%	10	7.5%	60	44.8%	62	46.3%	134	100%

NO	Statement	Totally disagree		Disagree		Doubt		Agree		Totally agree		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
12	Authentic learning experiences are encouraged in the course	0	0%	1	0.7%	6	4.5%	74	55.2%	53	39.6%	134	100%
13	The course design and instructional design is relevant to the level	0	0%	1	0.7%	3	2.2%	73	54.5%	57	42.5%	134	100%
14	The course instruction includes activities that engage students in active learning	0	0%	0	0%	6	4.5%	61	45.5%	67	50%	134	100%

The data in table 1 reflected that majority of the respondents showed high attitudes towards the course content and instructional design. In statements number 1-6 most respondents answered totally agree with the percentage more than 60%. The respondents acknowledged that the topics given met the students' needs and were considered based on the difficulty level. Abreast with the Brown's and Voltz's (2005) thought about online learning materials and activities, topics and tasks for students to undertake had provided experiences likely to lead them to meaningful learning and met their needs. One of the respondents said, "the contents were adjusted with the needs of students' teachers in the real condition," (IN10). This means the course contents were appropriately desiged to fulfill students' needs. Moreove, the course content was sequenced logically so that the students enabled to follow the materials easily. Respondent #7 responded, "There is gradation of the materials, from easy to difficult," (IN7). Then, from FGD it could be identified that the materials discussed in the online program helped students improve their teaching skills. However, there was a topic that the students considered difficult, specifically in making lesson plan. It can be seen from the following statement.

> "From my point of view, in terms of, for example, making worksheet, yes. How to compare models and make new models or texts, very useful. Then, in terms of how I design a worksheet,

how to make it challenging, how to make it perform students' high order thinking skills, how to provide 4Cs, yes. But for me personally, in the last material, I don't know how to make a good lesson plan, it's still difficult." (IN7)

Regarding the instructions and the designed activities of the online learning, the dominant answers were subjected to agree and totally agree, with percentage more than 50%. The students perceived that the instruction given by the instructors or in the tasks was clear. However they still expected that the instruction contains the example of what the students have to do and the expectation of the answers. This idea was also conveyed in FGD as follows.

Q3: Were the instructions clear?

"Occasionally yes." (IN2C)

Q4: When is it unclear?

"When there is no expected answer. I mean an example of how to answer it. So, take an example, I know what I have to do." (IN2D)

In addition, it was found that the instruction provided in the platform (SPADA) was different with the instructor's. This condition was triggered by the instructors' authority to make changes in the materials or tasks. Thus, students sometimes got confused in doing the tasks. Respondent #4 said, "There is different requirement between the government and the instructor. I mean the instruction in SPADA is different from one given by the lecturer," (IN4). If the directions were clear, the designed activities in the online learning were perceived acceptable.

Each lesson in the platform included lesson overview, discussion, and assessment, which were encouraged in the course to provide meaningful and authentic learning experiences. 69 respondents agreed with this idea, which means the given activities during the online learning program were based on the perspective of actions and challenges that afford the students (Brown & Voltz, 2005). Furthermore, the respondents also stated that they enjoyed the discussion where they were able to share ideas with colleagues and instructor, and elaborate more about the topics.

Besides the agreement, the students' attitudes can be seen from their doubt. For instance, in statement #4, there were 12.7% of the respondents

who felt doubtful whether the course content is up to date. Some respondents said that there were some topics like genres that have not been used in highschools. But those were still available within the topics of online learning. Then, statement #7 reached 14.2% of the respondents answering doubt because they felt that the workload was not equally distributed. Some topics might be easy to accomplish, but some might take more time. Moreover, during the online learning of national certification program, most students were still doing their school duties.

b. Learners Support

The respondents realized the importance of learners support of the online learning program. From the beginning of the program, they had been prepared by tutorial of how to use the system and given the contact information for both instructor and technical support. Thus, the results showed that the respondents tended to have positive attitude towards the learners support. The following diagrams present the data; those are the availability of contact information for the instructor and technical support, tutorial, and educational/library links.

From the diagram it can be seen that students had positive attitudes towards the learners support with percentage more than 56%. Some responses were in line with the results of qualitative data as follows.

> "The support from both instructor and help desk was satisfying." (SU14)

> "Learners support was very good, I think. But, if I can suggest, maybe we can have time to see the instructors some times so we know who the instructor is and can clarify things." (SU17)

Though the students demanded that they should see the instructors, the communication well occured through the platform. It means both instructor and students built good rapport that makes the program considered successfull. Nevertheless, there were some responses related to the provided links indicated doubt because of the source constraints.

c. **Assessment and Feedback**

Table 2:
Percentage of assessment and feedback

NO	Statement	Totally disagree		Disagree		Doubt		Agree		Totally agree		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
21	The types of assessments selected measure the learning objectives	0	0%	2	1,5%	5	3,7%	67	50%	60	44,8%	134	100%
22	The types of assessments selected are consistent with the course activities	0	0%	0	0%	5	3,7%	73	54,5%	56	41,8%	134	100%
23	Rich feedback are provided	0	0%	1	0,7%	9	6,7%	44	32,8%	80	59,7%	134	100%
24	Rapid feedback are provided	0	0%	1	0,7%	18	13,4%	61	45,5%	54	40,3%	134	100%
25	Students received frequent feedback from the instructor	0	0%	0	0%	14	10,4%	49	36,60%	71	53%	134	100%
26	Students received substantial feedback from the instructor	0	0%	0	0%	10	7,5%	53	39,60%	71	53%	134	100%
27	Samples of assigments illustrate instructor's expectations	1	0,7%	2	1,5%	11	8,2%	67	50%	53	39,6%	134	100%
28	Detailed instructions are provided for completing assignments	1	0,7%	1	0,7%	8	6%	64	47,8%	60	44,8%	134	100%
29	Tips are provided for completing assignments	2	1,5%	0	0%	16	11,9%	73	54,5%	43	32,1%	134	100%

Table 2 presents the percentage of students' attitudes towards assessment and feedback. More than half of the respondents chose agree and totally agree for each statement. The types of assessments selected measured the learning objectives and kept consistent with the course activities. The assessment also helped the students to improve their skills as stated below.

Q12: Did the assessment improve your skill?

All respondents: "yes"

This proved that by doing the assessment the students indicate positive attitude towards the online learning. However, the students still felt they needed more feedback or deeper explanation. It can be seen that 6.7% and 13.4% of the respondents answerd doubt on rich and rapid feedback were provided. This is in accordance with the response during FGD.

> "Need more... The feedback is sometimes confusing because the instructor tends to give questions instead of explanation." (AF18)

The way the instructor gave feedback was sometimes difficult to understand because the instructors use difficult scientific terms. Therefore, the students suggested that the feedback could be to the point and the word choice could be simplified. The similar idea actually appeared in Chen, Bastedo, and Howard's suggestion that feedback aims to enhance and maintain student engagement (2018).

d. **Environment and ICT**

The last aspect discussed in the questionniare is environment and ICT. Table 3 shows the result

Table 3:
Environment and ICT

NO	Statement	Totally disagree		Disagree		Doubt		Agree		Totally agree		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
30	The program is well timetabled	0	0%	1	0.7%	9	6.7%	54	40.3%	70	52.2%	134	100%
31	The application (SPADA) is user friendly	0	0%	1	0.7%	11	8.2%	54	40.3%	68	50.7%	134	100%
32	The application allows me to exchange ideas with my instructor	2	1.5%	2	1.5%	20	14.9%	55	41%	55	41%	134	100%
33	The application allows me to exchange ideas with my colleagues	2	1.5%	2	1.5%	13	9.7%	70	52.2%	47	35.1%	134	100%

34	The application helps me to generate a pleasant atmosphere in the online program	2	1.5%	2	1.5%	14	10.4%	69	51.5%	47	35.1%	134	100%
35	Connection to the application is stable	0	0%	7	5.2%	24	17.9%	61	45.5%	42	31.3%	134	100%
36	Connection to the application is reliable	0	0%	1	0.7%	22	16.4%	61	45.5%	50	37.3%	134	100%
37	The idea of using ICT in Program Profesi Guru (PPG) is interesting	0	0%	0	0%	3	2.2%	41	30.6%	90	67.2%	134	100%
38	ICT makes learning easy to understand	0	0%	1	0.7%	9	6.7%	44	32.8%	80	59.7%	134	100%
39	Working with ICT is fun	0	0%	0	0%	8	6%	38	28.4%	88	65.7%	134	100%

The statement #30 about the timetable of the progam reached 52.2% of the respondents stating totally agree. The online learning was scheduled to make sure that students were able to manage the time to do the course activities and assessments. Then, the application was user friendly which means the application was easy to operate and access. However, the access into the application still relied on the connection. As stated in number 35 and 36, 45.5% respondents agreed with the idea the connection was stable, but there were between 16.4%-17.9% respondents got doubtfull. Perhaps, this condition was also influenced by the area or where they live. The benefit that students could get was the application allowed them to exchange ideas with the instructor and colleagues. As stated in the the first aspect, about course content, the students' favourite activity was discussion. Apparently the application provided a room for discussion that supported the activity and involved all students.

Overall, the idea of using ICT in Program Profesi Guru (PPG) of the national certification program was interesting. 67.2% of the respondents totally agreed with this statement. ICT made learning easy to understand and working with ICT was fun. Though anxiety existed.

CONCLUSIONS

This study has proved some interesting insights into the positive attitudes of in-service English teachers towards the online learning program in the national certification program. There are some aspects that support the students' attitudes. First, course content and instructional design are clear and meet the students' needs. Students perceive that the learning activities reflect meaningful and authentic learning experiences. Second, students perceive usefulness of the learners support including additional sources to enrich their knowledge and satisfying service of the IT support officer. Third, assessment and feedback are intertwined since both are provided proportionally. The last is the environment and ICT that make the online learning program easy to access. In conclusion, the idea of providing online learning in national certification program is interesting.

ACKNOWLEDGMENTS

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Learning with MOOCs: Integrating Digital Platform in the Learning Pedagogy to Achieve Global Standard Education

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Abstract: With the rapid advancement in the area of digital innovations, it has become essential to adopt a digital approach in every walk of life to reap the long-term benefits. We are moving towards an era where technology is becoming an integral part of everything we do. Whether it is analyzing the effectiveness of a social policy or searching for a cure for cancer, technical skills have become a part of any field of study. Therefore, to raise a competent generation, it is necessary to incorporate technical knowledge in their education. Asian University for Women (AUW), an international liberal arts institution located in Chittagong, Bangladesh, intends to reach this goal in their education system. As per the mission statement, the university aims to increase female leadership to encourage sustainable development across Asia. In order to fulfill this aim, AUW has begun to integrate MOOCs (Massive Open Online Course) into its curriculum. "CS50x: Introduction to Computer Science" by Harvard University is a popular MOOC that is combined   with the assistance of on-campus faculty so that the students can gain a variety of technical skills while maintaining a high standard of education. These skills would be greatly valuable for the students in future regardless of any field they choose to pursue. They would be able to keep pace with technological innovations as well as fully utilize them to make an impact through their work.

Key words: Digital Learning, MOOCs, CS50x.

INTRODUCTION

Given the pervasive nature of computing in recent times, it is very important to have a level of understanding and skills in Computing. So it is an obvious choice to champion computing skills across the academic curriculum as a way to enable everyone to become active and independent in this technological world. Asian University for Women (AUW), being a unique international liberal arts institution located in Chittagong, Bangladesh, intends to reach this goal in their education system. The unique mission statement aspires to educate, empower, inspire and create future leaders in the region to encourage sustainable development across Asia and in the global context. In order to fulfil this aim, AUW has adopted the policy to integrate MOOCs (Massive Open Online Course) into its curriculum to ensure global standard education regardless of a student's socio-economic background. AUW has chosen "CS50x: Introduction to Computer Science" offered by Harvard University as a pilot project. A variety of teaching approaches have been combined to make the project successful which includes, but not limited to physical lecture in the classroom, lab classes and individual office hours to ensure that the students receive the maximum amount of benefits from taking this course. The course is integrated in the core curriculum to give students the necessary technical skills that they might need in later life for keeping up with a digitalized society. In addition, it teaches students the value of collaborating with their peers around the world to solve challenges.

LITERATURE REVIEW

Information and communication technology (ICT) has revolutionised virtually every aspect of our life and work. Students unable to navigate through a complex digital landscape will no longer be able to participate fully in the economic, social and cultural life around them (Schleicher, 2015). Governments all over the world are highly focusing on the skilful deployment of digital technology in schools, early learning settings and higher education institutions to ensure that learners develop a level of general digital skills that are vital for learning, life and work in an increasingly digitised world.

A. Emerging Technologies and new Trends in Education

In this era of fundamental changes in education brought by virtual worlds and augmented reality, dominated by mobile devices and applications, it is necessary to rethink the academic work environment based on Web2.0 technologies, in accordance with the (pedagogical) learning needs of students.

In a so-called "ubiquitous network society", it seems only natural that the technologies supporting the world's largest network of networks become one of the main topics for reflection and educational practice, as well as a focus of graduate and/or postgraduate studies. Nowadays, educators from all over the world are spending more and more time within this new form of social reality (Carmen M., 2015).

B. Digital technology, Learning and Teaching

Digital technology: The term digital technology is used to describe those digital applications, services and resources that are used to find, analyse, create, communicate, and use information in a digital context.

Digital learning: Learning which is supported and enhanced by a range of digital technologies and approaches.

Digital teaching: Educators providing and supporting enhanced learning opportunities through the use of digital technologies (Education Scotland, 2015).

Hence we can say Digital Learning refers to a learning method that includes any form of technology to support the learning process. There can be many forms of this type of learning. For instance, participating in online courses is a form of digital learning. On the other hand, using technological aids such as multimedia in physical classrooms can also be a form of digital learning.

We can summarily talk about the emerging digital learning toolkits as follows:

- Open Educational Resources (OER)
- video clips (e.g., a YouTube fragment), TED talks
- Illustrations (e.g., photos and drawings),
- Simulations (e.g., simulation of an organizational process or an electronic circuit),
- Interactive assessment resources (e.g. quiz)

- Mobile Applications (the term is similar or close/connected to Mobile Learning, Tablet Computing, Bring Your Own Device and Electronic Books)
- Augmented Reality
  - Daqri or Zoobrust – the 3D storytelling tool for creating 3D books (Carr, 2010). With powerful programming interface, other tools are intended for developers: ARToolKit, Unifeye, Mobile SDK, or Wikitude (Holotescu et al., 2013).
- RSS (Really Simple Syndication)
  - blogs, chat and voice over IP, peer to peer file sharing, Wikis, web conferencing
- Massive Open Online Courses (MOOCs)
  - Edx, Courseera, Futurelearn
- Flipped Classroom.
  - face-to-face and online activities and the integration of synchronous and asynchronous learning tools
- Learning (or Course) Management System LMS
  - Moodle, Blackboard (Carmen, 2015).

C. Educational Value from Digital Technology

1. Enhancing Learning and Teaching

Digital technology can make a substantial contribution by enriching education across all areas of Curriculum for Excellence. If used effectively and appropriately, digital technology can enhance learning and teaching, equip our young people with vital digital skills and crucially, it can lead to improved educational outcomes (Scottish Government, 2016).

Table 1:
How does digital technology enhance teaching and learning? (Scottish Government, 2016)

Aspect of quality learning and teaching	Opportunities and impact of digital technology
Provision of quality educational content	Learners and educators have access to a multitude of additional online educational content as well as being able to create new digital content that can support education.

[14] Tailoring approach to deliver personalized learning	A range of digital tools and services (apps, games, websites, etc.) allow educators to offer a number of approaches to learning and learners can choose the approach that best suits them.
Collaborating with others to test understanding of new knowledge and skills	Educators can offer learners the opportunity to collaborate online with others from across the world in addition to their peers within their school or early years setting.
Engaging and motivating learners	Educators have access to a range of engaging digital tools and services.
Ensuring education is relevant to learners' experience of the world	Educators can deliver learning in a digital context using digital tools and services. This better aligns with learners' experience of today's digital world.
Opening up experiences and opportunities for learners	Educators can provide learners with access to a range of digital resources which allow 'anytime/anywhere learning' and build a level of digital skills which will be vital in today's digital world.
Providing quality assessment, personalized feedback and data to inform subsequent learning and teaching	Educators can reduce workload by using appropriate digital assessments that provide instant results and personalised feedback. This frees time for focusing on next steps and improvement.
Allowing sufficient time for learning and teaching, enabling learners to develop their knowledge and skills	Online digital networks allow educators to share resources and digital tools and services expedite lesson planning. Digital assessment eliminates marking time. The time saved can be devoted to quality learning and teaching.

2. Improving Educational Outcomes [20]

It has long been established that excellent teaching leads to excellent educational outcomes for learners. If we can utilise digital technology to enhance learning and teaching [20] we can also help to improve educational outcomes for all learners.

3. Building Digital Skills

[20] Developing a level of digital skills that will be essential in today's increasingly digitised world as mentioned by OECD Education Director, Andreas Schleicher, "Investing in education technology is no longer an option, but a necessity.".

Due to the massive wave of globalisation, internet has reached very far corners of the world. People do not only see the internet as a means of entertainment, they have also begun to recognise the immense potential it has in terms of education.

Therefore, people from different walks of life take the help of MOOCs to gain more knowledge. From students to entrepreneurs, something can be found to cater to everyone's individual needs. Since online learning is mostly autonomous till now, it takes a fair amount of self-motivation and active participation in order to make the best of the opportunities. As a result, digital learning promotes a learning situation where students need to regulate their own behaviour and strive to learn through strategic research (Peters, 2000, p.16).

Whatever the form, the idea of incorporating MOOCs has become more popular in recent years with the advancement of technology. According to a US based research report, there were more than 6 million American students taking a minimum of one distance learning course. Among them, 83% of the students are at the undergraduate level (Elaine & Jeff, 2017). This statistic testifies to the increasing popularity and desirability of taking online courses among students to aid their traditional form of learning.

EVOLUTION OF MOOCs

A. History of MOOCs

The term MOOC, which stands for Massive Open Online Course, was coined to refer to a course developed by Stephen Downes and George Siemens entitled "Connectivism and Connectivity Knowledge" in 2008. MOOCs have a flourishing reputation and have become the most popular among all digital technologies available, since they are readily available on the internet and a lot of them are free of cost. Therefore, learning a new skill online has become easier than ever. However, MOOCs did not have the same level of recognition and popularity from the beginning. The idea of MOOCs was originated in Canada and they were open for all (Stacey, 2014, p. 112). Their intention was to exploit the possibility for interactions between a wide variety of participants made possible by online tools so as to provide a richer learning environment than traditional tools would allow. 25 students attended the course on the campus of the University of Manitoba, and a

further 2300 from around the world participated online. MOOCs with an emphasis on interactions and connectivity are now called cMOOCS.

In the fall of 2011, Stanford offered three courses online for free. Peter Norvig and Sebastien Thrun offered their Introduction to Artificial Intelligence to an initial enrolment of over 160,000 students from around the world. Over 20,000 students completed the course. These MOOCs focused less on interaction between students and more on exploiting the possibilities of reaching a massive audience.

Eventually, Thrun founded a company called Udacity in February 2012 which began to develop and offer MOOCs for free. In April 2012, Andrew Ng and Daphne Koller, two other Stanford CS professors, started a company called Coursera which partnered with universities in preparing and offering MOOCs.

Similarly, MIT developed the MITx platform for offering MOOCs, which was renamed edX when a partnership with Harvard was formed. The non-profit edX consortium which develops and offers MOOCs now has over 30 university partners, including McGill. The consortium has made available an open source version of the platform which can be used and developed by other institutions and individuals. The consortium also carries out research into learning using new technologies by analyzing data it obtains from students in the courses. Indeed, the consortium is an outgrowth of an earlier MIT project engaged in such research.

More than 4 million students have enrolled for Coursera MOOCs; both Udacity and edX have enrolled over a million students in their MOOCs. Udacity partnered with San Jose State to offer for-credit courses which were not free but were very low cost and blended MOOCs material with support from on-campus professors and teaching assistants. Such success had Sebastian Thrun suggesting that in 50 years there might only be 10 institutions offering higher education.

However, the San Jose State experiment was less than successful, with pass rates in some courses significantly lower in the blended courses than under the traditional model. Furthermore, there is a high dropout rate of over 90% in most MOOCs. In November 2013, Thrun stated that Udacity had a "lousy product" and that they would refocus on vocational education. In contrast, Anant Agarwal, the president of the edX consortium, insists that students and universities are benefiting from the provision of MOOCs. ("A

Brief History of MOOCs").

[24] More people signed up for MOOCs in 2015 than in the previous three years combined. In total, some 35 million registered for a MOOC, with Coursera (https://www.coursera.org/) securing 7 million new registrations in 2015, with this company now occupying some 50% of the MOOC market. FutureLearn (https://www.futurelearn.com/) is now the third largest MOOC provider - they secured growth of 275% in 2015. Around 1,800 new courses were announced in 2015, taking the total number of courses announced since the inception of MOOCs to 4,2003. Over 500 universities and colleges around the world, not to mention other organizations, are now offering MOOCs. edX has more than 90 global partners, including the world's leading universities, not for profits and institutions as members.

B. Adaptation of MOOCs

As far as the success of MOOCs are concerned, there are different parameters that can be analysed to determine their effectiveness. The completion rate, scalability and affordability are some of the important factors in this case. Some studies show that MOOCs have a completion rate of 10-20% overall. Nonetheless, it should be kept in mind that 10% of a large population is still a considerable number of people (Brown, 2013, p.241). Scalability can also become a challenge in the sense that all the learners do not have the same educational background and experience levels. As a result, the contents may become challenging for some groups of people. Peer to peer interaction need to be encouraged in order to tackle such problems (241-242).

Since MOOCs are mostly free of cost, it is a feasible option for the learners. However, the offering universities need to deal with the challenge of managing the cost of offering the courses in the first place. Financially stable universities have an easier time providing a multitude of courses and resources. On the other hand, smaller institutions need to come up with financially sustainable plans to offer courses that are on par with the larger institutions (242-243). Even though there are some challenges in the overall development process of MOOCs, there are also immense potentials. There are some schools of thought who believe that MOOCs can be used to revolutionise the traditional classroom teaching methods. If hybrids models can be developed that combine online resources with classroom facilities, a large number of students can benefit from them. In addition, MOOCs

should be developed in a more efficient and cost effective method so that the students from all financial levels can benefit from them and gain the experience which would be equivalent to college degrees (Milheim, 2013, p.41).

C. The ways MOOCs are changing teaching and learning

It is time to explore the extent to which MOOCs are enabling innovation, engagement and equity in higher education and to examine extent; have they inspired new approaches to teaching and learning. There are five ways in which MOOCs are currently having an impact on teaching and learning:

1. Encouraging and enabling unbundling – the separation of design, development, deployment, delivery and support for learning. In MOOCs environment, most large online learning institutions use course development teams, which then may not teach the courses they developed. The development of an adjunct faculty, peer support and tutoring and other systems of support provides for models in which a standard course is delivered in multiple sites to a very large number of learners by qualified individuals who did not develop that course.

2. Changing the nature of credit granting and credentials: What MOOCs have identified is that not all learners are interested in the assessment of learning – summative assessment and only a small percentage are interested in assessment for learning. Some learners just want access to quality, intentionally designed and credible learning resources.

3. Supporting and accelerating the development of blended learning: Blended learning is the new normal in higher education. It represents a willingness to explore new approaches to teaching and learning, leverage open education resources and seek to foster new kinds of learner engagement. A frequent request from faculty, especially new faculty, is to "show me" how this works in the subjects they teach. Some MOOCs are meeting this need.

4. Supporting the development of learning portfolios: Learners enrolled in MOOCs can and have increased the value of their learning experience by using an ePortfolio. ePortfolio accounts are

available for individuals anywhere; the ePortfolio providers host the functionality and data on their own servers

5. Demonstrating the power of learning communities and peer tutoring: Not all MOOCs engage their learners in active and mindful communities of learning. But many of them are focusing on it. edX has enabled self-managed study groups to form and is encouraging them to develop and deepen their understanding of the learning in which they are actively engaged. Some of these groups then arrange meet-ups (in person or virtual). In some cultures, this will be especially important where sharing and collaboration are normative features of that culture (Ontario's distance education and training network, 2016).

INTEGRATION OF MOOCS IN ACADEMIA: CS50x in Asian University for Women

Although MOOCs are predominantly targeted towards individual learners, academic institutions might find them beneficial as well. For example, AUW has begun incorporating MOOCs in the regular curriculum in recent years.

A. Motivation

"Asian University for Women (AUW) seeks to graduate women who will be skilled and innovative professionals, service-oriented leaders in the businesses and communities in which they will work and live, and promoters of intercultural understanding and sustainable human and economic development in Asia and throughout the world."

Following the mission statement, Asian University for Women (AUW), aims to create competent female leadership in the Asian region. In order to fulfill this aim, the institution constantly aims to provide a global standard education to the students to create efficient professionals and ethical leaders who strive for intellectual growth around the world. The students are prepared in a way that they can provide service to their own communities as well as pursue higher education after graduation. Keeping this aim in mind, AUW has taken up a hybrid strategy to institutionalize MOOCs and achieve the learning goals and outcomes.

AUW believes that teaching the students computer programming skills will contribute to their overall core of education. AUW core curriculum comprises of a variety of courses from different areas such as social analysis, literary writing, literature, civilization and arts, ethics, science and mathematics. In order to strengthen the curriculum as well as equip the students with critically needed technical skills, CS50x is a valuable addition to the curriculum to achieve the mission of the institution.

There are two main approaches how MOOCs resources can be used, in the first approach is that any MOOCs course content can be used a supplementary resource for any course within the curriculum and the second approach is directly including any MOOCs course within the curriculum.

B. Use MOOCs as Supplementary Material

The first method of integrating MOOCs in the AUW curriculum is by using the online course materials to enhance an already existing course. AUW has taken the initiative to provide basic computing and programming knowledge to all the students as a part of their mandatory core curriculum program. As a result, the students must complete a beginner level programming course in their first year of undergraduate. For a few years, a course titled "Introduction to Computing and Programming" has been offered to the students to fulfil this criteria. This was a pre-existing course at AUW, which has been taught using both C and Python programming languages. However, in the recent semesters, we have taken the approach to enhance the course by adding supplementary materials from the online course titled "Python for Everybody" that is available on *coursera.com*. This is a popular course that teaches the basics of programming with the use of Python. Therefore, we have utilised the book and the slides that were provided on the course website. Sometimes, we have also shown parts of the lecture videos in order to explain certain topics through visualisation. The students have completed the course fairly successfully even though they have had little to no previous programming experience. The onsite faculty conducted the course and assessed and graded the students through on campus assessment methods which included lab assignments, homework, quizzes, midterms, lab and final exams.

C. Integrate MOOCs course directly in the curriculum using blended learning approach

In this approach, a MOOC course can be directly integrated within

the curriculum. This is an approach that AUW has been undertaking for the past few years and this is gradually becoming the main trend of online learning at AUW.

WHAT IS CS50X?

The "CS50x: Introduction to Computer Science" is Harvard University's introduction to the intellectual enterprises of computer science and the art of programming for majors and non-majors alike, with or without prior programming experience. CS50x teaches students how to think algorithmically and solve problems efficiently. This course has been integrated in AUW curriculum since Spring 2016.

COURSE STRUCTURE OF CS50x AT AUW

CS50x is a globally recognized course provided by Harvard University. Therefore incorporating a course from their curriculum ensures a high quality of learning. Also, we provide this course to all our students despite the differences in their backgrounds. This is to make sure that all students receive the same quality of education in their AUW curriculum. Moreover, we strive to provide all necessary assistance to the students who do not have previous experience with computers and find the course challenging. Even though the students may have different starting points, we aim to prepare them equally for an effective career or further studies.

CS50x if offered using a blended learning approach where the course resources are supported by on-campus facilities in a unique method that ensures all students achieve the globally standard learning goals. The course structure is described in the following section.

A. Video lecture

The prerecorded video lecture by the Harvard Professor, David J. Malan is taken place once a week. Lecture contents are available online, both on edX and youtube and are played for all students in a classroom facilitated by the on-campus faculty or fellow. Typical duration of the lecture is more than two hours.

B. Discussion session

The video lecture is followed by a discussion session taken by the on-campus faculty who receives the questions from the students that arise during video lecture. The faculty helps resolving problems and finding answers for the questions.

C. Laboratory class

We provide a three hour laboratory session in addition to the discussion session on a weekly basis. This is to ensure that the students spend an ample amount of time practicing in order to keep pace with the level of the content that is covered in the video lecture. There is one supervising faculty and a number of fellows who help to facilitate the lab sessions. The on-campus faculty and fellows help the students with adequate office hours according to individual student's needs as they are coming from diverse socio-economic and academic background. Students generally audit this course so they do not have to pay for the edX certificate. But it is reflected in their transcript that they have completed CS50x.

D. Assessment Methods and performance evaluation

There are two types of assessment methods for this course: Online and on campus. CS50x problem sets provided by Harvard are inspired by real-world domains of biology, cryptography, finance, forensics, and gaming. Students who earn a satisfactory score which is above 70% on 9 problem sets (i.e., programming assignments) and a final project are eligible for a certificate. Students submit their assignments online which are machine checked and graded automatically.

However, AUW has its internal assessment method also to ensure the all students achieve learning goals. The on-campus assessment method includes quizzes, problem solving, lab exam and written exam. Overall they have to achieve 70% in order to pass the course. Instead of letter grades, students receive a "Pass" or "Fail" grade.

The on campus faculty and fellows provide office hours according to the student needs. All these measures are combined so that the students can gain a variety of technical skills while maintaining a high standard of education. These skills would be of highly valuable for the students in

future regardless of which field of study they choose to pursue and ensure better employability. They would be able to keep pace with technological innovations as well as fully utilize them to make an impact through their work to bring positive social changes.

There are generally three to four sections each semester to accommodate all the students in a batch. Majority of the students who have taken the course have successfully completed this course as well.

E. Challenges

CS50x is a challenging course as it includes different programming languages; C, Python, SQL, and JavaScript as well as CSS and HTML. As the syntax of each language is different, the students face the biggest hurdle to learn and switch from one language to another. Furthermore, more than 90% of AUW students do not have programming experience which has made it even more challenging to deal with the class. As the students are coming from very diverse background, their level of English proficiency varies significantly. Diversity of the student body results in very different levels of knowledge and skills in computers usage and it is a huge challenge for communication. The students' motivation also varies due to the difficulty of the subject material. The confidence level of some students drops when they see some other peers are doing better comparing to themselves. Hence the faculty always has to take extra care inside the classroom and during office hours to keep the students motivated.

F. Success of CS50x

AUW started the pilot project of CS50x in Spring 2016 with 26 students. Since then 286 students enrolled for the course and 266 of them successfully completed the course which presents 93% success rate. Some of the students failed to make it a success as they had lacking in English proficiency, required digital skills and lower motivation caused by different factors which includes, but not limited to, wide ranged socio-economic background, lack of exposure to digital environments and insufficient academic skills.

Table 2:
Student enrolment and pass rate since Spring 2016

Year	Enrolled	Passed	Success Rate
2019 Fall	94	Class in Progress	Yet to decide
2019 Spring	11	11	100%
2018 Fall	73	53	72%
2018 Spring	82	82	100%
2016 Spring	26	26	100%
Total	286		93%

G. Required logistic Supports

1. Needed Physical Resources:

- Uninterrupted electricity and internet connection

- On campus faculty to teach the class

- Teaching Assistants for providing office hours

2. Expectations from the target learners group

- Efficiency in English

- Basic Computer Literacy

- Decent understanding of logic and abstraction

- Basic programming knowledge preferred

- Offering a preliminary programming course

BEST PRACTICES for CS50X

Several initiatives can be taken to ensure the maximum benefit of integrating CS50x in the regular curriculum. CS50x is a pretty challenging and time demanding course for all students all over the world which might not be appropriate for every single one. It needs minimum of 12-16 hours per week to solve each problem set. So we need to find out a way which will

benefit the students most. For instance, a group of motivated students can be screened out for taking this course. This will enable the students to keep pace with the course even if they have had no previous programming experience. The students will remain motivated due to their own learning interest. It is also advisable to have a smaller classroom so that individual needs are met with greater efficiency. Another approach can be to run the course for an extended period of time rather than fitting it in the regular structure. In this way, students will get a bigger time frame to learn and adjust well to the course materials. Depending on the University curriculum, students can also take this course as an Independent Study if they show the potential interest for it. Students can be asked to complete it on their own within a given time frame for it to be counted as Independent Study.

CONCLUSION

In conclusion, educational institutions, administrations and policy makers need to focus on the promotion of new pedagogies in order to make the best use of technology in education. In addition, the skills and confidence of educators need to be developed to ensure appropriate and effective use of digital technology to support learning. Improved and fair access to digital technology for learning should have more emphasis. As digital technology is taking centre stage in different areas of learning, it requires more investment for the sake of preparing the leaders of future change and innovation. Not only CS50x, but other MOOCs that can teach useful skills to students can also be adopted in the university curriculum. The method of the courses offered i.e., completely online or blended learning method, depends on the available resources and target group needs. Finally, Webinar, TED Talks and Abve lecture can be good supplementary resources for any course.

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The Design of Augmented Reality-Based Board Game for English Language Learning Media

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Abstract: Among the many obstacles impeding the success of English learning include the lack of innovation by the teachers in the midst of the many novel technological advances and the slow responses to adjust with the technological change. With the advent of technology such as Augmented Reality (AR), new opportunities are wide-opened to sort out the shortcoming of learners' English language skills. Developing AR-based board games may provide students a means by which they can learn independently and enrich learning experiences that are not anymore bound by classroom space and time constraints. In the earliest stage, this multi-year research, having various purposes, is aimed at analyzing the users' inputs and the experts' judgment over the AR game design. In this very initial stage of development research, the effort is made to delve into the preliminary inputs needed to design a decent mobile game prototype. Assessment of the media design consists of aspects of learning contents, design aspects, functionality, and user-friendliness. The result of which suggests that besides board-game as the preferred model of game, all the four aforementioned aspects are highly perceived to be the benchmark for the prototype design criteria of Augmented-Reality-based English language learning media design..

Key words: Augmented Reality, Board Game, design aspects, media design, prototype.

INTRODUCTION

Over time, learning teaching media have been evolving and adjusting itself with the demand of time. Traditional classroom has been things of the past and information and communication technology comes to offer a new way of learning and teaching. A few years ago, digital-based learning using PowerPoint media could only be used to limitedly present what teachers wanted to convey to students. Later on, the digital book-based learning media (e-book) combined with web-based learning resources were subsequently present to offer a solution to the need for a newer mode of learning.

Historically, it did not take long for smart gadgets or smartphones to be as ubiquitous as they are now. Nowadays, they are available for teachers and students, making learning technology more advanced tools to learn with. Android and IOS mobile-based media compel teachers to compete in exploring various learning applications with multimedia-based content that can be used by students to learn both in class or outside the classroom.

The emergence of Augmented Reality (henceforth referred to as AR) application is another revolutionary innovation in the educational world. This is indeed a revolutionary technological invention developed in the 21st century that potentially makes a perfect linkage between technology with education. Among a few examples of the recent use of AR technology in learning is to study anatomy of the body, to expose the knowledge of the earth and space, the partially hidden under-sea life, simulation of flight and human surgery, and so on. Through AR-based applications, students can learn human organs, for example the human skull in a 3-dimensional form virtually and interact with the virtual object in unprecedented ways. By using AR students can learn visually and interactively about the earth and space and any other abstract concepts into a more vivid real-life like fashions.

AR is a concept combining virtual with real-world objects to produce information generated from data. They are generated from a system on the real designated objects that make the real and virtual objects less and less indistinguishable. AR can create interactions between the real and the virtual world from which information can be added so that the displayed information is as if real and interactive. Augmented Reality is a technology that combines two or three-dimensional virtual objects projected to the virtual object in real-time (Valino,1998). It is a technology that combines the real with the virtual worlds interactively in real-time, as well as in the form of

three-dimensional animation (Azuma, 1997).

As is generally believed, incorporating Augmented Reality into the learning process will allow students to have a new richer experience in learning including in better understanding abstract concepts or ideas. However, Augmented Reality incorporation into a learning process as a new learning media implies that prior to application, principles of its design have to be established to guide the learning media designers so that the created products will perform the best they can be as the learning aids. While the problem identified in this research is what suitable aspects need to be considered in the design of the AR-based mobile game design? By complying with the principles and the important aspects of design, the products can be the basis on which learning activities are planned and implemented and the results of which can be of a solution to the current and future instructional problems and can be a means by which learning and teaching could achieve their best outcome. Learning, as a result, will no longer be dull and boring activities but instead be of interesting and fascinating endeavor as it stays in touch with and catches up with the most recent technology.

LITERATURE REVIEW

A. Digital Media

We are living in a digital era when information and communication are mediated by media which are present in the computer which over time evolves in the form and function. Mobile smartphones, for instance, have been and will become even more so in their functions as a mobile computer that can materialize the humans' dream of computer for all learners. With the increasing high level of interconnectivity of computer, the landscape of humans' construction, consumption, and distribution of information has changed and will always change. Mobile devices break down the barriers between public and private space, allowing users to personalize surroundings simply by being connected (Squire, 2009).

Digital mediation is all about a means by which information is delivered through various digital devices which are traditionally capable of presenting animation, sounds, music, gesture, and speech, etc. to humans' senses. Among the most recent digital media include the Internet, mobile phones, computer games, and interactive television (Buckingham, 2007).

Even further, Balkun (2011) described digital media as an instructional toolbox that includes the Internet, e-book, video games, wikis, blogs, mobile devices, augmented reality, and virtual reality. Digital media are defined as follows:

The full range of cognitive, emotional and social competencies that includes the use of texts, tools and technologies; the skills of critical thinking and analysis; the practice of message composition and creativity; the ability to engage in reflection and ethical thinking; as well as active participation through teamwork and collaboration. (Hobbs, 2011, p. 17)

With the above definition, Hobbs (2011) does not only want to refer to them as electronic devices, but even further than that also include complete subsets of humans' activities in response to the availability of the technological devices. Digital media will essentially mean nothing unless humans as the agents or the subjects for which the devices are created are able to capitalize the devices for humans' common good and wellbeing. Thus, digital language learning media will be beneficial only if the actors in language education manage to take the most of the electronic devices for mediating language learning activities.

B. Augmented Reality

The AR technology has been around for quite a while with among its earliest use was for military and aviation purposes, then later on in advertising and commerce. With the advancement of technology, the high-end product of mobile phones seems to change the landscape of AR technology as they are equipped with the capacity to deliver various activities that support AR application. Almost all current smartphones are equipped with GPS system, faster processing speeds and data transfer, and larger displays, making the present day of mobile augmented reality capable of overlaying virtual information on a smartphone's camera output in real-time.

Carmigniani et al. (2011, p. 342) define Augmented Reality as "a real-time direct or indirect view of a physical real-world environment that has been enhanced/augmented by adding virtual computer-generated information to it". Unlike Virtual Reality which involves mostly or totally virtual environment. Similar to Carmigiani et al. (2011), Augmented Reality "...refers to technologies that project digital materials onto real world objects. This definition suits a large spectrum of technologies that range from a pure virtual environment to the real environment." (Cuendet et al., 2013). Both

definition emphasize the exploitation of virtual objects which are added to the real environment.

Augmented-reality is also defined as a technology that allows the mixing of virtual content into a real-physical world, permitting students to see virtual content that appears in the real world (Radu, et al., 2010). Based on the above understanding and definitions, it can be said that AR is a system that combines virtual and real environmental content which can be equipped with additional information and data, so that both content and information as if appear to be in the same environment.

Augmented Reality "consists of merging live images with virtual layers of information" (Vogt & Shingles, 2013, p. 47) whose layers include three-dimensional (3-D) models of content, images, sounds, and videos. AR technology is now embedded into the Internet browsers and known to have two different types which are differing in the way the virtual layer is associated with a given environment. They are known as location-based AR and image-based AR. Such a difference is clearly described by Vogt and Shingles (2013) as follows:

Location-based AR applications rely on the spatial position and orientation of the device to select and display location-relevant information. For image-based AR, applications use image recognition algorithms to trigger the display of relevant content over a recognized physical pattern (p. 47).

There are 3 ways of using AR, i.e. marker-based tracking, markerless based tracking and GPS based tracking. Markers, also known as barcodes are usually black and white square illustrations with thick black borders and white backgrounds (Siltanen, 2012) Unlike marker-based tracking, markerless-based tracing does not require users to use a marker to display digital elements (Comport, et al., 2006). Currently it is developed using Face Tracking, 3D Object Tracking, or Motion Tracking. Different from the two, GPS Based Tracking method is widely developed and used in smartphone applications based on IOS and Android. In this method GPS data are retrieved from GPS and compass prior to displaying them in accordance with the direction that we want in real-time.

Augmented Reality provides all possibilities to enhance learners' interest and motivation to understand learning materials as a result of its created non-conventional learning environment. AR allows for the creation of learning environment that adopts a new technology which can adjust not

only the content of the learning materials but also the way in which the materials are delivered. It is capable of delivering text messages, 3D objects, animation, images, audio, etc. relevant to the learners' learning needs and style preferences. With AR the still printed materials can be augmented with the layering of the above mentioned digital multimodal information making learning materials and learning content vivid, alive, dynamic, interactive, interesting and fascinating for learners to enjoy, making learning materials easy to grasp.

Unlike the conventional learning media, AR is specialist in creating learning environment that offers a space for learners to view learning materials in a non-conventional way as well. It gives students new perspectives about various information due to its ability to deliver abstract concept into more realistic one and due to its capacity to transform ideas or concept that was considered static in the past into a more dynamic one. Hence, it brings with it considerable effect on the way information is transferred and perceived by learners and on the way learning is taking place.

AR technology is born in a so disruptive and revolutionary fashion that it can change radically the way the world is viewed and understood. Johnson, et al. (2010) stated, "AR has strong potential to provide both powerful contextual, on-site learning experiences and serendipitous exploration and discovery of the connected nature of information in the real world." (p. 21). The hybridity nature that mixes virtual objects onto the real live world environment can dramatically revolutionize the way learners interact with the surrounding world. Despite being manipulative in some sort, it opens spaces for learners to interact with the material world and the objects in the physical world in a new way like never before. Akçayir & Akçayir (2017) believe that its being innovative carries with it attraction and inspiration to learners that stimulate creativity and curiosity of learning and provide the opportunity for interaction with abstract theories and concepts, experiments which in turns arouse deeper exploration of the objects, phenomena and knowledge being learnt that is not always possible or easy to do without it.

With all the above described potentials and capabilities, AR technological applications should generally be capable of satisfying most or all of the following mentioned learning attributes, i.e.:

- Sense properties about the real world.
- Process in real time.

- Output information to the user, including via visual, audio, and haptic means, often overlaid on the user's perception of the real world.
- Provide contextual information.
- Recognize and track real-world objects.
- Be mobile or wearable.

(Roesner, et al., 2014)

C. Previous Studies on the Use of AR

In spite of the fact that Sutherland already developed the first AR interface prototype in the 1960's (or to be exact in 1965), it has only been relatively recent that researchers have begun to explore its real potentials for educational purposes (Zhou et al., 2008). Iadeja et al. (2016) conducted a study of the use of AR in education setting. Using a survey method of data collection, their study showed that the use of AR produced a lot positive results as compared with the traditional educational class. With this result, in the future AR will sooner or later replace the traditional learning mode, or at the very least will be a compatible support for traditional classroom.

One of the previous studies on VR in education setting investigated the role of VR and 3D computer modeling on learning and teaching. In the study involving academic staffs, Horne and Lee, et al. (2013) conducted a combined study of augmented reality, mixed reality, and education and the result of which suggests that AR enables learners to get involved in an authentic exploration of real world and to experience the scientific phenomenonPositive teacher-student relationship is known to facilitate conducive classroom climate that will enhance students' learning and interaction in the classroom. A good, positive classroom environment is important because this situation provides the students' opportunities to feel capable, worthy, and confident. With these feelings, the students' would feel brave to share, express opinions, ask questions, convey difficulties, and to work without pressure. This condition is supported by Mazer (2012, p. 99 as cited in Da Luz, 2015) who states that students who experience heightened emotional interest are more energized, excited, and emotionally engaged by the material given in the classroom. Nielson & Lorber (2009) also note that exposure towards positive emotional stimuli will make the students able to recall newly learned information better than those who are not given any stimuli.

D. Augmented Reality in Educational Settings

For educational purpose, in particular where language learning is concerned, AR applications are very potential. With the widespread use of mobile technological gadgets, they can be embedded into any mobile device to provide vividly interactive experiences of learning to the language learners as they are capable of transforming still graphics or print materials into more interactive learning materials by augmenting or enhancing them into alive learning materials. By being more interactive and alive, learners will experience new way of learning and therefore learning materials are no longer something boring and monotonous but rather be encouraging, engaging, and motivating. This can be achieved by its ability to manipulate virtual objects that may represent real objects. The strength of AR applications has been in their ability to engage learners in more real life-like experiences

With the AR application learners can be put in a situation where they are to create an experience by providing them with triggers in the form of image or video or even a still text manipulated by the applications. For that particular purpose, students can more frequently work individually or in groups to learn certain relevant language topic or skills that are part of learning focus. With a certain predetermined scenario of learning, students can learn to retel or rewrite a story based on an interactive presentation of historical characters or figures that come to life in the application.

Mobile AR applications are naturally interactive and fascinating tools for learning that motivate learners to learn. Lee (2012) claims that this technology is capable of both infigorating students' motivation and enhancing their educational practices due to its ability to bring realistic learning environment. This technology is also able to create a learning environment that is appealing to learners as individuals or as group members. The realistic environment created by AR application allows for the learners to take control of their own learning and understand the ideas or the concepts via realistic interaction with the projected digital objects. Its' being adaptive to video and audio facilitates learners in making sense of the concepts and ideas of the learning materials.

The use of AR applications into the educational settings can be fascinating and rewarding for both teacher and students (Journet, 2007). AR applications is also able to simplify and transform complex concepts or ideas into more simple and understandable ones. For language learning,

for instance, narrative events can be brought to life through the video or graphics that can resemble real life events, this allowing learners to grow in their imaginative ideas of space, time, as well as the human characters. Another appealing potential advantage of AR applications, with a good control of the device and for an appropriate learning design, is its ability to create learning opportunities due to its ability to inspire and attract learners for a learning exploration. Anything that cannot be viewed in real life of human as a result of geographical or cultural barriers can be brought to life. Both virtual objects and real life environments, combined together, facilitate learners to visualize complex spatial relationships and abstract concepts (Wu et al., 2013).

Augmented reality is an advanced instructional tool to be used in the classroom. The effectiveness of AR can be improved when it is combined with other technologies such as mobile devices. A study found that the AR use in education has a positive impact, as a result of its multi-modal capacity which is attractive and interactive in increasing accessibility of educational content, increasing student control of educational content, opening opportunities for collaborative learning, motivating students to be actively involved, and changing an abstract to be concrete (Radu, et al., 2010).

METHODOLOGY

Conceptually, this study has taken the inspiration from the constructivistic paradigm from which people actively construct or create their own subjective representations of objective reality, while the research activities are conducted on the basis of Research & Development approach also known as design-based research (see Van Den Akker, 1999). It is the purpose and the function of the research that guide the researchers to the choice of research method (Plomp, 2007). The purpose of this research is to trace the relationship between theory, design, and implementation that embody the principles of learning media design (Barab & Squire, 2004; Cengizhan, 2007) or in "supporting design and development of prototypical products to solve complex authentic context specific problem" (Lai, et al., 2009, p. 120).

Design-based research is commissioned to generate a specific set of theoretical constructs that guide, evaluate, and refine the environmental contexts of media design. Hoadley (2004), contends that design-based

research has been separated from experimental research in several points in that : (1) it involves a close relationship between researchers and teachers or end-users, (2) distinction in the use of tentative generalization- results are shared without the expectation that universality will believe, (3) the researcher frequently follows new revelations that emerge, drawing the link between the intervention and the measurement as the research goes on and, (4) the researcher treats interventions as a result, often records what has been designed, the design rationale, and the shift of understanding over time as the product is put into trial.

This early stage of the research is to obtain input from the targeted end-users of what kind of learning media they actually expect to have, what they prefer and what aspects have to be considered in the making of the media design. In order to ensure that the inputs feed into the design of an effective learning media based on mobile AR application, careful planning is required before the development process begins. Game Design Model in the form of game prototype is going to be made on the basis of the guiding principles and the stages advocated by the design-based research methodology. By and large the research will go through the following research stages as illustrated in the Figure 1.

Figure 1:
Stage of Design-based approach

The graph above illustrates the stages that the Design-based research takes in developing AR-based learning media for language learning. The whole stages begin with an initial research and information gathering which require needs analysis and literature study. This is is in accordance with McKenney (2001) who suggested three phases for conducting design-based research which involve (1) needs and context analysis, (2) design, development, and formative evaluation, and (3) semi-summative evaluation. The results of research and data collection are used to provide inputs for product prototypes of the learning media design. The output of this second stage is the design that will be used in the next stage, namely the initial product development. The initial product will then go through testing and evaluation of stability, consistency, as well as its useability. The testing and evaluation that involve expert justice are followed up by making product revisions. Products that have gone through the revision stage are then tested by small and large groups. The results of the second phase of the trial is aimed at obtaining feedback from the end-users about their experience of using the product.

Data analysis

The data gathered are the data on: (1) the profile of the students; (2) experience in playing games; (3) preference of type of game; (4) the expectation of the good features of game that include design aspect, content of game, functionality, and user-friendliness, as well as (5) the guiding principles in designing a good game which were generated from the responses provided by subject matter experts (in this case teachers) and media design experts in the Mobile Augmented Reality media.

Research subjects and instruments

The research subjects involve 100 Junior high school students, 5 English language teachers, and 1 game design expert in Semarang, Central Java. The tools of data collection are questionnaire and semi-structured interview which were developed by the researchers

RESULTS AND DISCUSSION

At the time this report was made, the researcher had successfully completed the first stage of research, namely the analysis of the user's needs

with regard to the model of AR game. This section attempts to describe the results of the study which included quantitative data analysis and transcript analysis of the results of structured interviews with Junior High School English teachers and AR game expert t provide qualitative data. For the purposes of this report, the results of the study are divided into two parts, namely quantitative analysis of survey data and qualitative data analysis based on interviews. Both are reported as follows:

The research respondents consisted of male and female students with the following composition:

Figure 2:
Pie Chart of respondent distribution
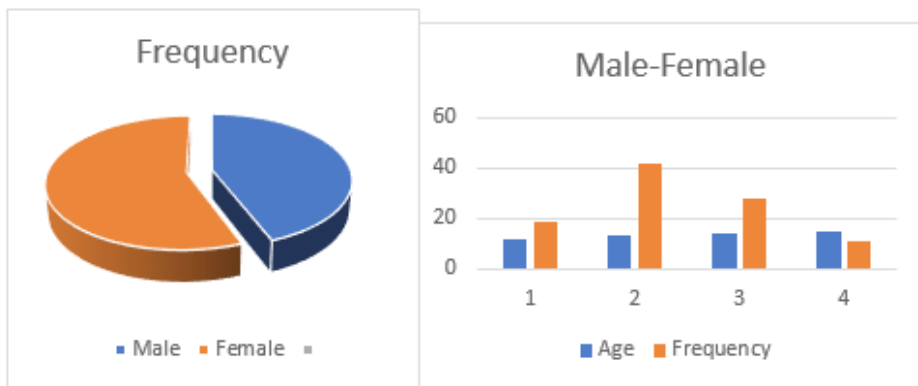
The following are descriptive quantitative data describing the respondents' opinions on questionnaire questions and statements. In order to answer the first research question, namely the design of AR-based game models useable for English learning media to read and listen. They were asked to fill in the questionnaire consisting of statements pertaining to 4 aspects of game design, i.e. design aspect, learning content, user-friendliness, and functionality. The statements were designed based on a Likert scale (1 = strongly disagree; 2 = disagree), representing the negative perception of the respondent; 3 = agree; 4 = strongly agree), representing the positive perception of the respondent. Based on their answers, it was discovered that the results of the questionnaire showed a high perception seen from the Mean (average) value as illustrated by Valid Percent and Cumulative Percent in the following table.

Figure 3:
Pie Chart of respondent distribution

Graph 3: Knowledge and play with AR Games

As many as 53% of respondents claimed that they did not know the type of AR-based game even though they had often played various games on their devices. This means that there are still more respondents who do not understand what Augmented Reality (AR) is. Meanwhile, the remaining 47% of respondents claimed to know or maybe at least heard about what AR is although they have never played it as illustrated by the following picture. As many as 61% of respondents have no experience playing AR-based games. One third of respondents, namely 39% of them have played it despite unknowing what type of game they have played and how often they play it. From this data, it is discovered that at least majority of respondents are potential gamers or they have the interest to play it if the game is available to them.

Figure 4:
Evaluated Aspets
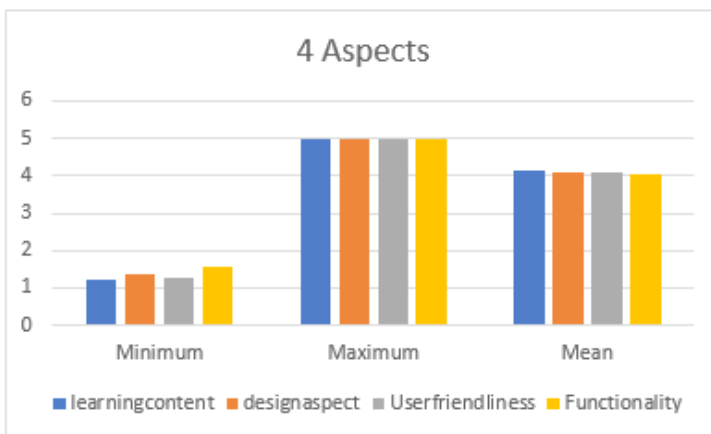
The data gathered from the questionnaire are primarily intended to obtain relevant feedback about what they think about a good game and what need to be considered as the game designer make a game. From the four aspects evaluated, i.e. learning content, design aspects, user-friendliness, and functionality , the respondents consider that all four have an equal importance. All four aspects are valued equally high with overall mean average of above four (4) suggesting that in designing a game, game designers need to consider each detailed aspects under each of the four categories.. Even though the data distribution is quite high, the range of respondents' answers ranges from the lowest value 1.2 to the highest perfect score 5. It shows that to design a good game a game designer must pay attention to the contents of the game to be made , what important things need to be in the design, how easy the game is to be played, and the functionality of the game itself. In other words, the four criteria include learning content or learning content that needs to be considered, desgn aspects or al what is taken into account in designing a game, user-friendliness or ease of play regarding what considerations so that the game is easy to play, and functionality or usefulness of the game that assesses the elements of game functionality for users, when the design of the game is completed and ready to play.

Here is a table of complete figures from the SPPS statistical descriptive analysis output elaborating the overall mean value of the four aspects:

Table 1

4 Aspects game

	N	Minimum	Maximum	Mean	Std. Deviation
Learningcontent	100	1,20	5,00	4,1460	,71059
Designaspect	100	1,38	5,00	4,0738	,67516
User-friendliness	100	1,25	5,00	4,0700	,72132
Functionality	100	1,56	5,00	4,0422	,68871
Valid N (listwise)	100				

Each of the four aspects contains detailed elements to be evaluated by the respondents. Regarding what elements each of the four aspects are composed of, the following are the details of elements as detailed and illustrated per item in the table below:.

Table 2
Element of aspect game

	N	Minimum	Maximum	Mean	Std. Deviation
A good game is well animated	100	1,00	5,00	4,5400	,77094
A good game is a speedy access	100	2,00	5,00	4,3300	,85345
A good game has quality pictures	100	1,00	5,00	4,3100	,80019
A good game has quality video	100	1,00	5,00	4,2300	,95193
A good game has quality sound	100	1,00	5,00	4,1800	,96797
A good game is easy to play	100	1,00	5,00	3,7000	1,08711
A good game has no access issues	100	1,00	5,00	3,6500	1,23399
A good game has no inconsistency	100	1,00	5,00	3,6500	1,35121
Valid N (listwise)	100				

From the table it is clear that in order for a game to be called good or to meet good game design criteria, such aspects as image quality, sound, graphic and video animations, ease of play and access and ensuring consistency of the game are important to consider. Even though the last three relatively get lower valuation compared to the first three, the assessment and respondent's expectation of design aspects asked are high. The overall score of the responses is above here (3) which means that they are all important to pay attention to during the game design process.

2. Learning Content

Table 3

Element of aspect game

	N	Minimum	Maximum	Mean	Std. Deviation
Game must have clear achievable goals	100	1,00	5,00	4,2800	,88854
Game must be fun and challenging to learn	100	1,00	5,00	4,2300	1,02351
Game elements should facilitate learning	100	1,00	5,00	4,2100	,95658
Game should help memorize things	100	1,00	5,00	4,0700	,97706
Game should be beneficial for learning	100	1,00	5,00	3,9400	1,04272
Valid N (listwise)	100				

The second assessed aspect is how important is the content aspect or the content of the game. Respondents' responses provide input on what should be contained in a game and how important that aspect is for game design process. As shown in the table above, a game must have goals to be achieved, must challenge and facilitate gamers to learn. In addition, a game can be said to be good if the game helps gamers to remember important things from the contents of the game, and no less important is that a game must provide benefits for its users to learn. From the whole statement provided by the respondents it is obvious that respondents expectation of what the game should contain is also high which means that this aspect must be an important consideration in designing a game.

3. User-friendliness

Table 4

Matters relating to the ease of a game to be played

	N	Minimum	Maximum	Mean	Std. Deviation
It is important that a game is easy to play and present good content	100	2,00	5,00	4,4100	,73985
AR is great in that it combines virtual objects onto real objects that helps clarify concepts	100	1,00	5,00	4,2500	,91425
I find it important for a game to be playable on mobile gadgets	100	1,00	5,00	3,8900	1,08148
I find it important for a game to be played anywehere and at any time	100	1,00	5,00	3,7300	1,23791
Valid N (listwise)	100				

The table above contains matters relating to the ease of a game to be played so that every game designed will not be a waste due to its complicatedness and its being difficult to play. The overall response of the respondent reinforces the importance of not only the ease of a game to be played, but also the practicality. A game is said to be friendly to users if it can be played anywhere and at any time so that place and time are not supposed to be a barrier. Besides the fact that the game world is now increasingly dominant with mobile gadgets, the respondent considers that the game can be said to be user friendly when it can be played with mobile devices such as mobile phones that can be carried anywhere and can access and play games anywhere without difficulty.

4. Functionality

A good game is the one that meets the aspect of functionality. One distinctive feature of the game is the presence of an entertaining

element that gives the players a happy mood and a sense of entertainment. Therefore, a game must have elements such as luck in order to be able to entertain through the element of surprise that arises from playing it. Losing or winning is normal in playing but players will feel comforted and encouraged to continue playing because they get a prize if they win or succeed in overcoming a barrier or an obstacle. To achieve this it requires a strategy, including the activation of memory an problem solving. With a right strategy a game should encourage players to think and overcome problems in order to win the game. Functionality is also related to the ease of players playing the game. Lastly, it is important that to be able to give a pleasant feeling effect, boredom arising from the longevity of the game to play must be avoided. For all of these aspects, respondents' average means of the responses of the functionality aspect are high as can be seen in the table below.

Table 5
functionality aspect

	N	Minimum	Maximum	Mean	Std. Deviation
A game requires strategies to play	100	1,00	5,00	4,4200	,78083
A game demands thoughts	100	1,00	5,00	4,3900	,76403
A game fucntions as trigger for problem solving	100	1,00	5,00	4,2900	,97747
A game demands memory	100	1,00	5,00	4,2300	,86287
A game provides tokens or rewards	100	1,00	5,00	4,1700	,99549
A game functions well and easy to play	100	1,00	5,00	3,8100	1,30031
A gome contains luck elements	100	1,00	5,00	3,7700	1,22972
A game does not have to need much time to play	100	1,00	5,00	3,5300	1,34431
Valid N (listwise)	100				

Because in this study researchers must design a game based on a model that is in accordance with the preferences of prospective game users, this research seeks to dig up information about which model is preferred by respondents. From the data generated from the questionnaire, it is discovered that the majority of respondents prefer the type of board type over the card type game for the following reasons. Respondents felt that Board model games were more challenging, fun, helped to learn, sparked thinking, and demanded a playing strategy. Based on the input obtained, the AR game that will be designed is based on the respondents' preferences, namely Board Game.

Qualitative Analysis

Interview results of students, teachers and game design experts, provided input which can be briefly summarized as follows:

1. The interviewed teachers admit that although the world of education is currently trying to keep up with technological advances, most schools where they interviewed teachers are teaching are currently still lacking of technological-based learning media besides the limited access to good learning media.

2. The interviewee teachers argued that AR-based games have the potential for students to learn a variety of language skills (especially reading, vocabulary), although they can obviously be used for other language skills such as listening and writing or grammar.

3. Cellular gadgets are unfortunately prohibited in almost all schools in times when lessons take place but for the purpose of learning and activities that support teaching and learning activities, then there are opportunities to be used in schools. Particularly, if cellular devices are used to support learning in the classroom or especially when they are used for supporting learning media in the context of the blended learning (BL) learning model.

4. Learning material that is packaged in a game will be very suitable if it is designed for the blended learning model that is believed to facilitative of enriching or deepening the material obtained by students through face-to-face activities in the classroom.

5. Important input obtained from interviews with expert game makers, among other things, is a suggestion that a game designer has to take into

consideration in designing game, i.e that he or she has to have clear goals, that the game must be easy to play, and that a game must be challenging.

The graph above illustrates the stages that the Design-based research takes in developing AR-based learning media for language learning. The whole stages begin with an initial research and information gathering which require needs analysis and literature study. This is is in accordance with McKenney (2001) who suggested three phases for conducting design-based research which involve (1) needs and context analysis, (2) design, development, and formative evaluation, and (3) semi-summative evaluation. The results of research and data collection are used to provide inputs for product prototypes of the learning media design. The output of this second stage is the design that will be used in the next stage, namely the initial product development. The initial product will then go through testing and evaluation of stability, consistency, as well as its useability. The testing and evaluation that involve expert justice are followed up by making product revisions. Products that have gone through the revision stage are then tested by small and large groups. The results of the second phase of the trial is aimed at obtaining feedback from the end-users about their experience of using the product.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

1. Feedback from the research subjects and input from the game expert helps provide input at the stage of   prototype game design which encompasses design aspect, content of game, functionality, and user-friendliness.

2. To the four important aspects of designing a good game above, the response of the respondents show that they put almost equally high expectation. This suggests that the game designers consider all the aspects in all stages of the game design.

3. This AR game model is considered as a prospective media for learning as a result of placing virtual objects into actual learning objects.

4. Although currently access to mobile gadgets is generally constrained by institutional rules and regulations, AR mobile games can be potentially

integrated through blended learning by integrating the game as the home supporting learning media

5. Good AR game design must consider relevant instructional objectives and quality aspects such as sound, graphics, and animation, etc.

Suggestion

In order to ultimately produce a viable and healthy learning media, the four aspects of game design studied must be considered in the stage of game development.

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B.

Faculty Development and Digital Pedagogy

Developing Intelligent, Social and Moral Potentials among Junior College Students: A Philippine Technology-Based 21CC Model.

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Abstract: Whole-person education continues to evolve, with experts and policymakers from various sectors espousing the integration of information and communication technology (ICT) in pedagogy, the development of life and work skills, and the nurture of the mind and spirit. These strategies highlight the value of ICT in enhancing students' educational experience as well as future-readiness, survival and employability, and character formation. Coming from such context, this study examined the development of intelligent, social, and moral (ISM) potentials of junior college students enrolled in Media and Information Literacy at the University of Asia and the Pacific in the Philippines. The mixed methods approach was used to present a multi-dimensional research encompassing narratives from a design analysis of course components and online survey data that ascertained the acquisition of 21st century competencies. Qualitative findings showed the course's tendency to dwell on knowledge acquistion and the lack of emphasis on the development of life, career, and moral skills. This necessitated an innovative curriculum design, which intentionally integrates the nurture of 21CC skills. Following its implementation, the ISM paradigm revealed furtherance of cognitive and metacognitive skills based on quantitative results and as corroborated by students' performance scores. ISM strategy can be replicated to cultivate key skillsets and produce T-shaped graduates that are equipped for life, career, and community.

Key words: Competencies, Media, Information, 21CC, ISM

INTRODUCTION

Theodore Long (2013) has observed that "American higher education has always championed the education of the whole person. But rarely [has it] designed systematic programs to achieve that ideal." (para. 1) Long's sentiments reveal an ongoing dilemma in achieving a truly holistic pedagogy. The Partnership for 21st Century Skills (2019) advocates a learning approach that builds analytical, collaborative, and interpersonal competencies known as 4C's; but leading science and engineering institutions consider such paradigms insufficient. In fact, Georgia Institute of Technology believes that the teaching of science, technology, engineering and mathematics has not been responsive to industry 4.0 expectations. In its own backyard, it noted a strong emphasis on subject matter teaching and a neglect of social skills and character development. GeorgiaTech finds:

> In traditional STEM learning, the importance of cognitive com petencies is widely recognized but rarely supported explicitly;... instructors often assume that students will pick up cognitive skills as they learn new subject content. It is rare that inter- and intra- personal competencies are accounted for. ("Creating the Next", n. d., para. 10)

This is a cause for alarm since all three skillsets are "predictive of long-term career success and intergenerational wealth ("Whole Person Development", n.d. para. 3) In short, if institutions want to be relevant, a nurture of the entire person must be pursued. Echoing Reeves (2014), GeorgiaTech argues, "While cognitive skills are important, by far the strongest associations [to success] are due to metacognitive skills." (para.3)

The Philippines, as a proponent of 21CC philosophy, sees the value of the 4C's and ICT as critical components of basic education. With the 2016 implementation of the K-12 program, Media and Information Literacy (MIL) was introduced in senior high school to educate students about communication channels and tools and effective use of technology. Despite this expanded program, however, a great majority of graduates cannot secure jobs. While lack of employment opportunities has been identified as a culprint (Hernando-Malipot, 2018), quality of the education is also being blamed. A study by the Philippine Institute for Development Studies suggests incompatibility between industry needs and acquired graduate attributes. In fact, companies prefer "graduates armed with the skills the job market needs." (Pascual, 2019, para. 5) This shows a gap between pedagogical ideals and objectives and training outcomes.

LITERATURE REVIEW

A. Aspirations toward whole person development

Whole person pedagogy has been a major educational agenda among national policy makers, experts, and educators worldwide. This movement toward holistic approach was borne out of the need to guarantee employability and instill citizenship among learners (Tan, Choo, Kang, & Liem, 2017). This has led to 21st century competencies (Tan, Koh, Chan, Costes-Onishi, & Hung, 2017). P21, for instance, emphasizes critical thinking, creativity, communication, and collaboration Additionally, it integrates ICT and life and career skills (Partnership for 21st Century Learning, n.d.).

The Assessment and Teaching of 21st Century Skills framework seeks to cultivate citizenship, life and career skills, and personal and social responsibility. Creativity and innovation, ICT skills and collaborative competencies are also championed. The EU Lifelong Competencies for Lifelong Learning, mixes entrepreneurship, STEM, social, civic, and cultural adeptness. For its part, the US National Academy of Sciences highlights cognitive, interpersonal, and intrapersonal competencies also known as T-shaped skills ("Initative 1", n.d.).

Despite the abundance of "new knowledge economy" pedagogical formulations, both governments and schools have observed a limited capacity of governments and institutions in terms of 21CC implementation as well as a lack of studies on the subject. (Tan, Choo, Kang & Liem, 2017, p. 427) Add to this challenge is the ever-increasing demand for T-shaped graduates. Adept in their own fields, T-shaped thinkers perform "cross-disciplinary collaboration" and capable of handling both technical and social rigors as "new employees of the digital age". (Conley, 2015, p. 1) The preceding are instructive of the need to recalibrate education agenda by aligning them with 21CC philosophies that produce employable and "future-ready" graduates. (Tan, Koh, Chan, Costes-Onishi, & Hung, 2017, p. 5)

B. Beyond cognitive expertise

Perspectives on T-shaped learning are echoed by organizations that champion multiple competencies development ("Learn About Whole Person," n.d.). Asian universities are on the same path, stressing body-mind-soul nurture, a blend of "classroom, church, court, cultural center, and community", community-centeredness and well-roundedness, as well as "research and experiential learning" (UBCHEA, n.d.; "Whole Person",

2019; The 5Cs", n.d.; & "Service-Learning", 2019).

Singapore is an example of a strong commitment to whole person education. For instance, it implemented a series of landmark reforms from 1997 to 2016 to forge "a resilient and active national citizenry" characterized by "responsibility, respect, and harmony" while acquiring knowledge competencies (Tan, Koh, Chan, Costes-Onishi, & Hung, 2017, p. 1). In 1997, the Thinking Schools, Learning Nation was launched to prepare students to "meet the challenges of the future" followed by an ICT masterplan that allocated a third of the curriculum time for computer use. (Tan et al, 2017, p. 4)

In 2005, "active and independent learning" was encouraged, "trimming syllabus content and [enhancing] critical thinking and inquiry-based learning". A move toward a full 21CC approach materialized with the implementation of a "full curriculum" that centered on character formation by integrating values, social, and emotional competencies. (p.6) Thinking skills and ICT competencies were balanced with social and emotional development. Later, the 1997 initiative was redesigned to develop a "Confident Person, Self-Directed Learner, Active Contributor, Concerned Citizen" in every student. (Wei Li, 2013; Ministry of Education Singapore, 2018, p.1.) The goal was to nurture citizenship, global awareness and cross-cultural skills; critical and inventive thinking, and communication, collaboration, and information skills. It also stressed values formation such as "Respect, Responsibility, Integrity, Care, Resilience, and Harmony". (p.7)

C. Whole Person Education in the Philippines

The Philippines, which subscribes to the 21CC frameworks, implemented an expanded basic education program in 2016. The Enhanced Basic Education Act of 2013 envisions "every graduate...[imbued with] creative and critical thinking, and the capacity and willingness to transform others and oneself". ("Republic Act No. 10533," para. 4) The law states that education must equip citizens "with the essential competencies, skills and values for both life-long learning and employment" (para. 5). However, this vision is yet to be realized. According to the World Bank Filipino graduates experience deficit on non-cognitive, social and behavioral skills or socioemotional skills (Acosta, Igarashi, Olfindo, & Rutkowski (2017). Socioemotional skills are deemed by a significant majority of employers as the most important competencies that they are looking for in an applicant.

The bank noted:

> Although the Philippines has achieved remarkable progress in raising the education level of its labor force, the standard proxy for educational attainment—years of formal schooling—is increasingly inadequate as a measure of workforce skills. About one-third of employers report being unable to fill vacancies because of a lack of applicants with requisite skills. Most of these missing skills are not forms of academic knowledge or technical acumen but rather socioemotional skills, also known as "non-cognitive skills," "soft skills," or "behavioral skills." Emerging international evidence suggests that socioemotional skills are increasingly crucial to the types of jobs being created by the global economy. (Acosta, et al, 2017, xiii)

The University of Asia and the Pacific's educational goals are congruent with the ideals of RA 10533 and anchored on various 21CC frameworks, seeking the "integral formation of the human person" ("Educational Principles", n.d., para. 1). Its programs endeavor to produce graduates "who are professionally competent, creative and enterprising, zealous for the common good, and capable of making free and morally upright choices, and who can thus act as positive agents of change in service to society" (para. 5). These traits and characteristics embody the formation of intelligent, social, and moral competencies that reflect 21st century pedagogical approaches.

METHODOLOGY

This study looked into the repurposing of a technology course to make it 21CC compliant in order promote career and life skills. In particular, the researcher ventured into two major investigations, namely, an analysis of the MIL program in December of 2018, and a May 2019 survey designed to test the effectiveness of the new curriculum which was implemented from January to May 2019.

A. **Type of research**

This study employed the mixed methods approach. This quantitative-qualitative hybrid is more effective due to its "synergistic" characteristic which promises "a fuller understanding of the research problem" or "complementarity." (Hesse-Biber, 2017, p.275) This "convergence" also adds "credibility" to the research. (p.275)

B. Research subjects

The research subjects consisted of Grade 11 students from five MIL sections during the second semester of school year 2018-2019. Out of the 150 students enrolled in the course, 138 participated in the survey. No other participants were included in the survey because the study was exclusive to MIL students. Additionally, the number of participants was deemed sufficient.

C. Research procedure

In understanding the problem, four research procedures were observed as listed below.

1. Design Analysis

    According to Jansen and Reddy (n.d.) this framework is appropriate when investigating "what theories, principles, methods, standards and assumptions underpin the curriculum" (p. 4). The curriculum on spotlight needed to be dissected to determine which 21st century learning principles were reflected, and analyze its sufficiency based on 21CC standards.

2. Questionnaire

    A 32-item Likert Scale questionnaire was constructed to measure behavioral manifestations, particularly the development of cognitive and metacognitive skills. Questionnaires are an "effective mechanisms for efficient collection of certain kinds of information." (The Handbook for Economic Lecturers, 2018, para. 1)

3. Behavioral Observation

    This third procedure recorded students' behavior (unauthorized use of gadgets) in class. In this obtrusive measurement, the subjects were aware of the monitoring of behavior. Canvas class record was utilized in lieu of an observation protocol (Creswell & Poth, 2018). Self-report measurement, another form of behavioral monitoring, was also utilized. Guidelines were provided on how to measure gadgets and media use outside class.

4. Interview (Online Assessment Questions)

    This minor procedure was limited to the visual task and gadgets use. Results were to be referenced in analyzing the survey data.

RESULTS AND DISCUSSIONS

A. Results

The results of this study highlight two important findings. One is the need for a revitalized technology course, and its replication. Another is the potential of developing the cognitive and metacognitive competencies with the use of a repurposed curriculum. Results of the design analysis are presented, followed by the survey data on the demonstration of 21CC skills, and Canvas records.

Alignment of MIL course with 21CC: a design analysis

The focus of this analysis is the Media and Information Literacy: Teaching Guide for Senior High School (Pitagan et al., 2016) to parallel the topics, intended outputs, and target learning competencies with the 21CC framework (See Appendices, Part 1). The targeted primary learning competencies are: evaluating and critiquing (used eight times), comprehension (seven times), describing (seven times), and producing (six times). The secondary objectives are defining (five times), discussing and explaining (five times), and determining and identifying (four times). The least emphasized competencies are editorializing, searching and researching (two), demonstrating and synthesizing (three), and classifying (one).

The teaching of MIL is meant to achieve a "basic understanding of media and information as channels of communication and tools" and develop creativity, critical thinking, responsible media use, and competent production (Pitagan et al., 2016, p. 5). Responsible use falls under the moral domain while the rest belong to the cognitive sphere. Competencies are measured via comprehension, repetition, and articulation of content through sharing and discussing, as well as writing. The major tasks are a poster, an infographic, a podcast, a video, and a survey.

The course does not intend to teach the use media and information tools; rather, it aims to measure comprehension of 17 topics. Since no actual hands-on in undertaking MIL tasks was evident, it appeared that the projects were determined arbitrarily, further showing a lack of intentionality in developing skills. It is clear that the objective of the course is learning subject matter content, and not life and career competencies as envisioned by the government. In light of the absence of a truly holistic curriculum, an overhaul of the course with the intent to develop intelligent, social, and

moral potentials, was warranted.

Intentional integration of skills in technology teaching

Since the MIL curriculum fell below the tenets of a 21CC formula, it necessitated reformulation, and a learning management system and technology were tapped to deliver content and develop key competencies. Canvas, an LMS, was used in the course delivery while media and technology tools were required for the tasks. Following are 11 technology-based activities that integrated ISM skills development.

1. LMS-based Assessment

   This includes regular seat work, quizzes, and two major tests. In the administration of assessment tasks, students were depended on smart phones, laptops, and Canvas. This is actual learning of technology with the use of the LMS, applications, and tools.

2. Group presentations

   Two presentations, one at the beginning of the term and the other toward the end, were delivered via ubiquitous media such as Microsoft powerpoint program, videos, and graphics. The first involves data-gathering of students' media and gadgets use and consumption of media content. The second aspect is an oral presentation of the results and their implications. Aside from processing content about media and information, students must exhibit competencies in the manipulation of technologies.

3. Book publication

   With ethical communication as its goal, this positivity-themed publication is a major project for the class, and represented a sizeable portion of the final grade. Tasks were writing of features, poems, and lyrics, graphics design and lay-outing, sourcing of funds, and negotiation with printers. As in all other outputs, the project necessitated the use of digital tools.

4. Visual design

   Undertaken by applying the elements of visual techniques, choices were a poster, an invitation, and a brochure using Photoshop, Canva, and other softwares. (Note: Canva is a design tool and is not to be confused with the LMS, Canvas).

5. Audio production

After conceptualization, recording of vocals is done during the production phase. During post-production, voice tracks editing and application of audio effects, sound effects, and music are done. Free recording and editing apps and softwares were utilized. Audio production was preferred over video since the latter is commonly used in UA&P for other projects.

6. Interview with reflection

   This individual task involved setting up of an appointment with a history teacher or experts in related fields and conducting the interview regarding media's role in the preservation of Philippine democracy. After determining the relevant details, students were to synthesize results, integrating both key concepts and the lessons on media's functions. Printed copies of reflection papers were required.

7. Photography

   Students were taught the rules of photography, and must apply the same in capturing images that reflect social, economic, and political issues. For the class exhivit, photographs must be categorized according to kinds and captioned accordingly.

8. Text analysis and reflection

   This required reading of any one of the recommended books. Part of the task was to determine the validity and reliability of the content. The ultimate output is a two-page reflection paper about the material and insights from lecture. Submission was via Canvas.

9. Media fasting, reading, and reflection

   A drastic reduction of media use (social media and/or tools) during a sacred period called Holy Week, this task required a reading on responsible media use and writing of a reflection paper. Students must report about the extent of social media control, emphasizing introspective thoughts and realizations and connecting the experience with both the reading and lessons covered.

10. Responsible media and gadgets use

    Consisting of two areas – regulated use in class and responsible use during non-class hours – this was a test of discipline, self-control, and responsibility.

11. Introspection

    This involved reflections on the lessons, readings, and experiences – all designed to develop this intrapersonal habit while improving

writing skills. Some reflections formed part of the positivity book.

Measuring intelligent, social, and moral potentials

The overall aim of this research was to determine the implications of the intentional integration of ISM in the teaching of MIL. In particular, it attempted to determine the extent of development of cognitive, interpersonal, and intrapersonal competencies. Measuring of these skills was through a self-assessment Google online survey, which was accomplished from May 19 to 22, 2019. In terms of intelligent skills, the study ascertained the extent of acquisition of problem-solving, critical thinking, and creativity. In the social domain, interpersonal communication, teamwork, and leadership potentials were measured while in the moral sphere, persistence, responsibility, and moral judgment were tested.

Table 1:
Index Value and Interpretation

Index Value	Interpretation
0.00 - 0.99	Very Low
1.00 - 1.99	Low
2.00 - 2.99	Moderate
3.00 - 3.99	High
4.00 - 5.00	Very High

Table 1 shows respondents' average scores and their corresponding levels in terms of skills acquisition in key areas in the completion of eight MIL projects.

Table 2:
Overall Self-Assessment Indices

Overall	Average Index Value
Intelligent Index	4.21
Social Index	4.32
Moral Index	4.49

As shown in Table 2, students' intelligent index was 4.21, representing a very high or significant acquisition of cognitive skills such as creativity, problem solving and critical skills. In terms of social skills, respondents rated themselves very highly with 4.32, indicating the acquisition of such skills as teamwork, interpersonal communication, and leadership. The moral potentials appeared to be the most well-developed with a score of 4.49 or very high. This reflects the university's strong emphasis on liberal arts education that develops a good attitude and employability. ("The CEO's Choice", 2013)

Overall, junior college students perceived a very high acquisition of the three 21CC skills particularly those that deal with internal or character development such as moral judgment, persistence, and responsibility. Moral potentials can be highly developed as shown by the high index score. Note that seven of the eight tasks tested the moral skills, a factor that could have influenced the very high rating for moral index.

Table 3

Self-Assessment Indices Per Output

Skills	Assessment	Group Presentations	Positivity Book	Visual Media
Intelligent Index	3.79	4.33	4.33	4.30
Social Index	0.00	4.30	4.29	0.00
Moral Index	0.00	4.57	4.48	4.54
Audio Recording Project	Interview with Reflection Paper	Media Fasting and Reflection	Responsible Use of Gadgets and Media	
4.33	4.18	4.28	0.00	
4.45	4.21	0.00	0.00	
4.61	4.36	4.32	4.54	

Table 3 shows what specific skills were measured. In Assessment, only intelligent skills were measured, while in Group Presentations, Positivity Book, Audio Project, and Interview with Paper all three competencies were tested. Visual project and Media Fasting tested only the intelligent and moral skills while Responsible Media Use was purely a test on moral competencies since it focused on honesty, discipline, and self-control (responsibility). A very high acquisition was recorded in presentations, publishing, and recording

with 4.33 index. This shows adequate development of critical thinking, creativity, and problem-solving skills. Assessment got the lowest index (3.79) although it is equivalent to high acquisition.

Table 4
Self-Assessment Indices (Start vs. End)

	Start	End
Intelligent Index	4.33	4.33
Sociall Index	4.30	4.29
Moral Index	4.57	4.48
Overall Index	4.40	4.36

At both the start and end, a very high intelligent index (4.33) was recorded. Social and moral indeces slightly declined from 4.30 to 4.29 and from 4.57 to 4.48, respectively. The findings in Table 4 suggest that the overall social and moral levels experienced a slight drop; however, the decline is negligible and insignificant. Thus, junior college students' competencies remain relatively static at the very high level.

Following are select figures illustrating the development of ISM skills. In assessment, Figure 1 shows that in terms of critical thinking skill, 50% believed they demonstrated a high acquisition while 32% considered it very high.

In group presentations, 46.4% of respondents strongly agreed to the development of problem-solving (Figures 2) while 38.4% agreed. Majority or 52.9% strongly agreed that they acquired creativity (Figure 3) followed by 34.1% who agreed.

Figure 1:
Critical thinking skill development in assessment

I developed my analytical or critical thinking skills in answering the seat work, quizzes, and major exams.
135 responses
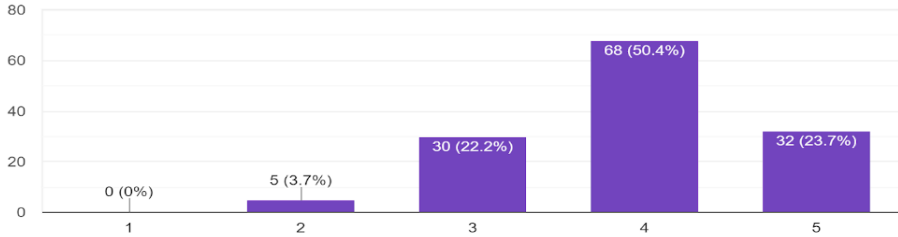
Figure 2:
Problem-solving skill through group presentations

I was able to determine which information was needed for our presentations.
138 responses
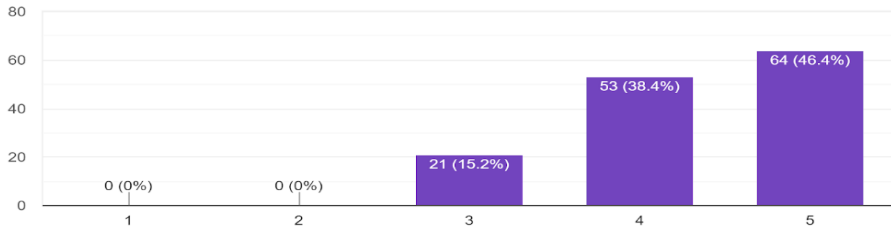
Figure 3:
Development of creativity through group presentations

My group created an excellent and visually appealing presentation that was complete with powerpoint slides and some audio-visuals.
138 responses
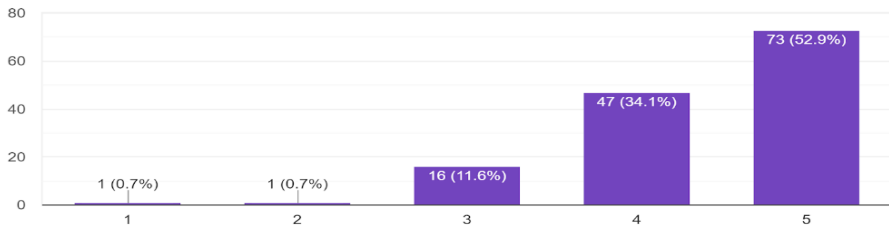
Figure 4:
Communication skill development through group presentations

My speaking skills improved through our class presentations.
138 responses
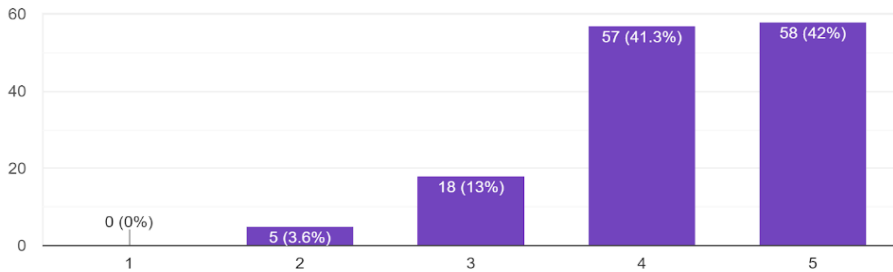
In group presentations, 42% of participants strongly agreed that they had developed communication (Figure 4) followed by 41.3% who agreed. Only 3.6% perceived a low development.

Figure 5:
Leadership skill development through group presentations

It was normal for me to step up when my team mates were hesitant to lead or initiate something regarding our presentations.
138 responses
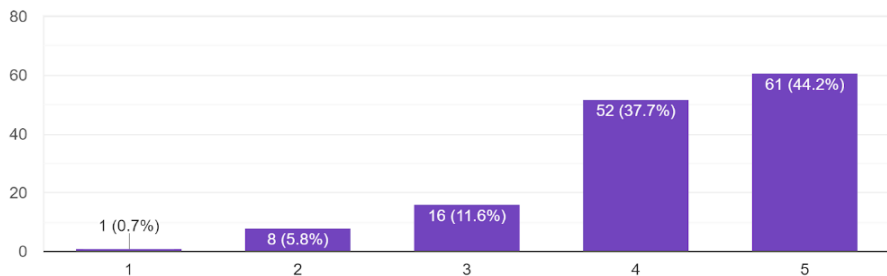
In the same task, 44.2% of students strongly agreed that they had developed leadership skills and 37.7% agreed (Figure 5).

Figure 6:
Persistence through group presentations

I was patient with my team mates and in completing my assigned tasks.
138 responses
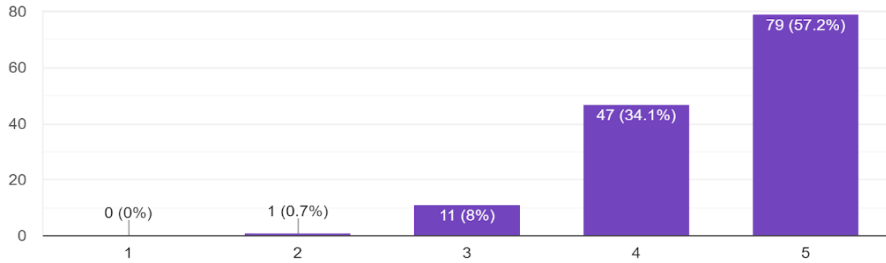
In group presentations, 57.2% strongly agreed to developing persistence (Figure 6) while 76.8% strongly agreed to exhibiting moral judgment (Figure 7). Results show tremendous improvement in both social and moral competencies.

Figure 7:
Moral judgment development through group presentations

We followed the rules regarding research and plagiarism in completing this project.
138 responses
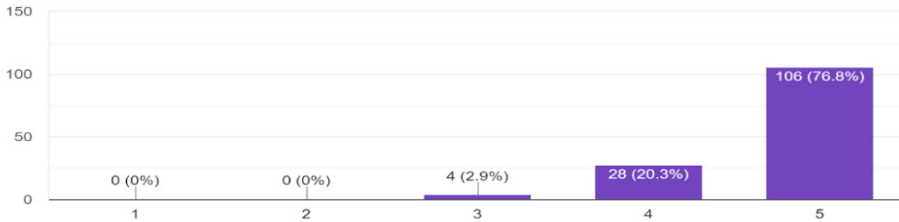
In publishing (Figure 8), 44.9% agreed that they had acquired critical thinking skill and 42.8% strongly agreed. Results demonstrate substantial development of this particular cognitive skill.

Figure 8:
Critical thinking through publication

I developed critical thinking skills in writing for and in producing this book.
138 responses
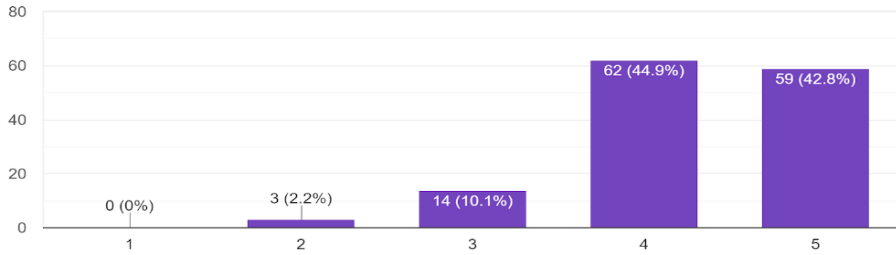
Figure 9:
Development of teamwork through publication

I learned to work with my group mates/ classmates in the assigned tasks and I thought of what would be good f...s and set aside my personal ambition.
138 responses
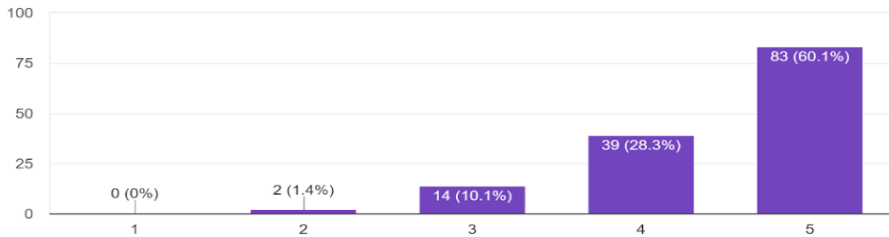
Sixty percent of respondents strongly agreed that teamwork was developed through the publication (Figure 9). Leadership got 44.9% in the same index (Figure 10) and 24.6% of students were in moderate agreement. Collaboration appeared to be much easier to develop compared to leadership as the data revealed.

In Figure 11, 44.9% of respondents strongly agreed that responsibility was developed and 38.4% agreed. Students perceived themselves as exhibiting this intrapersonal trait through the book project.

Figure 10:
Development of leadership through publication

I was motivated to lead in a particular task/ assignment or I made sure I served as a leader in a particular task or in this entire project.
138 responses
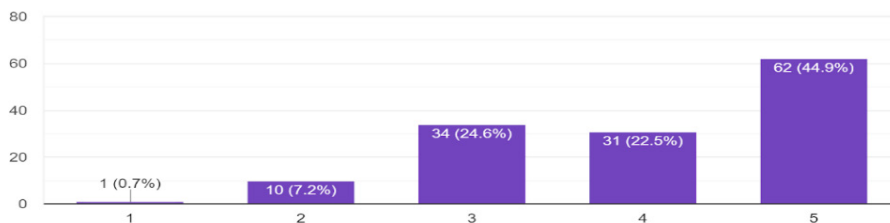
Figure 11:
Responsibility through publication

I learned to manage my time so I could meet deadlines and submit on time.
138 responses
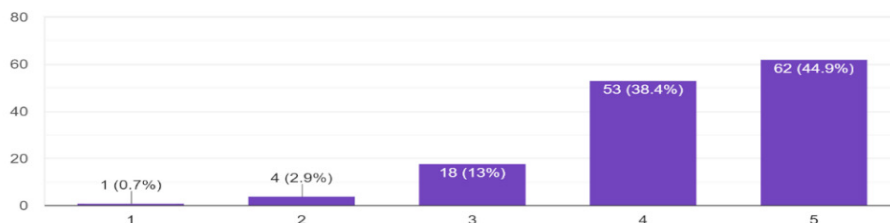
Figure 12:
Creativity through visual project

I developed my creativity regarding visuals and I designed an excellent poster/invitation/ brochure.
138 responses
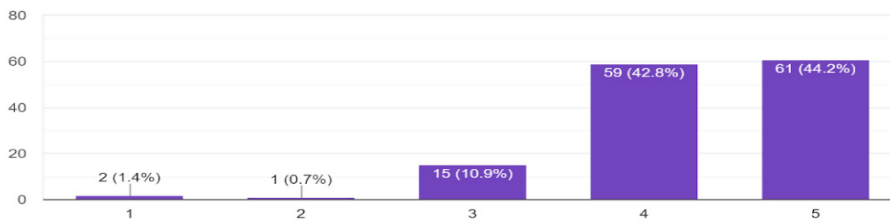
Figure 13:
Problem-solving through visual project

I tried to find solutions to my difficulty in designing this visual project.
138 responses
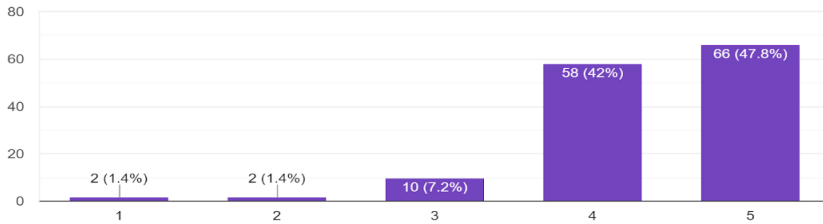
In the visual project, 44.2% of participants strongly agreed to developing creativity and 42.8% agreed (Figure 12). In Figure 13, strong agreement to problem-solving's development was at 47.8% followed by 42.8% of agreement. Results suggest students' ability to find solutions for their tasks.

Figure 14:
Acquisition of persistence through visual project

I never gave up until I finished this visual project.
138 responses
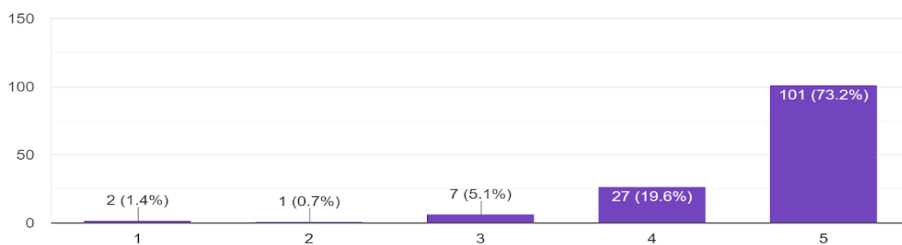
Persistence was highly developed in the visual task, with 73.2% of strong agreement (Figure 14). Only 5.1% disagreed.

Responsibility registered 61.6% under strong agreement (Figure 15) while only 2.2% disagreed.

Figure 15:
Responsibility through visual project

I did not only finish the project but I also did it well and submitted it on time.
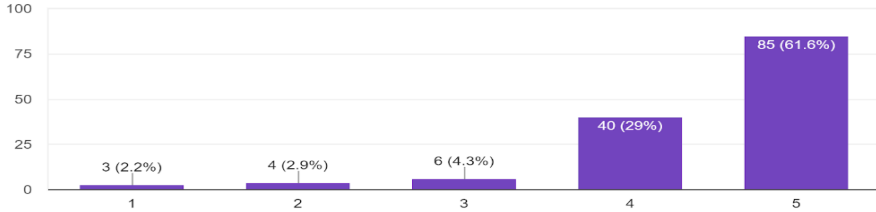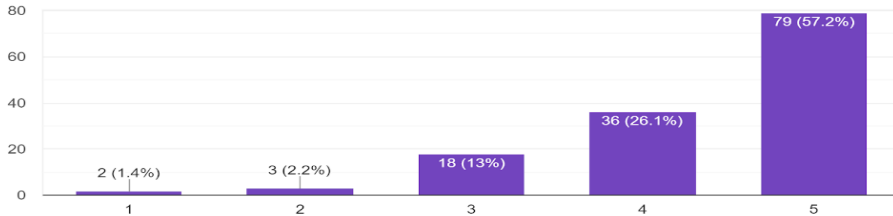138 responses

Figure 16:
Development of problem-solving through audio project

My team mates and I held a brainstorming session to decide on how to handle the project, and which software to use for recording and editing.
138 responses

Problem-solving was highly developed in the audio project, with a total of 57.2% of students strongly agreeing (Figure 16). Merely 13% moderately agreed.

In Figure 17, strong agreement to the development of leadership was at 47.1% and agreement at 32.6%.

In the same task, persistence received 65.9% under very high index (Figure 18) and 29% under high index, showing tremendous development of the intrapersonal skill.

Figure 17:
Leadership through audio project

I had to take the lead when my team makes needed direction or help.
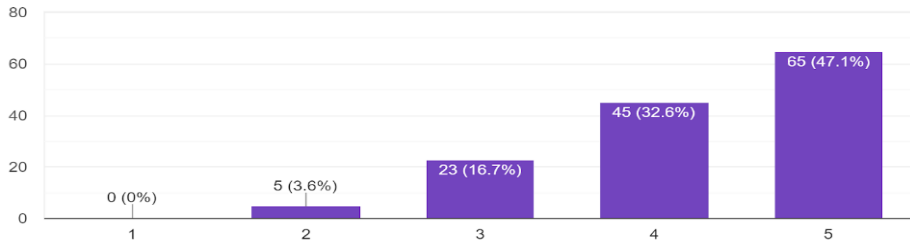138 responses

Figure 18:
Persistence through audio project

I learned to be persistent - I did not give up until I completed my task for this project.
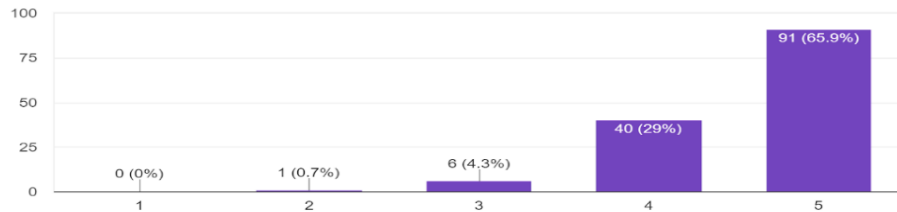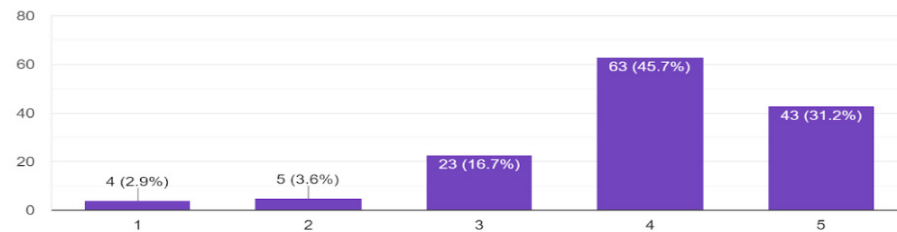138 responses

Figure 19:
Creativity through the interview paper

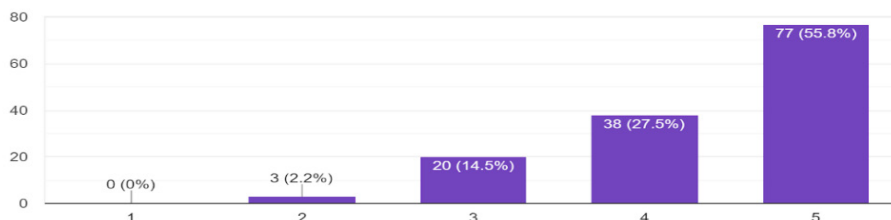I was able to submit an excellent interview paper.
138 responses

In the interview project, 45.7% of students strongly agreed to developing creativity followed by 31.2% agreement (Figure 19).

Figure 20:
Problem-solving through the interview paper

I was able to determine which content of the interview was important and needed for the reflection paper.
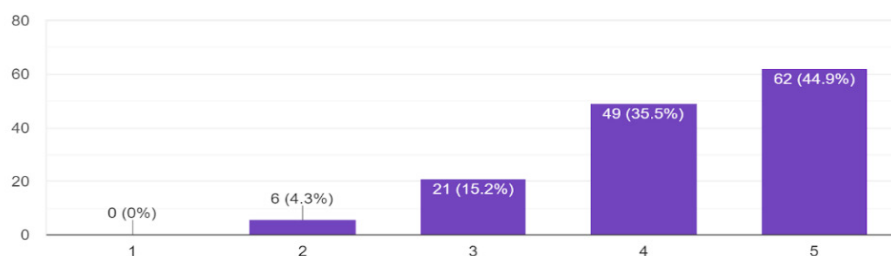138 responses

In Figure 20, respondents reported a very high development of problem-solving skill (55.8%) and a high of 27.5%.

Figure 21:
Development of communication through the interview

My interpersonal communication skills improved in performing this task.
138 responses

In Figure 21, 44.9% of the junior college students strongly agreed that they had developed communication skills through the interview task while 35.5% agreed. In media fasting (Figure 22), 52.2% of them strongly agreed that they had developed persistence while another 30.4% agreed.

Figure 22:
Development of persistence through media fasting

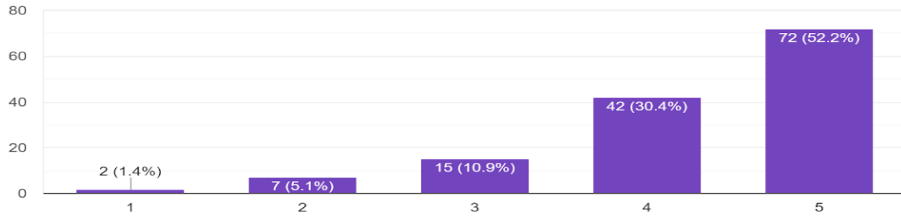I was able to endure with limited media and gadgets use during the fasting period.
138 responses

Figure 23:
Responsibility through media fasting

I made sure I did the media and gadgets fasting no matter how difficult it was.
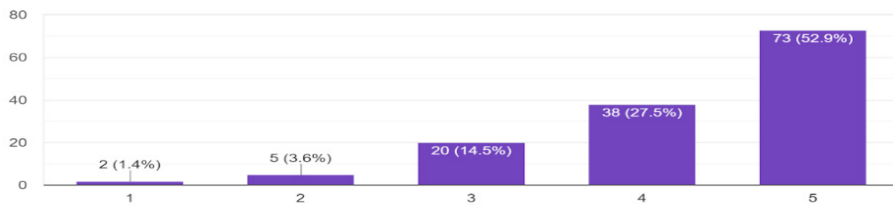138 responses

Figure 24:
Moral judgment through gadgets use in class

I used media and technology tools in classroom only as permitted.
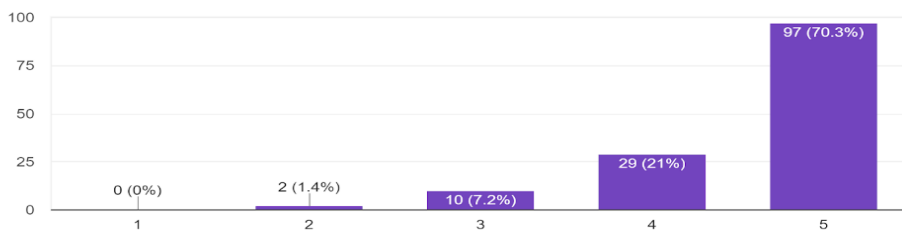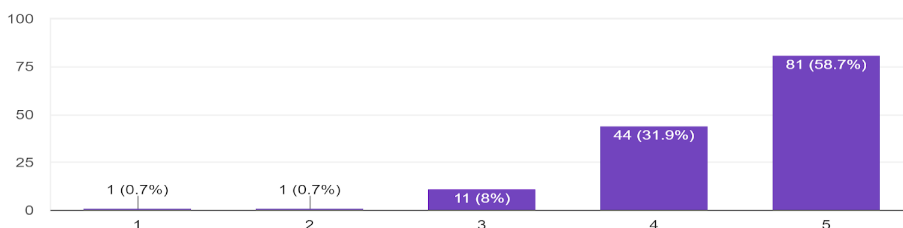138 responses

Figure 25:
Responsibility in media use outside class

Outside school, I used new media and technology when necessary. Also, I used media and technology tools to help others, not malign or bash them.
138 responses

In Figure 24, moral judgment was manifested in gadgets use in class by majority of the students (70.3%), showing adherence to class policies. Manifestation of this trait can also be attributed to the consequence of non-compliance.

The development of responsibility was evident in the use of media and technology tools outside class (Figure 25) with 58.7% strong agreement and 31.9% agreement. Only 8% perceived a moderate development.

4 In summary, students developed all three critical T-shaped skillsets namely, intelligent, social, and moral potentials as indicated by the charts. Of the three domains, students reported a very high development in terms of moral skills.

Performance scores: triangulation and complementarity

As a reference, a Canvas records of the eight tasks is provided (See Appendices, Part 4). Numbers reflect significant progress in terms of ISM potentials. High scores of select students in group presentations are consistent with the high to very high index in skills development as shown in the survey. The trend is similar in gadgets use, interview, fasting, visual project, and publication. One explanation is that students were guided in accomplishing the projects except for the visual task. Compared with other tasks, scores in assessment were lower, mirroring the survey data. Audio project scores slid slightly, indicating a lower level of skills development.

Out of the eight tasks, five were guided, namely group presentations, interview, fasting, audio project, and publication. The visual project and assessment were unguided since they were designated as the testing tasks for critical thinking, creativity, and problem-solving. Gadgets use was both guided and unguided. Use in class was monitored and under the researcher's guidance while outside use was at the students' discretion.

To test the intelligent, social, and moral potentials, lectures on photography and visual design were given as part of the visual information topic. As in most of the lectures, photography was delivered using Microsoft powerpoint program. Basic design criteria were applied in visual information through the unguided output, that is to demonstrate creativity and problem-solving skills. Photography/photography exhibit was excluded from the study due to redundancy in terms skills being tested; nevertheless, guidance and feedback were given. Publication and visual design were deemed adequate in terms of skills testing.

Evaluation of the visual project was based on visual design and text information lessons. Parameters were not restrictive, allowing more liberty toward artistic expression. A female student of section 3 produced a poster using the digital application AutoDesk Sketchbook. Part of the evaluation was a report about the project through print interview. The scores based on a rubric represent her demonstration of creativity, critical thinking and problem-solving. Answers to the online assessment questions (Appendices, Part 2-A & B) indicate intrapersonal development, spending three hours for the work (persistence), producing an excellent digital poster, and submitting it on time despite many other requirements (responsibility).

In the publication project (See Appendices, Part 1-A), instructions regarding text and graphics were given. Writing and design was at students' discretion. In terms of intelligent skills, creativity, problem-solving, and critical thinking must be exhibited. Two areas were measured – social (teamwork and communication) and moral (persistence, discipline, and moral judgment). To illustrate, failure to collaborate and communicate would translate into a substandard project resulting in lower scores. Similarly, inability to complete the project, which means lack of persistence and responsibility, would affect scores.

Problem-solving skills were expected to be manifested in securing a copyright, fundraising, negotiations with printers, among others. In moral

judgment domain, a reflection on the socio-economic issues was expressed through text and photographs with captions. Gadgets use in class without permission constituted a three-point deduction from *proper use bank.* Gadgets and media use elsewhere was also graded, and the researcher relied on students' self-assessment feedback. Score was, therefore, based on the teacher's scoring and the students' self-assessment. (See Appendices, Part 5).

CONCLUSION

Scaffolding the national educational philosophy with 21CC ideals was a significant move, but only constituted a minor step toward a responsive whole person pedagogy. The MIL curriculum lacked emphasis on intentional skills building, with social and moral spheres almost being non-existent. Topics tended to measure comprehension rather than develop life, career, and moral potentials.

In view of the need for T-shaped thinkers, UA&P's response and contribution was an innovative strategy that addresses industry 4.0 requirements. Both survey data and performance records revealed significant cognitive and metacognitive skills acquisition. Of the three skillsets, the moral aspect was the most developed. The research, is therefore, significant because of its effectiveness and responsiveness to holistic learning. ISM approach can be adopted as a reference for 21CC curricula in higher education institutions in the Philippines and beyond.

Results of this study must be used only as reference in formulation of whole person schemas. One limitation is that development of skills may take time and a single semester is insufficient to arrive at conclusive arguments regarding the development of competencies. It is recommended that skills be measured periodically in a non-graded environment to assure reliability. Needless to say, the outcome of the experiment indicates that UAP's approach is a reliable strategy in nurturing intelligent, social, and moral potentials among students. Along these lines, the study proves that T-shaped skills development can be intentionally integrated and developed in any STEM or liberal arts course.

ACKNOWLEDGEMENT

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APPENDICES:

Part 1: Topics, Outputs, and Target Learning Competencies in Media and Information Literacy: Teaching Guide for Senior High School

Topics	Output	Target Learning Competencies
1) Introduction to Media and Information Literacy		describing, identifying, editorializing, sharing
2) The Evolution of Traditional to New Media	Timeline of exposure to traditional/new media	identifying, examining, editorializing, and searching for sources
3) Information Literacy	Essay about information literacy	defining and demonstrating
4) Types of Media	Sketch/Drawing on how media is affecting everyday life	classifying, defining, and discussing
5) Media and Information Sources	Essay on media and information sources	demonstrating, deter-mining (accuracy, etc.), comparing, and interviewing

6) Media and Information Languages	Presentation on latest technology trends	evaluating and producing
7) Legal, Ethical, and Societal Issues in Media Information	Oral presentation on legal, ethical, and societal issue	defining, discussing, explaining, enumerating, applying, and demonstrating, explaining, defining, and enumerating
8) Opportunities, Chal-lenges, and Power of Media and Information	Mind map and 500-word essay about the transformative power of media and information	understanding and research
9) Current and Future Trends of Media and Information	Prototype of future media and information	evaluating defining, predicting, and synthesizing
10) Media and Information Literate Individual	Reflection and artefacts on the class debate on the impact of MIL	synthesizing
11) People Media	Report and Presentation on effects of social media	citing studies, describe-ing, categorizing
12) Text Media and Information	Text-based Presentation – Typography Campaign Poster	describing, com-prehending, evaluating, and producing
13) Visual Media and Information	Visual-based Presentation - Infographic	describing, com-prehending, evaluating, and producing
14) Audio Media and Information	Audio-based Presentation - Podcast	describing, discussing, evaluating, and producing

15) Motion Media and Information	Motion-based Presentation – Storyboard and Motion Media Presentation	describing, comprehending, evaluating, categorizing, critiquing, and creating/ producing
16) Manipulatives/Inter-active Media and Information	Manipulatives/Interactive Presentation – Online Survey	describing, comprehending, evaluating, and producing
17) Multimedia Information and Media	Final Project: Multimedia Presentation	describing, comprehending, and synthesizing

Part 2-A: Photo showing the cover and inside page of one of the 5 MIL books produced and published by students
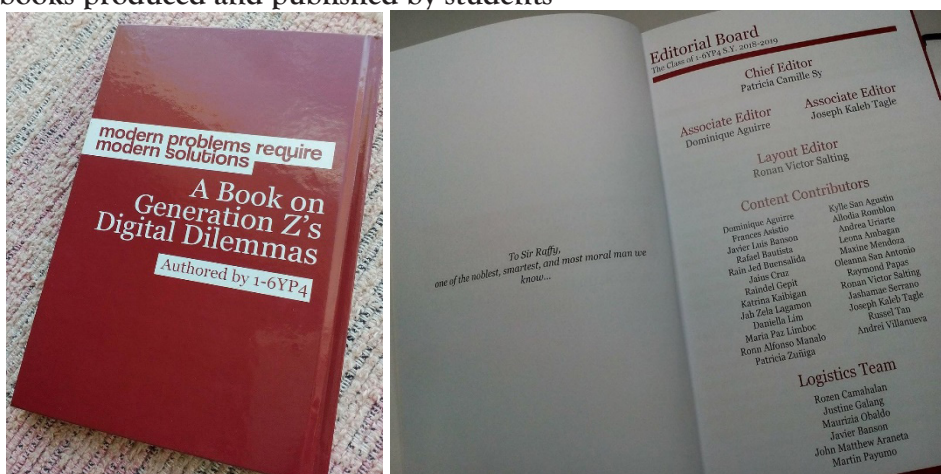
**Part 2-B: Rubric for Grading MIL Book**

Section 2; Schedule : 10:30a – 12:00nn, M-Th	SCORE
VISUAL DESIGN 1) Overall aesthetics: The book has an appeal in terms of content, design, and layout from cover to inside pages.	____ 10

2) Unity: sense of wholeness of all elements as belonging together.	_____ 2
3) Arrangement: a sensible order/organization of elements.	_____ 2
4) Balance: equal distribution of elements, not just symmetry.	_____ 2
5) Dominance: There is one element as the focal point and others being subordinate.	_____ 2
6) Contrast: Important items stand out; differences in size, color, direction, and other characteristics emphasized	_____ 2
TEXT: adequate, and well-written material or content	_____ 10
Repetition: Observed repetition in terms of font choice Emphasis: Highlighted lines that needed to be emphasized	_____ 2
Contrast, Alignment, Proximity, and Readability	_____ 8
Peer Evaluation (social and moral potentials)	_____ 10
TOTAL = 50	

Part 3-A: Screenshot of Online Assessment Questions
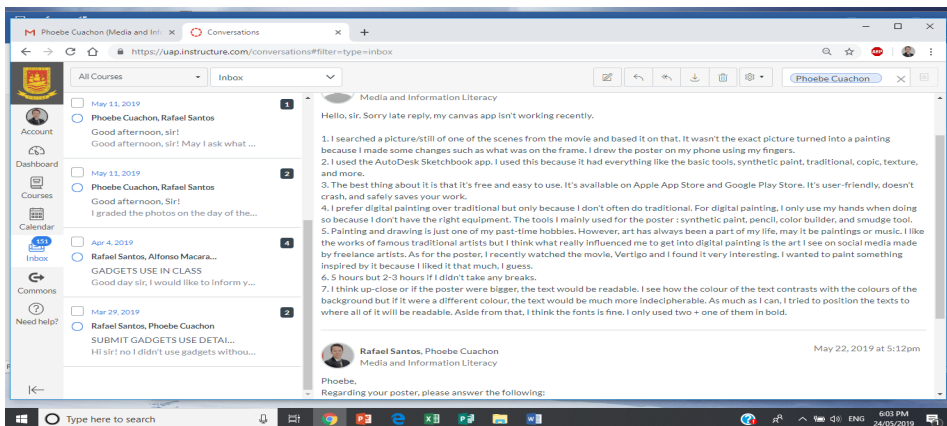
Part 3-B: Assessment Questions and Sample Answers: Visual Project

AQ1: Describe how you accomplished the project.

Student: I searched a picture/still of one of the scenes from the [Vertigo] movie and based it on that. It wasn't the exact picture turned into a painting because I made some changes such as what was on the frame. I drew the poster on my phone using my fingers.

AQ2: What app/software did you use to complete it, and why that particular software or app?

Student: I used the Autodesk Sketchbook app. used this because it had everything like the basic tools, synthetic paint, traditional, copic, texture, and more.

AQ3: Is the app/software free? Is it available online? Is it user-friendly?

Student: The best thing about it is that it's free and easy to use. It's available on Apple App Store and Google Play Store. It's user-friendly, doesn't crash, and safely saves your work.

AQ4: Did you paint? How?

Student: I prefer digital painting over traditional but only because I don't often do traditional. For digital painting, I only use my hands when doing so because I don't have the right equipment. The tools I mainly used for the poster: synthetic paint, pencil, color builder, and smudge tool.

AQ5: What led you to paint?

Student: Painting and drawing is just one of my past-time hobbies. However, art has always been a part of my life, may it be paintings or music. I like the works of famous traditional artists but I think what really influenced me to get into digital painting is the art I see on social media made by freelance artists. As for the poster, I recently watched the movie, Vertigo and I found it very interesting. I wanted to paint something inspired by it because I liked it that much, I guess.

AQ6: How long did you complete the project?

Student: 5 hours but 2-3 hours if I didn't take any breaks.

AQ7: How would you describe the readability of the text?

Student: I think up-close or if the poster were bigger, the text would be readable. I see how the colour of the text contrasts with the colours of the background but if it were a different colour, the text would be much more indecipherable. As much as I can, I tried to position the texts to where all of it will be readable. Aside from that, I think the fonts is fine. I only used two + one of them in bold.

Part 3-C: A Sample Visual Design Project by PC, a female student
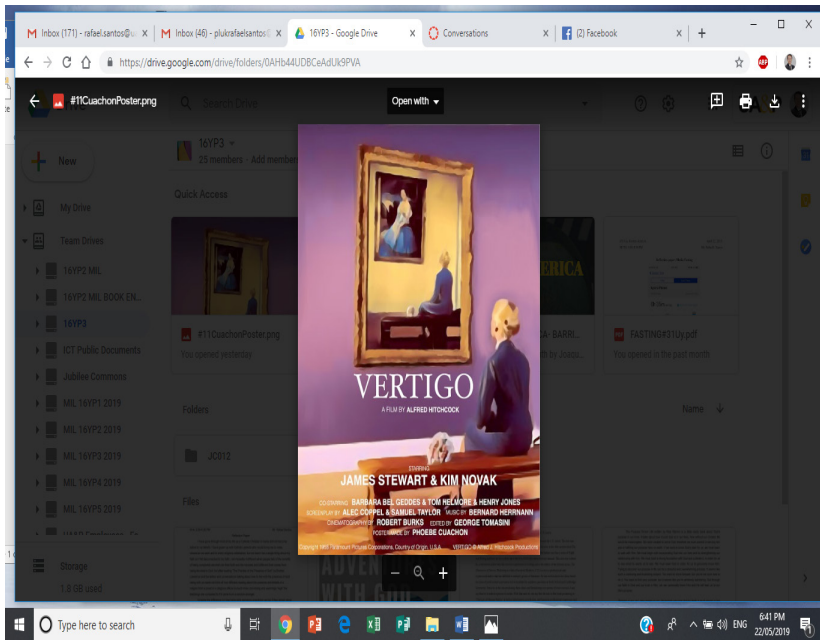
Part 4: The Canvas record of students' performance in eight MIL tasks

Part 5: A screenshot of sample self-assessment responses scores sent via group chat and then eventually sent to Canvas

Enhanced Campus Automation System and the emerging need for IoT integration: an automation perspective. [eCAS-IoT]

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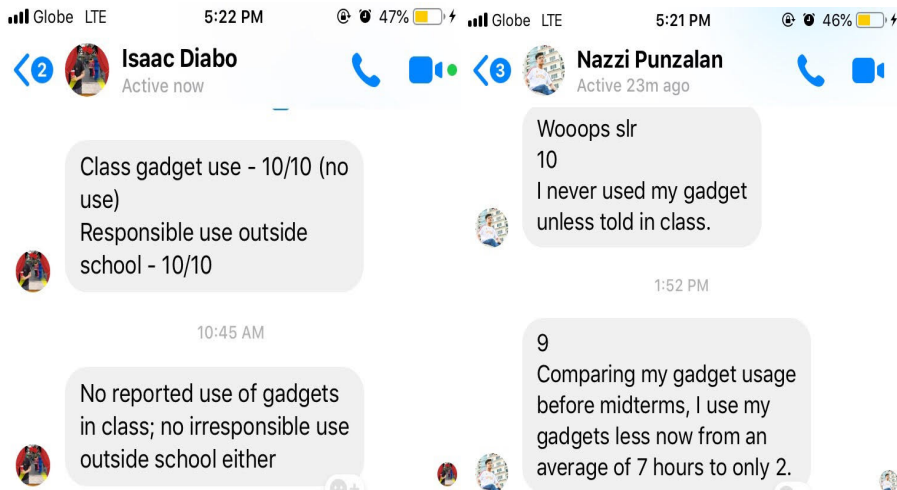
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Abstract: Technology has the power to break the limitations of traditional passive learning and innovate almost all aspects of everyday life with the power of connecting things of the world to the Internet, "Internet of Things (IoT)." IoT is no longer a phenomenon, but it has become a prevalent system in which people, processes, data, and things connect to the Internet and each other. This paper 'Enhanced Campus Automation System and the emerging need of IoT integration: an automation perspective' [eCAS-IoT] is an outcome of case study undertaken at St. Aloysius' College, Jabalpur, India, wherein the automation challenges are taken into consideration that has been integrated in the existing ERP and related tools such as RFID based attendance and monitoring system in real-time, digital library, API integration and implementation of Optical Network. In this paper we have tried to bring out ideas to achieve the campus automation challenges and awareness of greater need of technical expertise, promotion and training on the effective use of ICT and related devices to make teaching, learning and administration more impacting.

Key words: Campus automation, Internet of Things (IoT), Radio-Frequency identification (RFID), Optical Network.

INTRODUCTION

A Campus Automation system is an ERP solution to manage an Academic campus be it a College, institute or university. It brings an bring an effective system to manage all the aspects of an institution and seamlessly

integrates different administrative departments and ensures a smooth flow of information among them. It is empowered with the latest tools that facilitate process streamlining and efficient working environment for each department and provide seamless information sharing among related entities namely – the students, teachers, parents, alumni, teaching and learning entities, etc.

A typical Campus automation system includes Admission, Fee Management, Attendance, Examination, Library, Alerts, Canteen, Laboratory, Transport, Communication, Hostel, Alumni Management, Faculty Management, HR Management, Department Management, Account Management, Inventory Management, Placement and Training, Extracurricular Activity, Sports, Health, Research & Development, etc.

Educational institutes of this era need a better automation for a better and smarter management of all the important activities that pertain to an effective administration of the institution and its constituents like Payment Gateway, Barcode, RFID, SMS, Email, Website and IoT integration, all over a smart network, Optical Network.

The St. Aloysius College, Jabalpur [SACJ] has a blended learning environment for teaching and learning with digitally mediated and face-to-face activity. The students and teachers has experienced flipping the classroom by moving the course content out of the classroom to an online format allowing class time to be more interactive. This learning has improved the educational productivity by accelerating the rate of learning, taking advantage of learning time outside of college hours and better utilizing teacher time. (Siby, 2018)

SACJ has augmented student support, services, assessment and teaching and learning using ERP- eCAS and Android app-EduSAC over traditional methods. eCAS is managed by the Campus System Administrator using data server, web server, mail server etc.

The modern computer environment has moved past the local data center with a single entry and exit point to a global network comprising many data centers and hundreds of entry and exit points, commonly referred as Cloud Computing, used by all possible devices with numerous entry and exit point for transactions, online processing, request and responses traveling across the network, making the ever complex networks even more complex, making traversing, monitoring and detecting threats over such an environment a big challenge for Network forensic and investigation for cybercrimes. (Rajeshwar, 2014)

Soon the college is immigrating to local cloud environment with the aim for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources. They can be put in virtual environments where they can be accessed remotely.

Here the technology is ubiquitous and has become an integral part of students' daily lives. Use of mobile, ipad, digit learning environment, app etc., has brought in transformation, how they communicate and gather information, allocate time and attention, and potentially how they learn in both the campus and off-campus; it has enriched the campus and academic experience of the students.

The use of the app has unlocked the limitations of the classroom's geographical boundaries; the students can fetch the entire library in classroom. Admission, fee submission and providing feedback have no constraints to be physically present in campus, everything can be done from remote. Thus the ever-growing mobile landscape represents new opportunities for learners both inside and outside the classroom for college learners.

The technology upgraded campus can bring impact on classroom setting on both teaching and learning practices. The introduction of mobile app entails a shift in the way the students learn, as the devices provide interactive, media-rich, and exciting new environments.

TECHNOLOGY AND CHALLENGES

Technology has the power to break the limitations of traditional passive learning and innovate almost all aspects of everyday life. Challenges and limitations exist in any (or all) of the components/modules of an ERP or automation system but we would like to draw attention on the following four modules where St. Aloysius' College, Jabalpur [SACJ] has introduce and incorporated innovative ways to its ERP named 'Enhanced Campus Automation System(eCAS)' to deal with and its challenges:

1. Library Management system

A good Library Management System (LMS) has to facilitate integration with the Digital Library, external web resources, RFID and other technologies in support of IoT. There are many opensource software available for Library Management System like KOHA, Evergreen, etc. to name a few that best

suits for day-to-day working of Library but when it comes to integration of different API and IoT devices, it demands good programming knowledge to cater the customization needs and in turn increases the cost of maintenance. At SACJ, the Library Management System is an integral part of the ERP that runs in synchronization with each other, both web-based as well as a Utility standalone application, instead of being an isolated application sharing some of the parameters of the application. Thus, if a student is suspended by the teacher, then all associated services of that student are suspended or when freeze by the Librarian then other related services like Admit Card, Result, etc are suspended. Special clauses can be incorporated like: generation of Admit Card only after the clearance of Library, Internals and Course dues, generation of Marksheet and other reports only after the clearance of the respected dues.

Previously the Log Register of the Library is kept at the entrance of the Library where students, teachers and visitors are expected to log in and out time, which in many cases becomes unsuccessful because of rush hours and allocated schedule. Now the students of SACJ are issued a RFID enabled ID Cards which enables the students to just tap of the iAttendance device, made by students of final year UG students of Computer Application by programming Arduino boards and using electronic waste available at Campus. Further we are upgrading the system which would enable the iAttendance device to catch the in and out automatically.

2. Alerts and Communication System

In addition to existing system of providing alerts and communication through SMS, Email, web notifications now a days Ticketing based enquiry system, RFID based alerts, and mobile app notifications are much in demand. Some advanced campus requires online tracking system based of GPS solutions. At SACJ, notifications and greetings are being sent to mobile

app, and also posted in the notification section of the student dashboard in addition to SMS, email and web notifications. A newer Ticketing system is introduced in the year 2017 which has been integrated in the Student Dashboard of the existing ERP wherein the students can post their queries, technical issues, personal feedbacks and comments for the institution and the automation system. In this system, students have given the option to direct their post specifically to Principal, Vice Principal or System Administrator. The figure below is the screenshot of the Query section of the Student Dashboard.

In future, the project committee is planning for the development of GPS based gadgets and application that will be able to track the location-based activities, all with the motive to facilitate the teaching, learning, and administration in an efficient way.

3. RFID based Attendance System

Attendance System has gone through many advancements in collecting inputs like Barcode Chips, Mobile Apps, Biometric device, RFID Cards to name a few from the user with advantages and disadvantages of the respective system over the decades. At SACJ, the new initiative of taking attendance by RFID cards with IoT enabled iAttendance devices in real-time. Hear the word 'real-time' make sense by distinguishing it from bio-metric devices wherein data has to be exported at the end of day to be imported in ERP; here in iAttendance system, the devices are connected to internet and the attendance is punched directly to the database without being need of exporting and importing overhead. Every teacher is given the RFID embedded ID Cards to start the session and then the devices are given to the students during the class so that by the end of the class it comes back to

the teacher to end the session by her ID and can also see the live statistics on laptop screen. The iAttendance device used at SACJ was initially a minor project made by Shailendra Garg (ID=37402), a Second-year student Bachelor of Computer Application by making use of **e-waste** (like damaged chargers, Mouse, Keyboard cables, LEDs,Buttons of LAN Switch, Antena, etc) and **NodeMCU**, an open source IoT platform. Further guided by teachers and funded by the College, this project has been taken up at an institution level for the development of IoT based iAttendance and iLoginout systems. The picture below shows the inside (components) and outside view of the device.
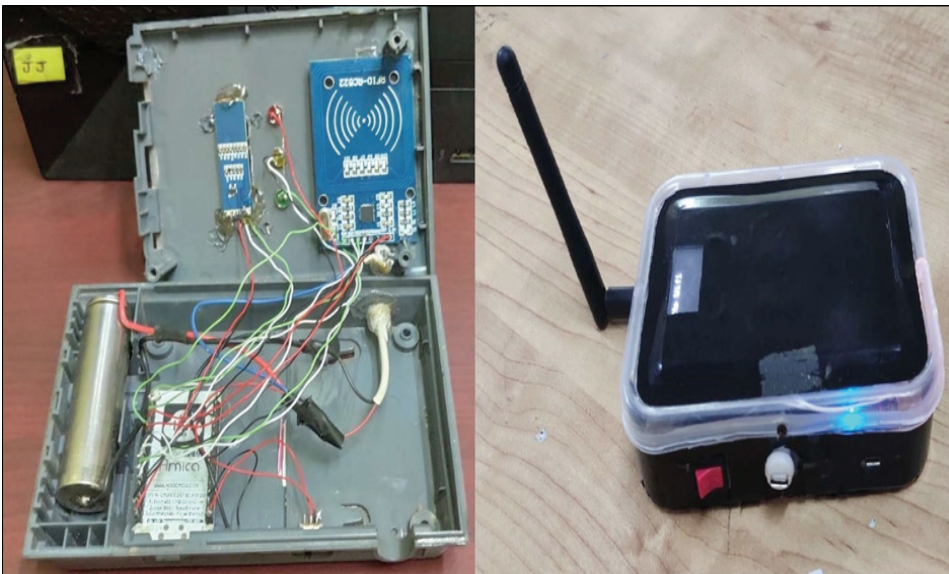
4. Transition in Network Architecture

The success of any ERP and IoT enabled devices relies on the network throughput and performance of the hosted servers. To run these applications efficiently we need better connectivity and network support. Traditional copper-based local area networks (LANs) have served as the in-building network technology backbone on campuses for decades. That worked in the early days of connectivity; however, nowadays there is a problem with this approach. Simply put, in order to accommodate higher education's growing IoT (Internet of Things) connectivity needs, these networks will require extensive high-priced and laborious upgrades. (er.educause.edu, 2019)

Instead of dedicating time and resources upgrading networks with antiquated copper-based technology, there is an alternative backbone network

infrastructure that better fits any higher education campus — passive optical LAN.

Optical Network

An Optical Network is basically a communication network used for the exchange of information through an optical fiber cable between one end to another. It is one of the fastest networks used for data communication. Today's internet era is based on fiber cable and only the optical signals can be transmitted through these cables. Thus, the need for optical network emerges. The basic setup of a passive Optical Network is shown below.
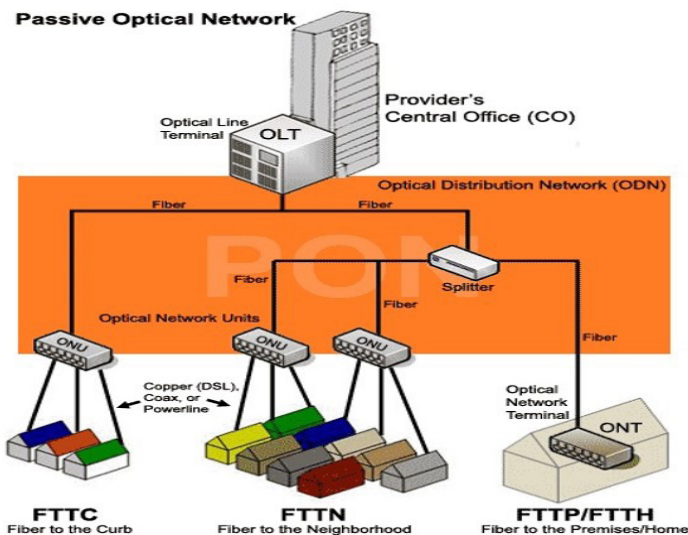
The explosive growth of internet traffic, audio/video streaming and mobile applications has led to a dramatic increase in the demand for transmission bandwidth, imposing a requirement for high speed broadband networks. Shodhganga, 10603, Chapter 2) The exponential growth of Internet data traffic pushes hard the telecommunication infrastructure for upgrading the transmission data rate. At the optical access level, a passive optical network is the most popular and lowest cost architecture which enables high speed access for enterprise and private users. (Wei, 2016)

Both from a technological and cost-saving standpoint, this technology is better structured to handle the needs of IoT and can do it at a fraction of the cost required to make copper-based LANs work.

The main capital saving of a Passive Optical LAN network comes from

the installation and equipment in the riser closets. It can help eliminate the use of multiple edge switches by replacing them with Passive Optical splitters. In this implementation, we were able to leverage much of the existing infrastructure for cable installation, such as the cable ladder tray, and we could easily access the open ceiling to distribute the cables.

The reduction in the quantity of cables and the size of cable bundles is astonishing. The picture below (Figure 7, IBM Smarter Networks with Passive Optical LANs, p.11) below shows a picture taken before the original CAT 5 cables are removed. The yellow fiber cable bundle is a Passive Optical LAN implementation. The number of end users and devices supported by the Passive Optical LAN fiber cabling is a factor of six larger than those supported by the CAT 5 copper cables. (IBM White papers, 2014)
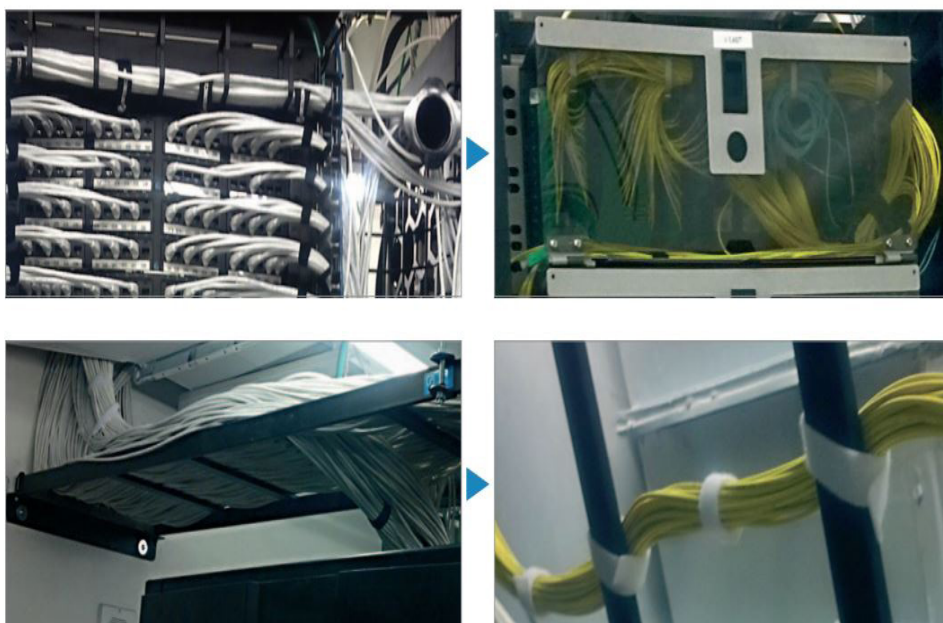
Figure 7. Cable size of CAT 5 vs. optical fiber Implemented in the same building infrastructure. The rack and cables at the left side were an early LAN implementation supporting one half floor. The yellow cables at the right side are the Passive Optical LAN implementation to replace the original LAN implementation—supporting three and one half floors.

Compared to a CATx copper cable, single-mode fiber (SMF) is smaller, lighter, and stronger; has a tighter bend radius, higher bandwidth capacity, and longer reach; is less susceptible to electromagnetic interference (EMI); boasts faster connector solutions and longer life; and, with lower material cost than CATx, is comparatively less expensive. This architecture reduces

operating costs, fewer electronics, less cabling and lower power needs.

The advantages of fiber are: (Yatindra, IITK)

- Large Bandwidth-distance product.
- Immunity to noise and interferences
- Very low cost per unit bandwidth
- Easy upgradability using WDM technology
- Tapping of signal from fiber without being detected is difficult.

Due to all these advantages:

- Optical fiber Networks have high capacity
- Can be used for providing the high bandwidth services

As per Cisco VNI (2017-2022), the total Internet traffic has experienced dramatic growth in the past two decades. More than 20 years ago, in 1992, global Internet networks carried approximately 100 GB of traffic per day. Ten years later, in 2002, global Internet traffic amounted to 100 Gigabytes per second (GB/second). In 2017, global Internet traffic reached more than 45,000 GB/second. Table 1 provides a view of the historical benchmarks for total Internet traffic.

Table 1. The Cisco VNI (Visual Networking Index) forecast (2018): historical Internet context

Year	Global Internet Traffic
1992	100 GB per day
1997	100 GB per hour
2002	100 GB per second
2007	2,000 GB per second
2017	46,600 GB per second
2022	150,700 GB per second

The below mentioned statistic received from Statista website (2019), it gives information on the global IP data traffic from 2016 to 2021. In 2021, IP data traffic worldwide is expected to reach 278,108 petabytes per month.
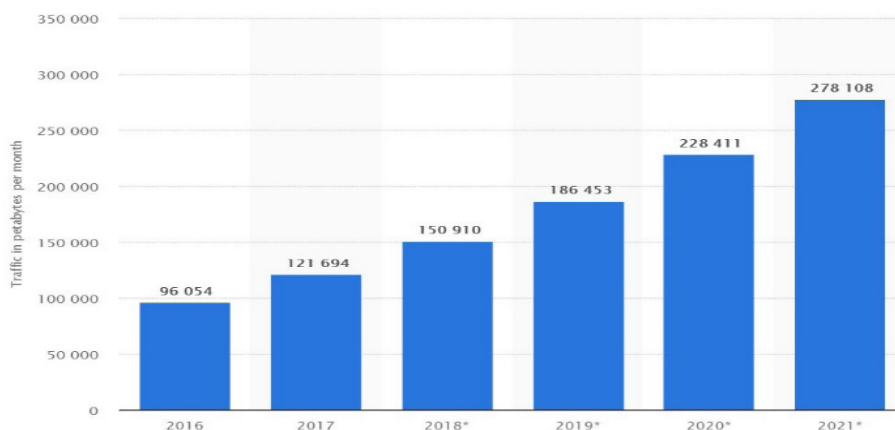
These statistics give an alarm to the education institutions for the ever-growing emerging need of data traffic or the internet bandwidth on and off the campus in coming years. This require the network to be implemented in such a way that it caters the need of high bandwidth utilization and connectivity for IoT enabled devices used for teaching, learning, evaluation and administrative processes.

These network challenges thus bring the transition from traditional copper-based local area networks (LANs) to passive Optical networks. At SACJ, these network challenges have been resolved by accepting the transition from Copper-based LAN to passive Optical LAN using the concept of Fiber-to-the-home (FTTH) broadband solution. All the classrooms which were previously equipped with the Ethernet supported Access Point are now replaced with the latest GPON (Gigabit PON) devices which are ITU (International Telecommunication Union) standard devices whose bandwidth efficiency is found much better than other counterpart devices like EPON (Ethernet PON). Both the Local and global network has now been upgraded to completely based on Optical Fiber.

Technology helps Higher Education move forward

A recent Gartner report predicts the total amount of connected devices will reach 20 billion by 2020. This means that in less than four years, the number of connected gadgets and products will be three times greater than the Earth's current population.

Throughout the world, higher education officials are contemplating

their growing connectivity needs, as the IoT becomes an increasingly important variable on their campuses. While modernizing existing legacy copper-based LANs seems a valid option, the costs and staff time required for this upgrade strongly suggest otherwise. Passive optical LANs offer a better alternative. This network architecture helps meet rising connectivity demands by shoring up interior IT facility infrastructures and by gaining three advantages compared to legacy copper infrastructure: network simplicity, network scalability, and cabling superiority.

By installing passive optical LANs, higher education IT departments can realize significantly greater density gigabit Ethernet endpoints for IoT while occupying a much smaller footprint. This allows facility infrastructures to support current and future IoT demands for voice, video, data, wireless, security, campus environmental, campus automation, and all other IoT endpoints. Transitioning to a passive optical LAN will assure campuses everywhere infrastructures ready for the inevitable IoT transformation.

CONCLUSION

Holistic education aims to qualify a student from intrinsic reverence for life and a passionate love of learning. The project 'Enhanced Campus Automation System and the emerging need of IoT integration: an automation perspective' [eCAS-IoT] undertaken at St. Aloysius' College, Jabalpur, India, has successfully overcomed the difficulties faced during regular activities of the College like online attendance, use of Biometric and Barcode based devices, ICT based lecture delivery, exhaustive reports requirements, etc. The proposed RFID integration has helped a lot in the online attendance system with IoT supported devices and are working on the same technology using programmable Open Suource devices like NodeMCU, in support with the student project group, trying to ue electronic waste (e-waste) as much as possible.

The eCAS-IoT project has grabbed much attention of the College management and the society as the institution aims to link teachers to their students and to professional content, resources, and systems to help them improve and personalize learning using technology as it has the power to transform teaching by ushering in a new model of connected environment thereby stimulating wholistic improvement. The increasing use of media and technologies for enhancing teaching and learning is an important current

trend to overcome the challenges of teaching and learning in the changing world. People are doing amazing things everyday by the use of technology.

In the institution the technology has infused classrooms with digital learning tools, such as computers, DLP, document camera, Wi-Fi environment, promoting virtual lectures using Polycom and learning materials that enables them to use institutional resources and learning materials on the go. It has increased student engagement and motivation as they are now more connected thereby fulfilling the mission of the college to create and facilitate an environment for knowledge, research, skill, self-reliance and humanity that stimulates whole person education.

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Digital-Based Communicative Competence Assessment for Teachers of Bilingual Program

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Abstract: This study is a part of educational R and D cycles which focuses on the needs of digital-based communicative competence assessment instrument for bilingual program teachers. This study involved 35 bilingual program teachers and 10 assessors in Central Java as participants of focus group discussion. To support the qualitative approach employed in this study, the writers also used semi open-ended questionnaire, and in-depth interviews as the research instruments. The findings of this study showed the positive perceptions towards digital CCA instrument and the expected features of digital-based CCA to enhance teachers' professional development.

Key words: digital, communicative competence assessment, bilingual program, teacher

INTRODUCTION

Teachers are seen as the most contributing factor to the students' outcome or achievement (Hattie, 2008). Therefore, investing on teacher professional development is worth for the success of the future generation educational path. In addition to that, teacher quality should meet parents' expectation towards the educational system and services given by the schools. Moreover schools which offer special programs such as bilingual programs should meet parents' high expectation to send their children to those schools. In fact, by sending their children to English speaking schools, parents are expecting their children to be excellent bilingual speakers (Hartono,2014). The question is : can the schools meet parents' expectations ? Again, teachers play crucial role to the success of the school goals.

As the one who gives most instructions to the students in the classroom, teacher's role is central in the teaching and learning process. In fact, the classroom's dynamics are much influenced by teachers' ability to communicate with their students. Professionally, teachers are demanded to be effective in their classroom both in delivering the lessons and managing the classroom. Campbell, Kyriakides, Muijs, and Robinson (2004, p. 11) provide the definition of teacher effectiveness and describe it as : "the power to realize socially valued objectives agreed for teacher's work, especially, but not exclusively, the work concerned with enabling students to learn". To do so, teachers need to have good communication ability.

The ability to communicate appropriately according to the settings, language rules, and communicative purposes is known as communicative competence (Celce-Murcia, 1995). As reflected in the practices of teaching and learning process, teacher's communicative competence is very crucial. Teacher's ability to use language appropriately for classroom discourse will determine the success of a classroom interaction and contribute to the success of teaching and learning. In the case of teachers at bilingual programs, teachers are not only demanded to have good communicative competence in the first language but they are also required to have good communicative competence in the additional language(s).

In Indonesia, most of the bilingual programs run by schools from the primary level to high schools involve the use of native language and one or more foreign languages. English is one of the foreign languages mostly taught in bilingual programs in Indonesia. It is in accordance with Crystal (2003, pp. 60-71) who observes that the number of people who are able to speak English is increasing in the last few decades. Further, he also mentions that there is a shift taking place in the number of English users as first language. In 1960s, the most English users were detected as the first language speakers but now there are more people speak English as a second language and even there are many more speak it as a foreign language. This study was encouraged by the facts that not all primary bilingual school teachers in Central Java have English education background nor experience of teaching their subjects in English. Therefore, not all of the teachers have good competencies in English. To give the best educational services, schools need to know their teachers's level of communicative competence. This background has motivated the writers to conduct an empirical study related to teachers' communicative competences. This study was a part of en educational R and D cycles by which a survey on the respondents needs of digital based communicative

competence instrument was conducted. The objective of this study was to see the respondents' perceptions on digital-based communicative competence assessment (CCA) instrument and the expected features of digital-based CCA instrument. The results of this study will be used to develop a model of digital CCA instrument.

LITERATURE REVIEW

A. Communicative Competence

The term "communicative competence" was introduced in 1960s by Dell Hymes as a counter-argument against what was called "linguistic competence" as proposed by linguist Noam Chomsky (Celce-Murcia, 2007). The focus of Chomsky's attention is linguistic competence excluded social factors. Hymes argued that language acquisition was not context-free. He condemned that in addition to linguistic competence, sociolinguistic competence was needed. In applied linguistics, communicative competence was then adopted in the practice of language teaching and learning process.

Since then, other linguists such as Canale and Swain had modified the model of communicative competence from the one proposed by Hymes by adding strategic competence and discourse competence. In 1995, Celce-Murcia added actional competence as a part of communicative competence so that there were five components of communicative competence so called the linguistic competence, actional competence, strategic competence, discourse competence, and sociocultural competence with discourse competence as the core.

In 2007, Celce-Murcia proposed a model of communicative competence for language teachers. The model was the development of 1995 model with addition of formulaic competence and interactional competence as the modification of actional competence. Thus, the communicative competence model consists of :

   a. Sociocultural competence which refers to the speaker's pragmatic knowledge that is how to express messages appropriately within the overall social and cultural context of communication (Celce-Murcia, 2007).
   b. Discourse competence that refers to the selection, sequencing,

and arrangement of words, structures, and utterances to achieve a unified spoken message.

c. Linguistic competence which includes the knowledge in phonology, lexicon, morphology, and syntax. In short, this is the competence that enables target language users to use the language correctly according to the rules of the language.

d. Formulaic competence

    Celce-Murcia (2007, p. 47) refers this competence to "those fixed and pre-fabricated chunks of language that speakers use heavily in everyday interaction". A speaker of a language can be called as fluent speaker when he or she has and uses formulaic knowledge as much as he or she has systematic linguistic knowledge.

e. Interactional competence which covers three components :

    -   Actional competence that is the competence to perform action through speech acts. Target language users with actional competence can perform interactions and express opinions and feelings in the target language

    -   Conversational competence which is the ability to handle conversation including how to open, close, interrupt, and backchannel

    -   Non-verbal/paralinguistic competence which includes the use of non-verbal language to support an interaction in the target language.

f. Strategic Competence which refers to the ability to sustain smoothly in a communication.

Teachers of bilingual program should have all the aspects that comprise the communicative competence.

B. Assessment

Along with the history of language teaching, assessment has been a part of the teaching cycle. In fact, there have been numbers of studies related to assessment tools and the assessment of learners' communicative competence. Some of the previous researches deal with intercultural competence (Arasaratman, 2009; Sercu, 2005) of students and teachers. There are also some previous studies about teachers' performance and competence in Indonesia and other countries as reported in the studies of Gordon, Kane and Steigger (2006) "Identifying Effective Teachers Using Performance on

the Job"; Anugerahwati, (2012) "Professional Competence for Teachers of English in Indonesia" and "The study of teacher competence at schools in the three southern provinces of Thailand" (Achwarin, 2010). Some other studies related to the policy and the implementation of international standard schools in Indonesia also provide vivid description of the use of English at schools in Indonesia (Kustulasari, 2009; Sumintono and Mislan, 2012). Meanwhile, Cheng and Warren's (2002) study concerns more on peer assessment in language proficiency.

Assessment practices are defined as a process of inquiry that integrates multiple sources of evidence, whether test-based or not, to support an interpretation, decision, or action (Moss et all, 2006 as cited by Freeman, Orzulak and Morrissey in Burn and Richard, 2009, p. 78). Moss argues that assessment involves two main aspects namely questions or problems and evidence. The evidence is used to address questions or problems, to support interpretation, decision and action. Educational institution needs to conduct assessment for teacher's teaching performance as teacher's performance is the reflection of his or her competence. The assessment will be useful to support decision and action needed for individual teacher professional development as well as the schools continuous effort to improve the quality.

Douglas Brown in his book "*Language Assessment Principles and Classroom Practices"* defines test as "a method of measuring a person's ability, knowledge, or performance in a given domain" (2003, p.3). By that definition, there are some components of a test which reflect the role of a test in a teaching cycle. Those components are method, measurement, performance, and given domain.

The first component is method. As a method, test is therefore an explicit and structured instrument which consists of a set of techniques, procedures, or items. Tests may take form as multiple choice questions, filled-in questions, writing prompt with scoring rubric, oral interview based on question script and so on (Brown, 2003). Next, test is a means of measurement. In social sciences, measurement is the process of quantifying the characteristics of persons according to explicit procedures and rules (Bachman, 1995, p.18). Some tests measure general abilities while some others measure very specific competencies. Tests measure performance but the results imply the test takers' ability. In the field of applied linguistics, tests' results imply the test-takers' competence. The last component of a test is a given domain. Tests are constructed to measure the test-taker's ability

within a certain domain.

While a test is prepared administrative procedures that are scheduled for some particular times in a curriculum, assessment is, on the other hand, an ongoing process that encompasses wider domain. Assessment can be done formally and informally. Informal assessment can be taken by a teacher when students answer questions, give comments, or even try to use new words or expressions. Thus, it can take forms as "incidental, unplanned comments and responses along with coaching and other impromptu feedback to the students" (Brown, 2003, p.5). Some examples of informal assessments are teachers' comments which serve as feedback such as "good job !", "Did you say *rent* or *lent* ?" , "Well, I think what you mean is I broke the glass, not I break the glass".

On the other hand, formal assessments are "exercises or procedures specifically designed to tap into a storehouse of skills and knowledge" (Brown, 2003, p.6). This kind of assessment is a systematic and planned sampling technique used by teacher to measure students' achievement. From this point, it can be said that all tests are formal assessment although not all formal assessment is testing because tests are usually relatively time-constrained. Portfolio can be seen as a formal assessment but it is hardly called as a test.

In the teaching practice, assessment can also be viewed from two functions which are identified as formative and summative assessment. Most of the informal assessment in the classroom can be grouped as formative assessment in which teachers give feedback to improve the learners' ability. Hence, the formative assessment is mainly focused on the ongoing development of learners' language ability. Summative assessment is the one prepared by teachers to measure students' achievement at the end of the course.

Another distinction of assessment is known as norm-referenced tests (NR) and criterion-referenced tests (CR) (Brown, 2003, Douglas, 2000). The purpose of NR is to place test-takers in a continuum rank. The test-takers' achievement is based on their rank. Examples of NR tests are standardized tests like Scholastic Aptitude Test (SAT) or the Test of English as a Foreign Language (TOEFL). The CR test is aimed to maximize the distinctions among the test-takers so as to rank them based on the ability tested. Thus, test-takers who can meet the criteria determined can pass the test.

Historically, there are two major testing approaches in language testing called Discrete-Point and Integrative Testing. Discrete-Point is based on a view that language can be broken down into its components and the parts can be tested separately. Those components of language : speaking, writing, reading, listening, and other units of language such as phonology, syntax, morphology, lexicon, vocabulary, and discourse. Another argument says that language competence is a unified set of interacting abilities that cannot be tested separately. Communicative competence is global and requires integration. This argument was then known as unitary trait hypothesis which suggested indivisible view of language proficiency : the four skills of language, vocabulary, grammar, and phonology cannot be disentangled from each other in language performance (Brown, 2003).

In the mid 1980s, the argument about unitary trait hypothesis was abandoned and people started to design communicative language testing tasks with a focus on communicative performance. Bachman and Palmer stressed the need to consider both language test performance and language use. They also emphasized the importance of strategic competence which is "the ability to compensate for breakdowns as well as to enhance the rhetorical effect of utterances" (Brown, 2003, p.10). The challenge faced by test designers is to provide real-world tasks that must be performed by test-takers. The real-world tasks allow the test-takers demonstrate their language competence through their performance. One characteristic of performance-based assessment is the presence of interactive tasks.

From the explanation above, it can be concluded that assessment is an integral part of the teaching-learning cycle. Tests are the subset of assessment which can give feedback as well as input about the learners' achievement and the success of the teaching. Brown (2003, p.16) provides some basic principles of assessment :

- Periodic assessments, both formal and informal can increase motivation by serving as milestones of student progress
- Appropriate assessments aid in the reinforcement and retention of information
- Assessment can confirm areas of strength and pinpoint areas needing further work.
- Assessment can provide a sense of periodic closure to modules within a curriculum.

- Assessments can promote student autonomy by encouraging students' self-evaluation of their progress.
- Assessment can spur learners to set goals for themselves.
- Assessments can aid in evaluating teaching effectiveness.

The advancement of technology has affected some aspects of assessment. The Technology Enhanced Assessment (TEA) offers some potentials such as the more various modalities to demonstrate achievement, more opportunities for learners to enhance the decision –making skills, increasing flexibility, supporting and enhancing collaboration, assessing complex problem solving skills, enhancing feedback to students, innovation in recording achievement, and exploiting learning analytics locally and nationally (Timmis, Broadfoot, Sutherland, Oldfield, 2016).

METHODOLOGY

This research was designed as an educational research and development study (R and D). Gall, Gall, and Borg (2003, p. 569) mention that :

> Educational Research and Development (Educational R & D) is an industry-based development model in which the findings of the research are used to design new products and procedures, which then are systematically field-tested, evaluated, and refined until they meet specified criteria of effectiveness, quality, or similar standard.

Further, Borg and Gall (1983, p. 772) define Educational R & D as the following :

> Educational Research and Development (R & D) is a process used to develop and validate educational products. The steps of this process are usually referred to as the R & D cycle, which consists of studying research findings pertinent to the product to be developed, developing the product based on these findings, field testing it in the setting where it will be used eventually, and revising to correct the deficiencies found in the field-testing stage. In more rigorous programs of R & D, this cycle is repeated until the field-test data indicate that the product meets its defined objectives.

A. **Type of research**

Qualitative approach was applied in this phase. Creswell (2009, p.4) defines qualitative research as a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. This method is meant to dig and gain data from natural setting. The output of this phase was an analysis of the existing model of communicative competence assessment instrument with the discussion of their strengths and weaknesses. Besides, from this phase, the writer also got the analysis of teachers' needs to improve the paper-based communicative competence assessment instrument to the digital one.

B. Research subjects

There were 35 teachers from 6 schools and 10 assessors which consisted of lecturers of English Department from 5 universities in Indonesia involved as subjects for the research. The teachers involved in this study were those who taught at the bilingual programs and used English when they teach their subjects. Meanwhile, the English Department lecturers involved in this study were those who understood the concept of communicative competence and had tried out the paper- based communicative competence assessment instrument.

C. Research procedure

This following procedure shows how this research was conducted:

1. Administering questionnaire

The first step to do in this phase was constructing semi-open ended questionnaire to collect data from the respondents. The questionnaire was meant to get a picture of respondents' perceptions on digital-base communicative competence assessment. Before distributing the questionnaire, the writer checked the content validity of the questionnaire with some faculty members of English department who were competent in this field.

2. Focus Group Discussion

The purpose of doing focus group discussion is to collect data related with respondents'view on the existing communicative competence assessment (the paper-based CCA) and digital-based assessment instrument. The focus group discussions were conducted twice with two different groups. The first group consisted of bilingual program teachers and the other group was

assessor group. The FGDs were also meant to confirm the results of the questionnaire.

3. In-dept Interviews

The interviews were conducted to reconfirm the data from focus group discussion. The interviews were done with several respondents from both teachers and assessors.

RESULTS AND DISCUSSIONS

The results of this study provide information of how the teachers and assessors perceived both the paper-based and the digital-based communicative competence assessment instruments. Generally, the respondents agreed that assessing their communicative competence was important. It is shown by the results of the questionnaire in which 100% of the respondents agree that assessing their communicative competence is important. This answer is supported by these following reasons:

- The CCA is a reflection of one's strengths and weaknesses
- The result of the CCA is a stepping stone to improve one's competencies
- CCA is important to determine the most appropriate professional training
- CCA is a part of school quality assurance

Regarding the model of digital CCA, 30 out 45 respondents chose web application rather than mobile application. It can be seen in this following table:

Table 1. Application
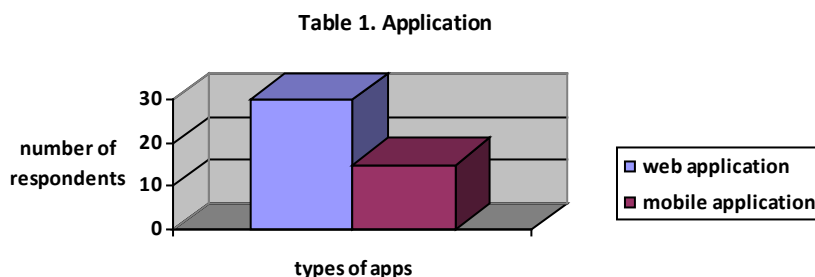
During the FGD, the respondents confirmed that they rather chose web application because it could apply to any devices (mobile phone, laptop, or PC). They did not like to have a lot of applications in their mobile phone which required more memory in their gadgets. While the rest of the respondents preferred to have mobile application which was more friendly for them and it could be used both offline and online.

Before starting the FGD, all respondents were given a chance to try out the paper-based CCA instrument. 36 of 45 (80%) of the respondents (teachers and assessors) said that they had no problem with the content of paper-based communicative competence assessment (CCA) instrument. They agreed that the three components of the assessments support and complete one another. It is in line with what Moss (2008) who condemns that an assessment mainly consists of questions or problems and evidence. Therefore, performance assessment is necessary to be included in the assessment set. Meanwhile, out of 10 assessors there was only one assessor who saw some weaknesses in the paper based CCA instrument, especially in the performance assessment. In some cases, it is not easy to apply performance assessment to senior teachers. Commonly senior teachers did not feel comfortable to be assessed during their classes. Nevertheless, all respondents mentioned that the performance assessment was crucial to support the other sets of assessment. Further, it confirms Moss's (2008) argument that evidence which is in this case teachers' performance supports interpretation, decision and action. Educational institution needs to conduct assessment for teacher's teaching performance as teacher's performance is the reflection of his or her competence. The assessment will be useful to support decision and action needed for individual teacher professional development as well as the schools continuous effort to improve the quality. Thus, during the FGD, the respondents also suggested some methods to do the performance assessment such as through CCTV or one way glass window.

Considering that the paper-based Communicative Competence Assessment consists of three main elements so called the self-reflection assessment, receptive productive assessment, and performance assessment, the existing assessment requires a lot of paper. Thus, it is seen impractical and not environmental friendly. This issue was highlighted in the focus group discussion. Therefore, all respondents agreed to have more environmental friendly assessment by reducing the use of paper. However, during in-depth interviews, some teachers and assessors still find it easier to read and complete the paper-based assessment.

In line with Timmis, Broadfoot, Sutherland, Oldfield (2016) who see some challenges in the application of TEA in learning process, the purpose of using digital-based assessment is not only to reduce the cost and paper but it should also leave a space for innovation and improvement in assessment. In two different groups of discussion, both teachers and assessors who became the respondnets of this study saw the digital-based CCA instruments offered simplicity, ease, and practicality.

Regarding the features of digital-based CCA instrument, the results of the questionnaire, FGD, and in-depth interviews confirm that the respondents expected to have application which can easily be accessed and friendly user. This includes these following issues: having clear instruction, multiple choice questions (more preferraby), showing direct results, and having attractive background appearance.

CONCLUSION

From the results of the data analysis, it can be concluded that the respondents under this study have positive perception towards the digital-based CCA instrument. In terms of content and instruction, the paper-based CCA instrument have represented a well-designed assessment. The transfer from the paper-based to the digital version should not change the content of the assessment. However, the digital-based version should accommodate respondents' expectation to have user friendly digital-based assessment instrument.

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Learner-Centered Teaching and Its Assessment: a Case of Atma Jaya Catholic University Class

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Abstract: This paper, entitled "Learner-Centered Teaching and Its Assessment: A Case of Atma Jaya Catholic University Class, is a report of a personal experience in teaching undergraduate students of English Education by applying learner-centered technique. This technique of teaching has been sounded by the university management for the last several years that lecturers conduct the teaching by applying learner-centered teaching. The goal of this teaching technique is to activate students in learning which include students' active learning, cooperative learning, and inductive teaching and learning. The objective of this presentation is to share personal experience in conducting teaching-learning activities in the undergraduate class applying learner-centered teaching in Learning Assessment subject. This method of teaching is relevant to university students for they are mature enough to learn together, to practice being discipline, and to practice teaching and assessing. By doing learner-centered teaching and partly assessing other student's performance, undergraduate students who want to be English teachers can develop some characters of being discipline in preparing materials for presentation, in listening and assessing, in cooperating with the teacher before presentation, with teachers outside campus to try out test instrument developed by the students in real class, and with other students both for presentation and assessing other students if done in groups, in active learning by self-searching materials and in discussing materials with other students and the class teacher especially before presentation.

Key words: learner-centered teaching, assessment, sharing personal experience

INTRODUCTION

This paper is about learner-centered teaching project in Learning Assessment subject conducted by the writer in the English Education department, Faculty of Education, Atma Jaya Catholic University, Jakarta, Indonesia. Since this is related to learner-centered teaching in Learning Assessment subject, this paper reviews learner centered teaching related to its definition, previous research findings, students active learning, cooperative learning, and inductive teaching/learning. As for the Learning Assessment subject, the writer would describe the subject including the name of the subject, subject description, objective of the subject, the topics discussed and the assessments. Finally this paper would also like to identify the Ethics Addressed for Whole Person Education from the implementation of the learner-centered teaching in Learning Assessment subject.

LEARNER-CENTERED TEACHING

Five sub-topics concerning learner-centered teaching will be elaborated in this section: definition, previous studies findings, students' active learning, cooperative learning, and inductive teaching.

Definition

There are many definitions of learner-centered teaching but basically it includes students' active learning, cooperative/collaborative learning, inductive teaching and learning to which students/learners are the center focus of instruction in active learning strategies (Bonwell & Eison, 1991; Johnson, Johnson, & Smith, 1991; Kember, 1997).

Students Active Learning

Learner-centered teaching basically activates students' active learning in solving problems, answering questions, formulating questions of their own, discussing, explaining, debating, or brainstorming during class.

Cooperative/Collaborative Learning

It is an approach of education which involves groups of students working together to solve a problem, to complete a task or create a product. According to Gerlach (1994) it is basically a social interaction to learn together in which students work in teams on problems and projects under conditions that assure both positive interdependence and individual accountability.

Inductive Teaching

Inductive methods include inquiry-based learning, case-based instruction, problem-based learning, project-based learning, discovery learning, and just-in-time teaching.

Research Findings

In relation to research findings, learner-centered methods of teaching have repeatedly been shown to be superior to the traditional teacher-centered approach to instruction, a conclusion that applies whether the assessed outcome is short-term mastery, long-term retention, or depth of understanding of course material, acquisition of critical thinking or creative problem-solving skills, formation of positive attitudes toward the subject being taught, or level of confidence in knowledge or skills.

LEARNING ASSESSMENT SUBJECT

The name of the subject the writer wants to introduce here is IKW 306 Learning Assessment (2 sks). This subject aims at providing students with the competence of learning assessment specifically in measuring the students learning achievement. Furthermore, students are expected to be capable of constructing, analyzing, and evaluating their own learning achievement test and finally they are also expected to be able to make the students' scores to become the grades.

The topics discussed in this subject include the scope and nature of learning assessment, types and functions of assessment, characteristics of learning assessment, achievement tests, characteristics of good tests, procedure/steps of conducting learning assessment, constructing/ developing tests, objective and essay tests, analyzing and evaluating achievement tests, test validity and reliability (theory and practice), and analyzing the scores to become the final grades of the students.

The assessments for this subject consist of mid-term test, final test, analyzing score data, developing and analyzing test, and materials presentation. Materials presentation is assessed by peer groups based on the scoring rubric prepared by the lecturer. (Harsono, Y. M., 2019)

IMPLEMENTING LEARNER-CENTERED TEACHING

The implementation of the learner-centered teaching in carrying out the teaching-learning activities would be organized in five sub-sections: preparation, implementation, assessment, relevance of the method to the university students, and the ethics addressed for whole person education.

Preparation

Preparation to conduct this learner-centered teaching for the subject of Learning Assessment is done by the lecturer preparing the semester lesson plan which includes the name of the subject, the credit of the subject, the subject description, the objectives of the subject, the assessment, the materials which will be discussed for one semester, and the source of the materials, and the detailed teaching-learning plan.

Implementation

The implementation of the learner-centered starts with the teacher's introduction about the subject based on the semester lesson plan, the procedure of the discussion, the grouping of the students, and the materials distribution to each group, and for their presentation and the procedure/steps of each group's preparation and the presentation.

Assessment

The assessment of this learner-centered teaching applied in this Learning Assessment subject includes the scores of the half-semester exam, the final semester exam, individual assignment, and two group assignments the percentages of which consist of 30%, 30%, 10%, 20%, and another 10% respectively making the whole assessment of the Learning Assessment subject 100%. The materials of the half-semester exam cover all the materials presented and discussed in the first half of the semester, The materials for the final exam include those presented and discussed in the second half of the semester.

What is rather special in this learner-centered assessment is the peer assessment of the other group's presentation of the material assigned for each group. The assessment is conducted as follows: when one group presents one topic of discussion, the other groups listen to the presentation, asking questions, giving comment(s) and suggestion(s) of the material presented as well as the presentation itself. At the end of the presentation, all groups other than the presenter group assess the presentation using 'Holistic Assessment

Rubric' containing six aspects (1) preparation, topic materials understanding, and presentation clarity, (2) problem solving accuracy, (3) communication competence, (4) competence in answering questions, (5) completeness of teaching aids for the presentation, and (6) group cooperation.

Each group is also assigned to develop a test, a standardized test, for a certain level of students, primary school students, junior high school students, senior high school students, university students, etc. Since they have to develop a standardized test, they have to follow the procedure of developing a standardized test, i.e. (1) developing table of specification, (2) writing the test items, (3) preparing the answer key and the scoring rubric, (4) asking reviews of the test draft from peers, teachers, and or experts for test revision, (5) test tryout that can be carried out in three ways, that is, one-to-one evaluation, small group evaluation, and real tryout in the classroom, and (6) instrument quality empirical analysis which includes the analysis of difficulty index, discrimination index, validity, and reliability.

HOLISTIC ASSESSMENT RUBRIC
Presentation
IKW 306
LEARNING ASSESSMENT

Topic: _____

DIMENSION	%	SCORE RANGE	COMENTS	TOTAL SCORE
preparation, topic materials understanding, and presentation clarity	50%	(1-50)		
problem solving accuracy	10%	(1-10)		
communication competence	10%	(1-10)		
competence in answering questions	10%	(1-10)		
completeness of teaching aids for the presentation	10%	(1-10)		
group cooperation	10%	(1-10)		
TOTAL SCORE	100%	(1-100)		

Assessor Group   Jakarta,
_____

                                                                                       Signature

Leader: _____   _____

Members: 1. _____   _____

                           2. _____   _____

                           3. _____   _____

                           4. _____   _____

With this assignment students are very much involved in learner-centered learning, they have to be active in cooperating/ collaborating with all the members of the group, with the teacher in which they are going to try out their test, with their peers, lecturer, etc. In analyzing the test items, students have to be capable of evaluating the test items they are developing. Therefore, by doing this project assignment of developing a standardized test, students are trained to develop their good characters.

The final assignment is an individual one about calculating students' scores using Norm-Referenced Evaluation (NRE). This assignment trains students to use statistics manually to evaluate students using NRE the result of which shows more or less normal curve.

Ethics Addressed for Whole Person Education

By doing learner-centered teaching and partly assessing other student's performance, I mean to have educated undergraduate students who want to be English teachers some characters of being responsible, active, and discipline in preparing materials for presentation, in listening and assessing, in cooperating/collaborating with other students as well as with the lecturer before presentation, with teachers outside campus to try out test instrument developed by the students in real class, and with other students both for presentation and assessing other students if done in groups, in active learning and cooperating by self-searching materials and in discussing materials with other students and the class teacher especially before presentation.

CONCLUDING REMARKS

As concluding remarks of this sharing about the implementation of **Learner-Centered Teaching and Its Assessment** I would like to emphasize that learner-centered teaching is a method of teaching that has proved effective since the result of the learning/teaching shows good results for any situation: short term goal, long term goal, deep understanding of the materials, etc.

In addition to the effective use of learner-centered teaching in instruction, this method is also relevant to the level of university students especially for the students of faculty of education to activate students in learning, to enhance cooperative/collaborative learning, and inductive teaching and learning. The activities in this learner-centered teaching are also relevant to the students' position as they are preparing themselves to become English teachers.

Last but not least, learner-centered teaching also addresses ethics or whole person education in developing their discipline, responsibility, cooperation/collaboration, attention, and conscientiousness.

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A-L-IT Integration in University

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Abstract: Academic functions that are reflected in the learning process of universities today must follow the development of digital technology, considering that students currently studying at universities have been exposed to the rapid development of these technologies, for example there is shifting reading habits for reading sources to digital versions. Meanwhile, a good learning process must be supported by reliable reference sources. Provision of reference resources should be the responsibility of educational institutions that are usually carried out through libraries. Therefore it is necessary to collaborate with book publishers who are currently changing their platforms into digital ways.

In general, universities should strengthen IT infrastructure and support systems to anticipate the development of digital technology also. However, this is done independently and has not been integrated with the academic and library processes. The purpose of this project are (1) in order to accelerate the learning process at the university more effective and efficient, (2) providing resources access to be affordable, flexible, trusted and digital, (3) increased digital literacy among university academics

In line with the vision and mission of the university to be an excellent university community, one of which excels in the digital learning process, becomes relevant for university. At present it is important to know there is a diversity of exposure to the development of information technology experienced by the academic community before entering academics activities in campus. Through this project all academicians having an experience learning experiences that are equal. Thus, it is expected that the graduates produced will have better digital literacy advantages

compared to university graduates in general.

The ease of existing technology today, the academics are increasingly free to do the "cut and glue" culture in the learning process. Providing an affordable, flexible, trustworthy and digital learning resource, it is hoped that the appreciation to other people works will be more real. Through the integration of three things (A-L-IT Integration), the reading culture is more increasing, the sources to information are increasingly widespread and easy to access, making all academician being a great and inspiring whole person

Key words: learner management system, system integration, digital literacy

INTRODUCTION

Academic functions that are reflected in the learning process of universities today must follow the development of digital technology, considering that students currently studying at universities have been exposed to the rapid development of these technologies, for example there is shifting reading habits for reading sources to digital versions. Meanwhile, a good learning process must be supported by reliable reference sources. Provision of reference resources should be the responsibility of educational institutions that are usually carried out through libraries. Therefore it is necessary to collaborate with book publishers who are currently changing their platforms into digital ways.

In general, universities should strengthen IT infrastructure and support systems to anticipate the development of digital technology also. However, this is done independently and has not been integrated with the academic and library processes. The purpose of this project are (1) in order to accelerate the learning process at the university more effective and efficient, (2) providing resources access to be affordable, flexible, trusted and digital, (3) increased digital literacy among university academics

LITERATURE REVIEW

A. Learning Management System

Nowadays, encounter the increasing number of student population, higher education institution have become gradually interested in e-learning, expose other scope of interaction between students and lecturer and among students themselves, and offer a comprehensive and rapid-information (Khaddash and Al-Hadhrami, 2006 in Alshorman and Bawaneh, 2018). It is value revealing that the revolution of information and technological that vibrated the academic environment carry out itself on all parties of the educational learning process, and entered the learning via the extensive entrances

In the e-learning advancement, they are spaces to deliver tools that enable the sharing and interaction between students and lecturer, and in order to accomplish the personalization of learning they have abilities to allow the implementation of adaptations. It make the evolution of Learning Management Systems (LMS) has been growing, improving and being applied to support traditional face-to-face and distance learning processes (Coredor et al, 2015).

Transforming higher-education form "routine-practice, simulation and retreat" to "creativity, inspiration and improvement" have a progressive influenced of th desire for employing technology in classrrom. It will let them to pro-active the necessities of the current age through gaining promptness and openness to other values (Alshorman and Bawaneh, 2018). Universities will led to board on using technological software in classroom an administration activities by using technology implemented in higher education. The efficiency of learning-process, ensuring flexibility and involving it to the reality for students live are the rationale behind this matters. In order to working together in a fresh, innovative and enjoyable way, the learning management system allows community both students can communicate and linkage with the lecturers. It will transform process of teaching and learning in new paradigm.

The results of many studies (Khaddash and Al-Hadhrami, 2006; Al-Mutairi, 2015; Alqadere, 2011; Mashaqbeh, 2009 as cited in Alshorman and Bawaneh, 2018) indicate the effectiveness of using the Learning Management System in university teaching as a recent electronic system with numerous programs will increase the efficiency of university lecturers and support them

deal with with the course-subjects and the sources of individual-learning as well as to accomplish the dialogue among students themselves. Most of the students showed the usefulness of using the Learning Management System software as it increases the chances to study and relate with the subjects and with leturers as well as among themselves.

There is need to emphasis on: user outlooks – not just return on investment, human-resources, not just technology, marketing and change management to fruitfully recognize an appropriate learning management system. This is attained by involving all the stakeholders including discussion with professional expertise, both within and outside the society where necessary (Dagada and Mungai, 2013). It was critical to integrate the suggested open source solution with all academic communities and learning managemet system. This was an obligation in order to help in giving trustworthiness of the courses taught and the assessment grades awarded, and also to ensure genuineness of learnes and lectures through the system.

B. Digitallization Tranformation Era

In the past, the more technologically 'ready' populations could found in the world's richest and most developed nations. More recently, however, this trend has been overturned by the rise of online connectivity, mobile devices and social networking. Each of these new technologies has been quickly and deeply embraced by the Asian population, effectively leapfrogging more developed nations in terms of 'digital-readiness', and 'digital-savvy'. A unique challenge for Asian institutions will be to serve a population that is quickly becoming one of the world's most digitally-savvy. The rapid growth of online, mobile and social across the region will impact both business and learning alike (Mak, 2019)

Digital transformation has arise to higher education. Institution all over the world are utilizing digital paths to make life easier for students, leturers and administration staff from branded mobile apps to higher education data analytics software. More options are available to colleges and universities that are ready and willing to adapt to the digital landscape. This migration toward digital resources is more important than ever before, considering the increasing competition institutions are facing. It is essential for organizations to highlight two things for keep stay competitive which are creation the lives of students easier and using data to constantly recognize areas of inefficiency and chances for enhancement (Spear, 2019).

The rise of the 'digitally sophisticated learner' is not a surprise to many in the sector. Across the region, leading faculties and institutions have already set bold visions to implement digital & blended learning models. For many execution is the challenge; while it is a trivial exercise to put static reading content online, institutions are discovering that building 'sophisticated' and 'engaging' digital experiences is a much more challenging exercise. Digital education is no longer just a 'nice-to-have', but many regional institutions face a near-impossible challenge – to build sophisticated digital learning experiences, rapidly, and with limited resources (Mak, 2019).

METHODOLOGY

Universitas Atma Jaya Yogyakarta established in 1965. Currently, it has 12 undergraduate and 7 study programs with approximately 11,500 students and faculty members. "*Serviens in lumine veritatis*" or "serving in the light of truth" is the university motto.

As other universities, the academic function at this university has the task of formulating academic policies so that students can achieve the curriculum outcomes at the end of their studies. Some academic policies that have been implemented in this university are each course must be equipped with course syllabus or learning plan, the syllabus list textbooks that being used in the course, learning management system is available for each course, and the provision of textbook to students.

The learning management system (LMS) used at this university is a moodle-based LMS which is named kuliah.uajy.ac.id. "*Kuliah*" is an Indonesian word that means lecture. At the beginning of each semester, i.e. after student class registration process is complete, university IT support will prepare this LMS by creating all classes listed in the system including to set the class lecturer as administrator of each class and all the student registered in the class as participants. Therefore, if the lecturer or student login to the LMS, they will automatically know what courses are involved in the current semester (see Figure 1).
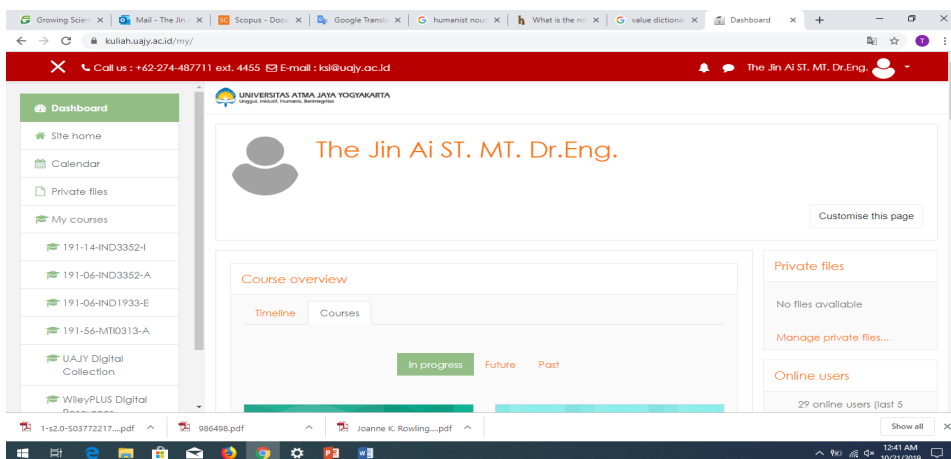
Figure 1. Screenshot of university LMS (kuliah.uajy.ac.id)

The university has a policy in providing textbooks for students. In accordance to university motto and values, respect for copyright especially textbook authors is given by providing original books for students. Over the years, the university's practice was to write explicitly 'provision of textbooks' in the study cost component. This cost component is annually use for buying textbooks and university administration are responsible to distribute the textbooks to students. It is noted that this practice is rarely practiced by other university in Indonesia, but we have believe that this action is a meaningful action to students. By using original textbooks, it is a real examples of respect for copyright that university can give to all students, so that the students can easily comprehend its values. In providing additional reference books to students, University library also used the same policy and principle of respect for copyright.

Today digitalization has hit all aspects, including the book. At the time when there was a shift from printed books to digital books, about five years ago, book publishers began to introduce digital books. In the spirit of respecting copyright, universities began to replace the purchase of printed books into digital books for some titles with the same business model, which is at the end students received the digital textbooks for their study purposes.

After two years of purchasing digital books, both university and book publishers realized that the value of money spent for purchasing digital books was quite large but the number of titles obtained by each student

was very limited. Therefore, in 2017 one book publishers offered different business model, which is licence to access annually or in simple word equal to rent a digital book instead of purchase. In general, the book publisher provide all their digital books collection and all student and faculty member can borrow digitally the books with a year contract. There are some access limitations, for sure, i.e. number of books that can be simultaneously borrowed to read by student or faculty members and number of user that concurrently access to single book. However, these limitations are reasonable set so that enabled for single batch students of a department to access simultaneously a single textbook. Also, these limitations are considering already reading capability for each student. Therefore, the behavior of this new business model is similar to 'digital library' in which a digital platform is provided for user to browse, find, activate, launch, and read digital textbook (see Figure 2)
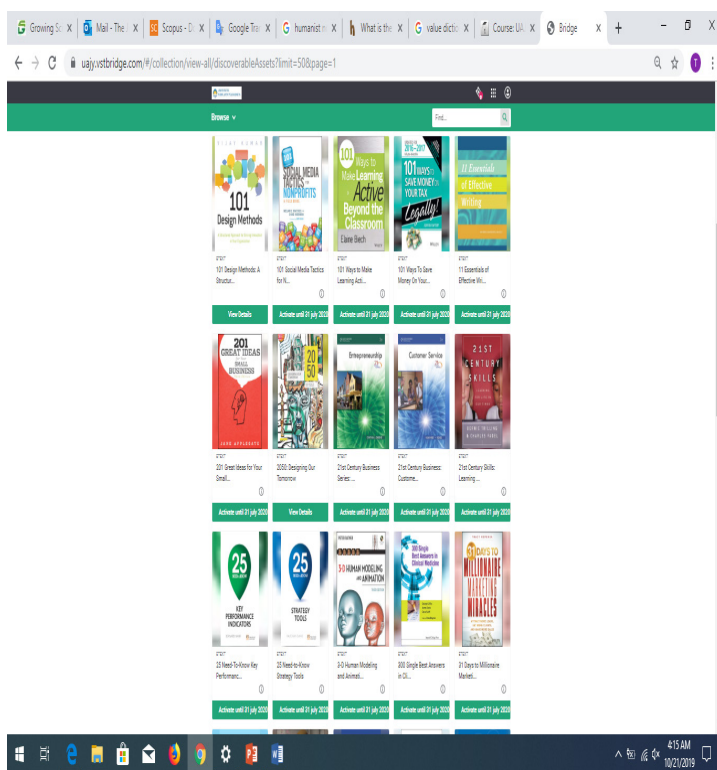
Figure 2. Screenshot of university digital library platform

University believed that this new business model cooperation with book publisher is one of the respond of university to adapt the learning

behavior of students, one of the feature is tend to use digital resource for study. This cooperation is showing the willingness of university for providing reliable reference resources to student and continuing respect for author copyright.

However, our university thought that there must be an additional effort so that this available digital library resource can be utilized for student teaching and learning activities. As mentioned before, our academic policy are availability of course syllabus, list of textbook, and learning management system. Therefore, we initiated an effort to integrate all these things, which are Academic policy, digital Library, and Information Technology or we called it A-L-IT, through the LMS. To be more specific, link access to the main references for each course is set in the LMS (see Figure 3). Therefore, there are several activities should be prepared before class begin, which are selecting reference textbook that is properly used for each course open and setting the reference textbook in the LMS.
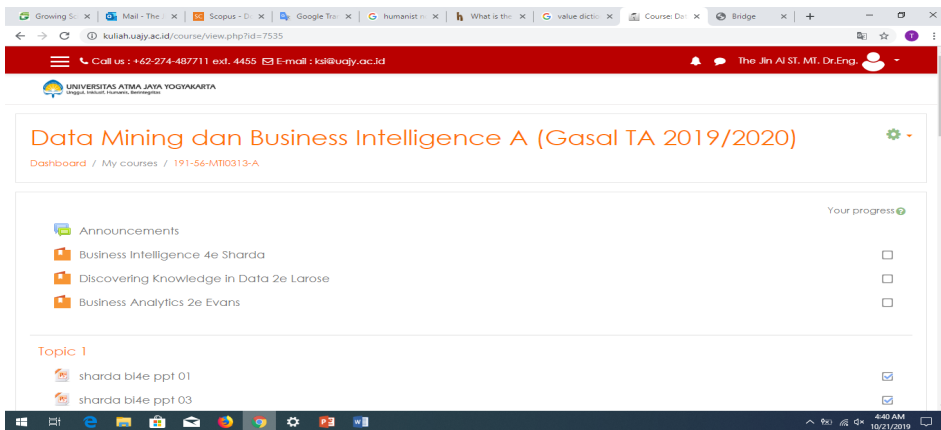
Figure 3. Screenshot of a course LMS with textbooks access link

RESULTS AND DISCUSSIONS

As the result of three years of A-L-IT policy implemented at the university, several key statistics can be obtained, which are the number of active users, the number of book titles read by user, and the total number of books activated. Active users is defined as users who have accessed and activated at least a single book title through the digital library platform. The number of book titles taken into consideration is the titles of books that

have been activated and read by at least one user. One activation is taken into consideration if it is activated and read by a user. These statistics are presented in Figure 4. It is noted that these statistics are full year statistics for the first two academic years (2017/2018 and 2018/2019) and only for about three months for the current academic year (2019/2020).
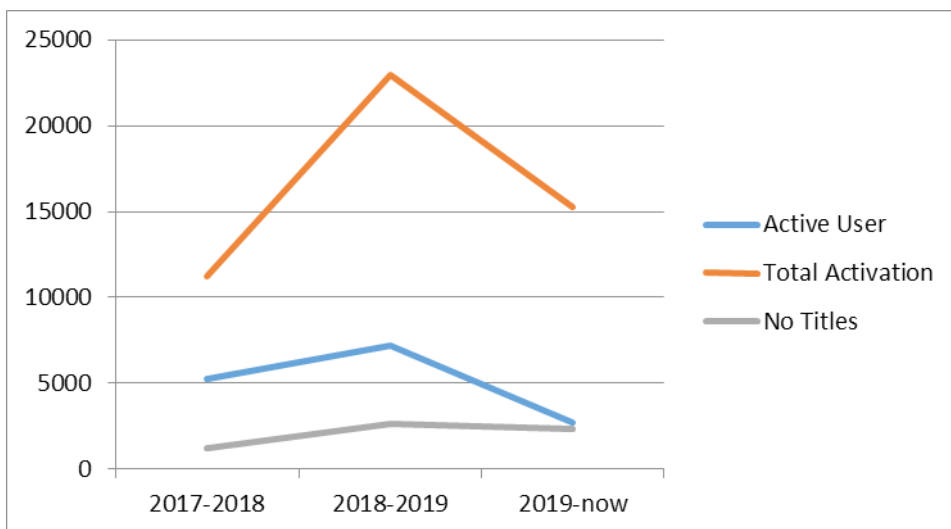
Figure 4. Three years implementation statistics

The figure shows that there is an upward trend in all these three statistics, during the first two academic years. This trend proves that there is a tendency that the learning process has begun to shift to learning by reading digital books. By providing learning facilities in the form of digital books that are trusted and easily accessible, because they are already available in the LMS, lecturers and especially students tend to activate and read the book.

Other interesting statistics that can be learned from the users behavior is the number of book titles read by user is far greater than the number of book titles set in the LMS. In the first year of implementation, among 1190 book titles read by users, only 78 titles are set in the LMS. While in the second year of implementation, among 2612 book titles read by users, only 181 titles are set in the LMS. This statistics imply that whenever user realize that there are many other books available on digital platforms, for their own reference and learning purposes they also use them.

Another thing that can be utilized from this implementation is the ability of information technology to record user statistics as shown in the

Figure 5. This activity statistics provides student activities per class in accessing textbooks required by the class, even the weekly statistics can be monitored. Lecturers can utilize this statistics for their own monitoring class purposes. Also, university can utilize this statistics to evaluate the effectiveness of this implementation, i.e. to answer the big question whether this implementation can increase the result of student learning process.
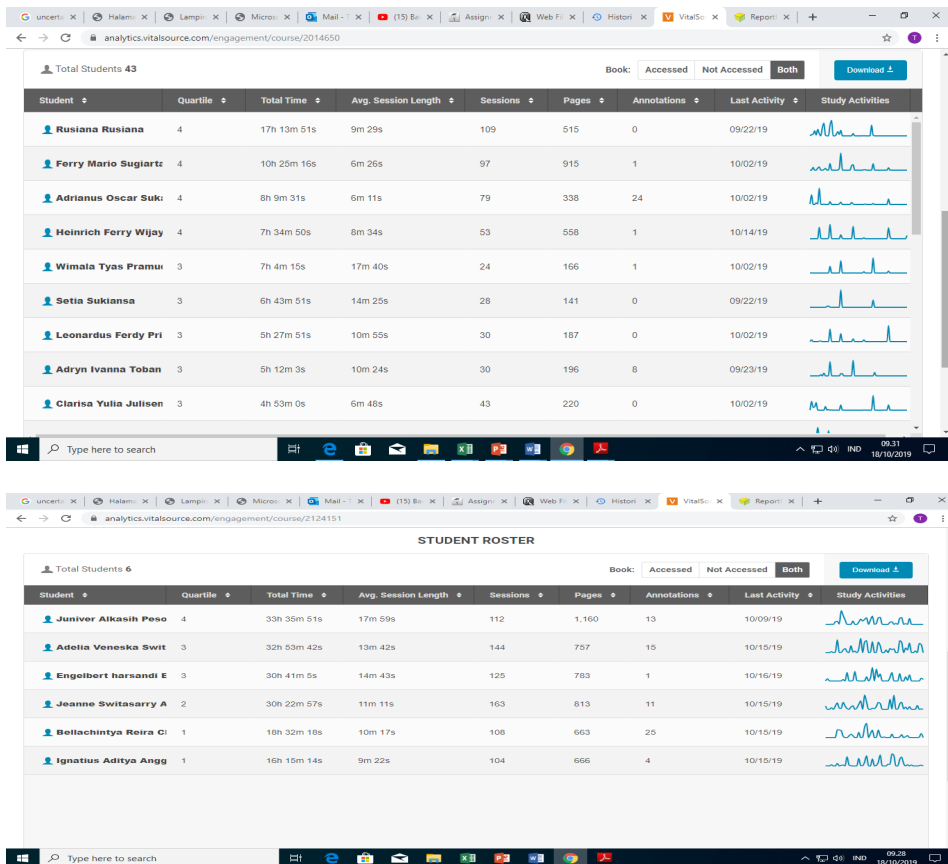
Figure 5. User statistics

CONCLUSION

The ease of existing technology today, the academics are increasingly free to do the "cut and glue" culture in the learning process. Providing an affordable, flexible, trustworthy and digital learning resource, it is hoped that the appreciation to other people works will be more real. Through the

integration of three things (A-L-IT Integration), the reading culture is more increasing, the sources to information are increasingly widespread and easy to access, making all academician being a great and inspiring whole person

ACKNOWLEDGEMENT

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Improving Outcome of Learning Science Process Through PBL4C Model Assisted by e-LKS Application on Android in Grade IX-H Students of SMP Negeri 29 Semarang

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Abstract: This research is a classroom action research that conducted in order to improve the conditions of learning science process through PBL4C learning model (Problem Based Learning with 4C). The PBL4C model learning in this research is then carried out by utilizing ICT, in the form of learning media that are operated on smartphone devices with Android systems, called e-LKS.

This research was carried out at Junior High School named SMP N 29 Semarang which is located on Jl. Kedungmundu, Tembalang District, Semarang. The results of the preliminary study showed that all of 33 students in grade IX-H had Android-based smartphones. Furthermore, the results of the study also show an increase in the average daily test scores of students. The average daily test score in the first cycle was 73.78, increasing to 79.39 in cycle II. The number of students who completed the study also increased, there were 24 students completing learning in the first cycle (72.72%) increasing to 29 students completing learning in the second cycle (87.87%).

The increase in outcome of learning science process shows that the PBL4C learning model assisted by e-LKS application on android can improve student learning outcomes, also improve the role and skills of the teacher when teaching some difficult science concepts to students and improving 4C skills in students.

Key words: Class Action Research; e-LKS PBL4C; PBL; 4C skills in students.

INTRODUCTION

One indicator of achieving a good science learning process is the learning outcomes of science that can deliver students to fully understand of science material and furthermore. Therefore, the indicator of success in teaching science and learning process is interesting and needs to be considered.

State Junior High School of SMP N 29 Semarang is one of the public schools located in Tembalang District and is a National Standard School (SSN). Based on the results of the average National Examination (UN) for science subjects in 2017/2018, SMP N 29 ranks at 11th among 43 State Junior High Schools in Semarang. This result is quite good and encouraging. Nevertheless, the average UN score for science subjects in SMPN 29 Semarang is still quite low, which is 68.42.

Reflections that have been made by the writer indicate that the role of the teacher is very important in activating the teaching and learning process in the classroom. Subject concept of inheritance in the 2013 curriculum is one subject of learning with a large number of meetings. Therefore, it is necessary to try to use the right learning model for this subject.

Furthermore, the writer choose to implement the research in grade IX-H since the average of score at the first examination during another 4 classes is the lowest in score gained (65.45). Also, the results of interviews with students of grade IX-H, showed that most students in this class stated that this subject is one of difficult concept with a lot of memorization.

Based on the conditions mentioned above, the writer tries to use the PBL4C model (Problem Based Learning with 4C) in learning. PBL4C model learning in this research is carried out by utilizing ICT, in the form of learning media that are operated on smartphone devices with Android systems, called e-LKS.

LITERATURE REVIEW

A. Learning Sciences of Inheritance Material

Natural Sciences (IPA) is closely related to how to find out about nature systematically, so that science is not only the mastery of a collection of knowledge in the form of facts, concepts, or principles, but also a process

of discovery. Learning science when it's referring to the 2013 curriculum, is carried out in scientific inquiry to foster the ability to think, work and communicate it as an important aspect of life skills (KEMDIKBUD, 2018).

The concept of inheritance in humans requires 6 meetings to complete the learning process. The nature of the material taught in this chapter requires students to count and memorize so that they can understand the material given. Therefore, it needs media that can bridge the teaching process in the classroom so the material become more real for students. The PBL4C Learning Model assisted by the e-LKS application on android is composed of many images and cases that greatly support the learning process.

B. Theory of PBL4C in the learning process of science

The PBL4C learning process is almost similar to PBL (Problem based learning) which starts from learning scenarios with real world problems / or problems found in everyday life.

The characteristics of PBL are: Learning by solving problems that are open, unstructured, teachers only as facilitators and educating students to think critically and develop creativity from diverse student answers, this is also done in PBL4C. The benefits of PBL4C according to Dr. Waraboon (2013) are: inviting students to think critically and be able to bring up creative ideas from students, as well as providing the widest opportunity to develop creative abilities, a source of inspiration for students to be more creative, and train themselves to be creative. PBL4C was first implemented in medical schools in Ontario Canada in the 1960s (Barrows, 1996) then developed starting in 2008 at SEAMEO RECSAM Penang.

Another advantage of PBL4C is that students have the opportunity to apply a variety of disciplines knowledge in one activity, for example the ability of students to predict the location of a place (mathematics), the ability to measure (physics), the ability to make a map of the region (social studies), the ability to study environmental science health and others. Another advantage is that PBL4C can develop HOTS (Higher Order Thinking Skills) for students because: 1). Can improve the ability to solve new and unexpected problems, 2). Develop the ability to carry out activities of analysis, synthesis, evaluation, systematically, 3). Develop the ability to make various predictions that are useful for daily life phenomena, critical, and creative manner, and 4). Develop collaboration between students.

C. PBL4C Model Assisted by e-LKS Application on Android

The use of Android-based learning media is one of 21st century learning styles (Calimag et al., 2014). The use of this type of learning media has the potential to help improve student academic performance in the form of learning outcomes in the cognitive domain (Chuang & Chen, 2007 in Jabbour, 2014) and student learning motivation (Hess, 2014 in Calimag et al., 2014). This type of learning media allows students to learn not limited by time and place with interesting applications (Squire, 2009 in Meister, 2011).

PBL4C learning model used in this study is the development of PBL learning model (problem-based learning) by putting forward the values of universal harmony and 21st century skills which called 4C skills (Communication, Collaborative, Critical Thinking, and Creativity).

Nowadays, the use of instructional media has become more paperless and connected to each individual through various applications available on smartphones. Learning media using this Android application has the potential to help teachers because of their attractive appearance and interest by students and easily to install and use (UNPI, 2017). Li et al. (2010) in Resty (2016) states that the implementation of learning using smartphones and tablets can have a positive impact on the dimensions of cognitive, metacognitive, affective, and socio-cultural. Smartphones and tablets have the power to transform the learning experience.

This type of learning media allows students to learn not limited by time and place with interesting applications (Squire, 2009; Meister, 2011). The appearance of media e-LKS PBL4C can be seen at figure 1 below.

Figure 1.
interface of e-LKS PBL4C on android

METHODOLOGY

The research was conducted in SMP Negeri 29 Semarang. This School located at Kedungmundu street, district of Kedungmundu, Tembalang Regency, Semarang for 5 months (November 2018 untill April 2019). The research was conducted in November 2018 for 4 meetings in the first cycle and then 3 meetings in January 2019 for the second cycle. The second cycle of the study was conducted in January 2019 because the subject of "animal and plant breeding" and "genetic engineering of living things" are closely related to subject of biotechnology which is taught in the even semester of the school year of 2018 - 2019.

A. Type of research

This research type is Classroom Action Research, which is used to solve a problem in class. The main purpose of this study is to improve the process and results of learning in the classroom where the teacher is fully involved in research ranging from planning, action, observation, to reflection.

The implementation of this study follows the stages of classroom action research which consists of four stages, namely the planning stage, the stage of action, the observation stage and the reflection stage. The action implementation consists of 2 cycles. In the first cycle, the writer should made some reflection to find out the lacking and any problems arise while conducting research at cycle I and have not been resolved yet. Furthermore, the problems and shortcomings in the first cycle will be corrected in cycle II.

B. Research subjects

The subject of the study was the science learning ability of the concept of inheritance for students of grade IX-H in the academic year 2018/2019. This class consists of 33 students that consisting of 20 girls and 13 boys.

C. Research procedure

This action research classroom is consists of 2 cycles. Cycle 1 consists of 4 meetings and cycle II consists of 3 meetings. In the first cycle, the writer will be made some reflection to find out the lacking and what problems arise and have not been resolved. Furthermore, the problems and shortcomings in the first cycle will be corrected in cycle II.

The instrument in the study consisted of test instruments and non-

test instruments. The test instrument in this study was the results of daily test scores after the end of the cycle and assignments given to students. The forms of non-test instruments are interviews and observation sheets. While the observation sheet is used to determine the situation, response, activeness and attitude of students during ongoing learning carried out by observers.

Data validation is done by triangulation. The same data is checked by different techniques. For example, observational data that is also explored through interviews or documentation. In interviews, for example, the material used to interview students is the same.

Data analysis techniques in the form of quantitative descriptive, namely analyzing test data in the form of average score before students are given action, the average score in the first cycle, and the average score in the second cycle. Furthermore, analyzing non-data data in the form of descriptive qualitative, namely analyzing student activities during the learning process by applying PBL4C models assisted by e-LKS application on android. The analysis used is a description, describing the observational data at the end of each cycle by comparing the results achieved in each cycle.

According to the assessment guidelines, students are considered complete in learning when mastering the Minimum Completion Criteria (KKM) set by the school. SMP Negeri 29 has set KKM for science subjects is 70, classical learning completeness is achieved when the percentage of students who complete learning reaches 75%. While to find out the activities of students in learning is done by observation by filling in the observation sheet with the following formula:

$$AS = \frac{Score\ gained\ of\ student's\ activities}{maximal\ score} \times 100\%$$

RESULTS AND DISCUSSIONS

A. Results

Preliminary Data

The initial stage of the study was conducted in October 2018. During this month the writer designed the PBL4C model assisted by e-LKS application on android. The making of media has been verified by expert

verifiers and is ready for use in November 2018.

The study begins with analyzing the needs by filling out a questionnaire consist of 7 questions with a Likert scale which aims to determine student responses about science learning, the way of teaching science (for teacher) and the application of PBL4C model assisted by e-LKS application on android. The results of the questionnaire form student responses are presented in Table 1.

Table 1.
Result of questionnaire sheet before action research study

No	Questions	Percentage (%) of answer		
		A	D	DA
1	Interesting in science subject	61	21	18
2	Enjoying the way of your teacher teaches science	82	12	6
3	Active in working in a group of discussion	58	24	18
4	Easily to search new information with *smartphone*	91	3	6
5	Enjoying learning science in a group discussion	55	24	21
6	Enjoying learning science with model of PBL4C	15	52	33
7	Enjoying in presenting in group	91	3	6
	Average	65	20	16

Information : A : Agree; D : Doubtful; DA : Disagree

Based on the data in table 1, it can be explained that 61% of students in class interesting in science subjects, and 82% of students enjoy the way of teacher teaching science. This result shows that most students have a positive perception of science subjects and the teacher's basic ability to teach is good in managing the class. Furthermore, these results indicate that teacher have a high opportunity to be able to increase intensive motivation to students, through learning models that will be applied in the classroom.

The results of the preliminary study also showed that all 33 students of grade IX-H in SMP N 29 Semarang had Android-based smartphones. The existence of this smartphone is very potential in supporting learning in the classroom and at school. The use of smartphones in science learning

can facilitate students in learning, increase learning motivation, and help improve learning outcomes, especially the cognitive domain.

Learning by discussion also has a high tendency, about 55% of students enjoy learning science in a group discussion, while 24% express doubt and 21% tend to disagree. Total of 52% of students were hesitant about the PBL4C model and the remaining 33% did not know this model of learning. This means that the teacher needs to inform to students about the stages in PBL4C model learning assisted by e-LKS application on android and the need to understand their respective roles while learning process by this model.

Description of Learning Activities in Cycle I

Cycle I was held in 4 meetings with the subjects are: 1). The molecules of inheritance; 2). The role of molecules underlying the inheritance of traits in living things; 3). The nature of monohybrid and dihybrid and 4). Pattern of inheritance of abnormalities in humans. The types of student performance activities observed in cycle I are presented in Table 2.

Table 2.
types of student performance activities in learning science with PBL4C

NO	ACTIVITAS	Groups of Student							% activities
		1	2	3	4	5	6	7	
1	Active in discussion and collaboration in group	2	3	3	3	2	2	3	85.71
2	Active searching for answer of the problem	2	3	3	3	2	2	2	80.95
3	Creative in answering the problem	1	2	2	3	3	2	2	71.43
4	Accessing e-LKS and searching internet in answering the problem	2	2	3	3	2	2	2	76.19
5	Presenting result of discussion interestingly	1	2	2	3	2	1	1	57.14
	Activity categories	K	B	A	A	B	C	C	

Information :group 1 = astronomers; group 2 = cosmologist; group 3 = archeologist; group 4 = climatologist; group 5 = gynecologist; group 6 = psychologist; group 7 = geologist
Activity categories A = very active (>85-100); B = Active (>70-85); C = quite active (>55-70) K = less active (55-0).

Based on table 2, There are 2 groups namely archeologists and climatologists which is categorized as very active groups. During the learning process, this two groups are very good at performing, all members are actively involved in the tasks given by the teacher and can make presentations well and interesting. Furthermore, cosmologists and gynecologists are in the active category, psychologists and geologists fall into less active category. When observing these four groups, the apparent tendency was that they were still less creative in answering the problems given and the appearance of group presentations was less interesting (there are too much text in their presentation).

In this first cycle there is still one group, namely the group of astronomers who are in the category of less active groups. The indications can be seen from several aspects of performance appraisal, namely, lack of enthusiasm in discussions, lack of creativity in answering questions given and unattractive group presentations. When conducting special interviews for this group, it was found that only 2 students wanted to work in groups, consequently result of the group assignments were less than optimal. This kind of result need specific consideration for the teacher in the next cycle.

During the first cycle, it was proofed that students were satisfied to learn with the PBL4C model assisted by the e-LKS application on android. The indication is that they are happy to install on their smartphones and enthusiastic in utilizing the e-LKS application on their androids during the learning process. The observation in class show that the use of smartphones can attract students' attention because they are happy to be able to keep holding a smartphone during learning in the classroom.

The learning process during the first cycle can be seen in Figure 2.

(a)   (b)

(c)   (d)
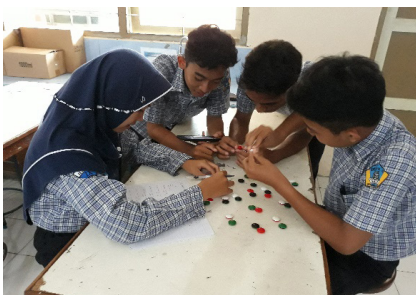
Figure 2. Picture (a) and (b), showing process of groups discussion by using smartphone to access e-LKS PBL4C. Picture (c) showing the teacher supervising each group, and picture (d) showing group of students doing presentation.

Description of Learning Outcomes in Cycle I

Retrieval of data on completeness of learning outcomes in Cycle I was conducted at the 5th meeting. The questions of test in this cycle is in the form of 10 multiple choices and 5 description questions. Data of score gained in the last of first cycle can be seen in Table 3.

Table 3.
Percentage of student's score gain in cycle I

Score	Categories	% numbers of student score
100-90	Very good	4 (12,12)
70-89	Good	20 (60,60)
50-69	Adequate	9 (27,27)
30-49	Less	-
0-29	Very less	-
Sum (%)		33 (100)
Average (category)		73.78 (good)

Table 3 shows that there are 4 students who gain very good score, 20 students gain good score, 9 students get adequate score, and no students get less score. The average test score in this first cycle is 73.78 with the percentage of learning completeness in the class of 72.73%. The increase occurred in the average test scores, before the first cycle was 65.45 increased to 73.78. Furthermore, student learning completeness also increased from 45.45% to 72.73%.

The results of student learning scores in the first cycle with an average of 73.78 were above the KKM set at SMPN 29 Semarang (70.00). This result is quite encouraging, meaning that the use of learning models with PBL4C assisted by e-LKS application on android is effective in improving student learning outcomes. In addition, the percentage of students' classical learning completeness increased to 72.73%. Even though there was an increase, these results still below standard of classical completeness (75% of students completed classically).

Description of Learning Activities in Cycle II

The learning activities in cycle II is carried out in 3 meetings, with the subjects discussed in the second cycle is "animal and plant breeding", "genetic engineering" and "biotechnology reproductive". Before the implementation of the second cycle the teacher first reflected on the results of the first cycle. Some of the problems that appeared in the first cycle were improved so that deficiencies can be corrected during the implementation of the second cycle.

In general, learning in cycle II still uses the PBL4C model assisted by e-LKS applications on android with little improvement, especially during the implementation of discussions and presentations. This change follows the results of reflection that has been done by the writer, including presentation models that made by groups of students. They can do varied presentation, not only presented in power point media, so that the presentation will be more varied and interesting. The types of student performance activities observed in cycle II are presented in Table 4.

Table 4.
Types of student performance activities in learning science with PBL4C

NO	ACTIVITAS	Group							% activities
		1	2	3	4	5	6	7	
1	Active in discussion and collaboration in group	3	3	3	3	3	3	3	100.00
2	Active searching for answer of the problem	2	3	3	3	2	3	3	90.48
3	Creative in answering the problem	2	2	3	3	3	2	3	85.71
4	Accessing e-LKS and searching internet in answering the problem	3	3	3	3	3	3	3	100.00
5	Presenting result of discussion interestingly	2	2	2	3	2	2	2	71.43
	Activity categories	B	A	A	A	B	B	B	

Information : group 1 = astronomers; group 2 = cosmologist; group 3 = archeologist; group 4 = climatologist; group 5 = gynecologist; group 6 = psychologist; group 7 = geologist

Activity categories A = very active (>85-100); B = Active (>70-85); C = quite active (>55-70) K = less active (55-0).

Table 4 shows that 4 groups (astronomers, gynecologists, psychologists, and geologists) in active category and 3 groups (cosmologists, archeologists, climatologists) in very active category. Unlike the first cycle, learning process in cycle II run smoothly. Students begin to get used to setting up group assignments, and all members are actively involved in the tasks given by the teacher. Also, they can make presentations well and interesting. Presentation time of in the cycle II began to show better creativity in terms of more images with suitable explanations not only filled with text. The process of answering the given problem also showed improvement, they began to get used to giving answers that showed a high level of thinking (HOTS).

In the second cycle there were no groups in the category of less active groups. When observing, especially in the group of astronomers who in the first cycle were less active, it was seen that they had been enthusiastic in discussing and were more creative in answering the questions given. In general, the value of the average group performance in cycle II has reached 89.52% thus, the results of performance appraisal in cycle II have exceeded group performance during cycle I. Learning process in cycle II can be seen in Figure 3.

(a)   (b)

(c)   (d)

Figure 3   figure (a) and (b), process of group presentation by using interesting power point media. Figure (c) and (d) process of making presentation by group of student with stereo form media.

Description of Learning Outcomes in Cycle II

The implementation of the final assessment in cycle II was conducted at the 4th meeting. Same as in cycle I, test questions given in the form of multiple choices (10 questions) and 5 description questions. Data on score gained in the second cycle can be seen in Table 5.

Table 5.
Percentage of student's score gain in cycle II

Score	Categories	% numbers of student score
100-90	Very good	6 (18,18)
70-89	Good	23 (69,69)
50-69	Adequate	4 (12,12)
30-49	Less	-
0-29	Very less	-
Sum (%)		33 (100)
Average (category)		79.39 (good)

Table 5 shows that there are 6 students who get very good score, 23 students get good score, 4 students get adequate score, and no students get less score. The average test score in this second cycle is 79.39 with the percentage of learning completeness in the classically reached 87.89%. The increase occurred in the average test scores, in the first cycle is 73.78 increased to 79.39. Student learning completeness also increased from

72.73% to 87.89%. The results of student learning scores in the second cycle with an average of 79.39 is exceeding the acquisition in the first cycle and the KKM value set at SMP N 29 Semarang (70.00). The results of this score have exceeded the expectations of the writer because it has exceeded the minimum completeness of the class.

B. Discussion

The implementation of this classroom action research is carried out in two cycles, as an effort to implement the action plan and for final decision-making or conclusion. The learning process with PBL4C in the first cycle has not run optimally, so the improvements needed are carried out to achieve maximum results in the second cycle.

The ability of teachers to manage classes supported by PBL4C learning models assisted by application of e-LKS on android proved to be effective in improving the learning outcomes of science concepts. The PBL4C models can create more independent learning patterns because students can carry out learning activities through small groups that work together to get maximum results. These results indicate that the PBL4C model based on e-LKS application on android, proved to facilitate students in learning, increase learning motivation, and help improve learning outcomes, especially the cognitive domain. In addition, learning with the PBL4C model assisted by e-LKS can be one of the solutions for teachers to create appropriate learning for 21st century students.

Comparison of the value of student activity in the group during cycle I and cycle II is presented in the graph of Figure 4.

Figure 4.
Comparison graph of group performance in cycle I and cycle II
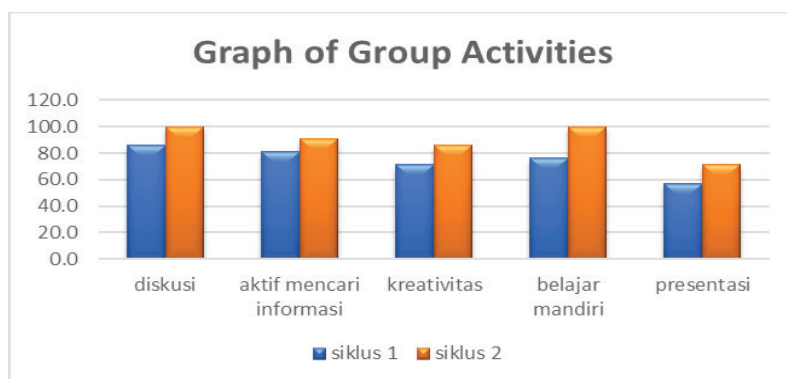
In cycle I, activities of discussion had the highest average compared to other activities, followed by seeking information activities through each student's smartphone. This is probably because the group discussion activities by using the PBL4C model assisted by e-LKS application on android are interesting and fun for them.

Figure 5.

Comparison graph of score gained from pra cycle, cycle I dan cycle II.
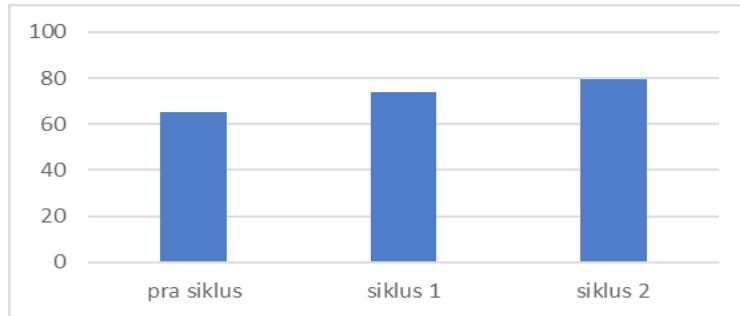
Graph in figure 5. Shows that the daily test score has increased even slightly. The average score in the first cycle was 73.78, increasing to 79.39. The number of students who completed the study also increased, there were 24 students completing learning in the first cycle (72.72%) increasing to 29 students completing learning in the second cycle (87.87%). The increase in score of learning outcomes shows that the PBL4C learning model assisted by the e-LKS application on android can improve student achievement.

Classical learning completeness has increased from 45% in the initial conditions, to 72.72% in Cycle I and 87.87% in Cycle II. This result has exceeded the percentage of completeness in classical completeness set at SMP Negeri 29 Semarang.

From these data, it can be stated that by using the PBL4C learning model assisted by e-LKS application on android can improve the teacher's roles and skills when teaching difficult science concepts to students. Also, this model is proved the improving of 4C skills in students. The results of interviews with students revealed that students like to learn difficult concepts through solving problems creatively. Without realizing it, students have learned the concept in pleasant conditions and are more motivated and understand the subject matter more deeply and impressively.

CONCLUSION

The model of PBL4C (Problem Based Learning with 4C) assisted by e-LKS application on android can improve student learning outcomes in science subjects in the concept of inheritance in grade IX-H SMP N 29 Semarang. This can be seen from the increase in the results of student learning activities in groups (very active and active categories), the level of mastery learning and absorption from the results of repetitions at the end of each cycle. Class learning completeness in cycle I was 72.72% and increased to 87.87% in cycle II. The average score gained of students on the material studied has exceeded the specified KKM value (70), which in the first cycle of 73.78 increased to 79.39 in the second cycle.

ACKNOWLEDGEMENT

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Flipped Learning for EFL Writing in An Indonesian Senior High School

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Abstract: Indonesian students specifically Banyumas students seem to lack proficiency in writing English. In addition, teachers continue to use traditional, teacher-centered methods in teaching English as a foreign language (EFL). The flipped learning (FL) approach where video lectures are assigned as online homework before class, followed by learning activities during class, might be able to address the issue of the lack of proficiency in writing. English analytical exposition is one main writing focus in this research proposal that will be taught to the students. This research was aimed to investigate whether flipped learning is more effective than conventional teaching method in teaching writing for the eleventh grade students of Baturraden Senior High School.

The method which was employed in this research was an experimental research. The population of the research was the eleventh grade students of Baturraden Senior High School. The two classes were taken by using cluster random sampling technique. The sample in this research was two classes; class XI IPS 1 consisting of 33 students as the experimental class and class XI IPS 2 consisting of 33 students as the control class. The research instrument was a writing test about analytical exposition text which was designed by the researcher. In collecting the data, the researcher made some steps: (1) conducting pre-test; (2) applying teaching methods to the students in seven meetings; (3) giving post test to the students; and (4) analyzing the students' writing competence. The data were obtained from writing test. They were analyzed in the terms of their frequency distribution, normality of the sample distribution, and the data homogeneity and then independent t-test.

The result of the research findings leads to the conclusion that flipped learning is more effective than conventional teaching method to teach writing for the eleventh grade students of Baturraden Senior High School.

Keywords: writing, Flipped Learning, Conventional teaching method, experimental study

INTRODUCTION

English is the most widely-used language by the people around the globe. The role and status of English is that it is the language of social context, political, sociocultural, business, education, industries, media, library, communication across borders, and key subject in curriculum and language of imparting education (Graddol, 1997: 16). Writing in English is important not only in the classroom, but also for encounters in real-life situations. The students write an English text when there is an assignment given by their teachers. They hardly ever compose any kind of writing text if their teachers do not instruct them to do that. They cannot improve their writing proficiency because they do not learn on how to make themselves to be proficient in writing. Writing proficiency seems to be positively related to learning (Elliss, Taylor &Drury, 2005; Manchon & Roca de Larios, 2007). The more the students learn on how to write and also practice writing frequently, the better their writing proficiency is. Besides, teachers are able to identify errors and diagnose the extent of students' understanding of the subject through students' writing (Krause, 2001; Maclellan, 2004).

It is undeniable for conventional teaching method that the teacher offloads the content to the students directly and gives the students homework to be done at home. In a flipped, or inverted classroom, things are done the other way around; the teacher delivers lectures before class in the form of pre-recorded videos, and spends class time engaging students in learning activities that involve collaboration and interaction. The activities which are done passively such as unidirectional lectures are pushed to outside class hours, to be replaced with active learning activities in class. According to Lage, Plart and Treglia, 2000, the term inverted classroom appeared in the literature as early as 2000 and Chemistry teachers Bergmann and Sams made it well-known in recent years (Bergman and Sams, 2012, 2012a).

Shimamoto (2012) in an international journal entitled "Implementing a Flipped Classroom: An Instructional Module" stated that flipped classroom has chances to cause a significant shift on the delivered instructional method. By using technology, a teacher now can give alternative to traditional-based learning model with applying mixed learning method which combines the

benefits of the direct instruction and active learning to involve the students in the learning process.

Roehl and Linga (2013) in an international journal entitled "The Flipped Classroom: An Opportunity to Engage Millennial Students through Active Learning Strategies" stated that in order to introduce several new strategies which are transferred from the teacher and the students' thoughts, the teacher has to carry out a research with an alternative strategy in the class. As the instructor that will use the new strategy, flipped classroom is very important in education reflected in an effective learning. By using active learning and flipped classroom learning strategy enriched with technology, the students will develop their creative thinking skill be higher.

Pierce and Fox (2012) in American Journal of Pharmaceutical Education entitled "Instructional Design and Assessment Podcasts and Active Learning Exercises in A "Flipped Classroom" Model of A Renal Pharmacotherapy Module" stated that applying flipped classroom model for renal pharmacotherapy module results in the students' achievement higher and the students' perception about instructional approach is good. Factors which possibly contribute toward the improvement of the students' score include: the students are mediated with the lecture materials before they get into the class, criterion referenced and formative evaluation is given when the module and the classroom activities are done interactively.

Tirtasanjaya, et al (2012) in an international journal entitled "Assessing the Effectiveness of Flipped Classroom Pedagogy in Promoting Students' Learning Experience" stated that the implementation of flipped classroom model was valuable for the future. One of the possible improvement includes the differentiation of guided questions used in the low level of Bloom taxonomy for the independent work (at home) and the high level of Bloom taxonomy for the in-class activity. Marlowe (2012) in her research entitled "The Effect of The Flipped Classroom on Student Achievement and Stress" revealed that the flipped classroom could give an effect and difference on the students' achievement and the stress level. For the sophomore, the students watched the video of lecture outside the class and the assignments done in the classroom. The students reported that their level of stress decreased in the class environment compared to the other classes. Besides, the semester score showed an improvement, while the final test semester did not show an improvement. Overall, the students showed positive feeling on the flipped classroom and they could choose their own assignments and explore the

more interesting concepts to be explored.

In flipped learning or flipped classroom, the teacher creates video lecture and shares with students, while in the classroom the teacher facilitates discussion and answers students' questions. For the students, they watch the video of the teacher's lecture at home. Then in the classroom, they ask questions to the teacher and participate in learning activities. Referring to Bloom's Taxonomy, flipped learning enables the students to think logically and systematically. Before the class or when the students are at home, the students watch the video lecture given by their teacher. Here the phase of Bloom Taxonomy, remembering and understanding, is applied by the students. During the class, the students ask questions regarding the video lecture they have watched at home. Besides, the students participate in all learning activities provided by the teacher. The phase of applying and analyzing is implemented in this case. After the class, the students do the evaluation of their learning and the progress of their English proficiency. In addition, the phase of creating allows the students to compose a writing text. All phases in Bloom Taxonomy can be applied when we use flipped learning to teach English to the students so that the students can sharpen their high order thinking skill.

In most senior high school in Indonesia, the teaching of writing is still done using traditional way. The traditional teaching method commonly uses several teaching steps, teacher instructs the materials to the students, the students take notes, the students follow guided instruction, the teacher gives assessment, and the students have homework. The students have no improvement in their writing proficiency since there is not any variety in the teaching and learning process. The teacher teaches how to write an English text monotonously so that the students get bored and not interested in the lesson. Besides, the teacher gives few practices and feedbacks on their writing as the teacher has believed that the materials have been delivered well without checking whether the students have really understood how to write or not.

In Baturraden senior high school, there are ten classes of the eleventh graders divided into the science and the social. The teachers of English there have no idea about what flipped learning is and how to use it to teach English. They teach the students using a conventional teaching method. The students do the learning activities passively so that their English proficiency is still considered very low.

Having seen the facts explained above, the researchers have conducted an experimental research entitled "Flipped learning for EFL Writing in An Indonesian Senior High School". This research was aimed to investigate whether flipped learning is more effective than conventional teaching method to teach analytical exposition text writing to the eleventh graders of Baturraden Senior High School in Banyumas Regency, Indonesia.

LITERATURE REVIEW

A. Flipped Learning

1. Definitions of Flipped Learning

Flipped learning is a pedagogical approach that moves direct instruction away from the group learning space to the individual learning space, and the resulting group space is transformed into an interactive learning environment where the educator facilitates the learning process (Flipped Learning Network, 2014).

Flipped learning is a learning model in which the students gain first-exposure learning prior to class and then have the students focus on the processing or higher order learning (synthesizing, analyzing, and problem solving) in the classroom. The students receive feedback from the teachers during class time as students are completing assignments and activities in the classroom (Brame, 2013)

Flipped learning is a learner-centered learning environment focusing on the students' experience of learning and not on the delivery of instruction in the classroom. In a traditional classroom where the teacher is the direct source of information and the sage of the stage, the flipped learning promotes growth and development of learning (Jarvis et al, 2014)

Flipped learning means students are exposed to new material outside the classroom, via reading or lecture and demonstration videos (Brame, 2013). Flipped learning or flipped classroom is a teaching strategy that allows instructors to more actively engage with students in the classroom. This is a form of blended learning, a term that refers to any form of education that combines face-to-face instruction with computer-mediated activities (Flipped Classroom Field Guide).

Based on the definitions of flipped learning above, it can be concluded that flipped learning is a learning model which moves direct instruction away from the group learning space to the individual learning space and it enables the students to obtain the first-exposure learning prior to class as well as promoting growth and development of learning.

2. Benefits of Using Flipped Learning

a. Flipped learning makes course concepts more meaningful and relevant to students.
b. Flipped learning helps students to explore diverse perspective.
c. Flipped learning tests student assumptions.
d. Flipped learning improves students' communication skills.
e. Flipped learning develops a better understanding of the students' perspective.
f. Instructors implementing flipped learning can use various methods for preparing the online content.
g. Flipped learning allows for a range of teaching methodologies to be employed.
h. Flipped learning allows teachers greater insight into students' grasp of information and learning as a result of increased student/teacher interaction.
i. Flipped learning allows students who may be hesitant to ask question in the middle of a lecture to seek assistance from the teacher during their individual feedback sessions.
j. Students also have the opportunity to "replay" the lectures several times before formulating their writing.
k. Flipped learning provides ability for the class to move forward despite both teacher and student absence.

B. Analytical Exposition Text

Analytical Exposition is a text that elaborates the writer's idea about the phenomenon surrounding. Its social function is to persuade the reader that the idea is important matter, and to analyze the topic that the thesis/opinion is correct by developing an argument to support it. Generic structure of analytical exposition text consists of thesis statement, arguments and reiteration.

C. Teaching Writing Analytical Exposition Text Using Flipped Learning

In flipped learning, the teacher/educator assigns the class lecture or instructional content as homework. In preparation for class, students are required to view the lecture. According to Tucker (2012), students utilize the time in class to work through problems, advance concepts, and engage in collaborative learning.

In this research, the researchers applied flipped learning to teach writing to the eleventh graders of IPS II of Baturraden Senior High School for seven meetings. Here is the list of the meeting sequence of the flipped learning class.

Table 1. Meeting Sequence of the Flipped Learning Class

NO	MEETING	MATERIALS	INDEPENDENT WORK (AT HOME)	IN CLASS ACTIVITIES
1	1st	Pre-Test	-	-
2	2nd	Understanding Analytical Exposition Text	✓ Watching lecture video about understanding analytical exposition text (social function, language features, generic and schematic structures). ✓ Online discussion using Edmodo and WhatsApp group.	✓ Peer review ✓ Exercises
3	3rd	Writing An Opening Paragraph	✓ Watching lecture video about writing an opening paragraph. ✓ Online discussion using Edmodo and WhatsApp group.	✓ Peer review ✓ Exercises ✓ Problem-solving activities ✓ Discussing and Collaborating ✓ Creating

4	4th	Writing A Thesis Statement	✓ Watching lecture video about writing a thesis statement. ✓ Online discussion using Edmodo and WhatsApp group.	✓ Peer review ✓ Exercises ✓ Problem-solving activities ✓ Discussing and Collaborating ✓ Creating
5	5th	Writing Body Paragraphs	✓ Watching lecture video about writing body paragraphs. ✓ Online discussion using Edmodo and WhatsApp group.	✓ Peer review ✓ Exercises ✓ Problem-solving activities ✓ Discussing and Collaborating ✓ Creating
6	6th	Writing A Concluding Paragraph	✓ Watching lecture video about writing a concluding paragraph. statement. ✓ Online discussion using Edmodo and WhatsApp group.	✓ Peer review ✓ Exercises ✓ Problem-solving activities ✓ Discussing and Collaborating ✓ Creating
7	7th	Writing A Complete Analytical Exposition Text 1	✓ Watching lecture video about writing a complete analytical exposition text. ✓ Online discussion using Edmodo and WhatsApp group.	✓ Peer review ✓ Exercises ✓ Problem-solving activities ✓ Discussing and Collaborating ✓ Creating a complete analytical exposition text in pairs.

8	8th	Writing A Complete Analytical Exposition Text 2	✓ Watching lecture video about writing a writing a complete analytical exposition text. ✓ Online discussion using Edmodo and WhatsApp group.	✓ Peer review ✓ Exercises ✓ Problem-solving activities ✓ Discussing and Collaborating ✓ Creating a complete analytical exposition text individually
9	9th	Post-Test		

D. Hypothesis

The hypothesis of this research is: Flipped learning is more effective than conventional teaching method to teach an analytical exposition text writing to the eleventh graders of Baturraden Senior High School, Banyumas regency.

METHODOLOGY

To collect the data, the researchers used writing test since the researchers wanted to get a clear picture on the subjects' writing competence. Hence, the study employed an analytical exposition writing test which were distributed to Indonesian EFL students, who were selected based on cluster random sampling.

A. Type of research

The type of this research is quasi-experimental research method with pretest-posttest non equivalent control group design.

B. Research subjects

There were 33 students from the eleventh grade of IPS II as the experimental class; and 33 students from the eleventh grade of IPS I as the control class. Both classes were from the same school, i.e. Baturraden Senior High School in Banyumas regency.

The reasons for having students from Indonesia specifically the students of Baturraden Senior High School was because 1) Indonesia was facing the

21ˢᵗ century learning which required the use of technology in the teaching and learning process, 2) the teachers and the students at this school never used information and communication technology in their English class. Therefore, flipped learning which gave an online learning content outside the classroom and a follow-up activity in the classroom was applied to teach writing an analytical exposition text to the eleventh graders of Baturraden Senior High School.

C. Research procedure

The procedures of this research were as follows:

1. Pre-Test

The students both in the experimental class and the control class were given a pre-test at the first meeting. The students were to write a 150-word analytical exposition text with the theme "the power of music" in 90 minutes.

2. Treatment Giving

The students in the experimental class was given the treatment i.e. writing an analytical exposition text using flipped learning, while the students in the control class was not given any treatment. The treatment was given for seven meetings.

3. Post-Test

The students both in the experimental class and the control class were given a post-test at the ninth meeting. The students were to write a 150-word analytical exposition text with the theme "the importance of exercise" in 90 minutes.

4. Data Collection and Analysis

After testing the students to write a 150-word analytical exposition text, the researchers collected their writing as the data of this research. Their writing was scored based on the content, organization, vocabulary, grammar and mechanics. The researchers employed the scoring rubrics for writing test taken from Brown and Bailey, 1984: 39-41 in Brown, 2004: 244-245). There were two raters to evaluate the students writing both pre-test and post-test writing in order to obtain the students' score objectively.

The analysis of the data was done using inferential analysis, descriptive analysis, and independent t-test.

RESULTS AND DISCUSSIONS

A. Data Description

As stated in the research procedure, this research employed data obtained from the students' writing scores taken from the experimental class treated by using flipped learning and control class by using conventional teaching method. The data description in this research is divided into four parts that are described below:

1. The Description of the Pre-Test Writing Scores of the Students Taught by Using Flipped Learning Method.

The pre-test writing scores of the students taught by using flipped learning method are presented in table 2.

Table 2
The Pre-Test Writing Scores of the Students Taught by Using Flipped Learning Method

Teaching Method	N	Mean	Median	Mode	S	Max	Min.
Flipped Learning	33	61,53	61.85	62.26	2.12	66	56

From the table 2, it is revealed that the mean score of the students' writing is 61.53, the median is 61.85, the mode is 62.26, and the standard deviation is 2.12. Then, the frequency distribution, the polygon, and the histogram of the pre-test writing scores of the students taught by using flipped learning are described in table 3 and figure 1.

Table 3
Frequency Distribution of the Pre-Test Writing Scores of the Students Taught by Using Flipped Learning Method

Class Limit	Mid Point (Xi)	fi	Xifi	Xi^2	$fiXi^2$
56-57	56.5	3	169.5	28730.25	86190.75
58-59	58.5	4	234	54756	219024
60-61	60.5	7	423.5	179352.25	1255465.75
62-63	62.5	12	750	562500	6750000

64-65	64.5	6	387	149769	898614
66-67	66.5	1	66.5	4422.25	4422.25
	N=	33	2030.5		9213716.75
	Mean=		61.53		
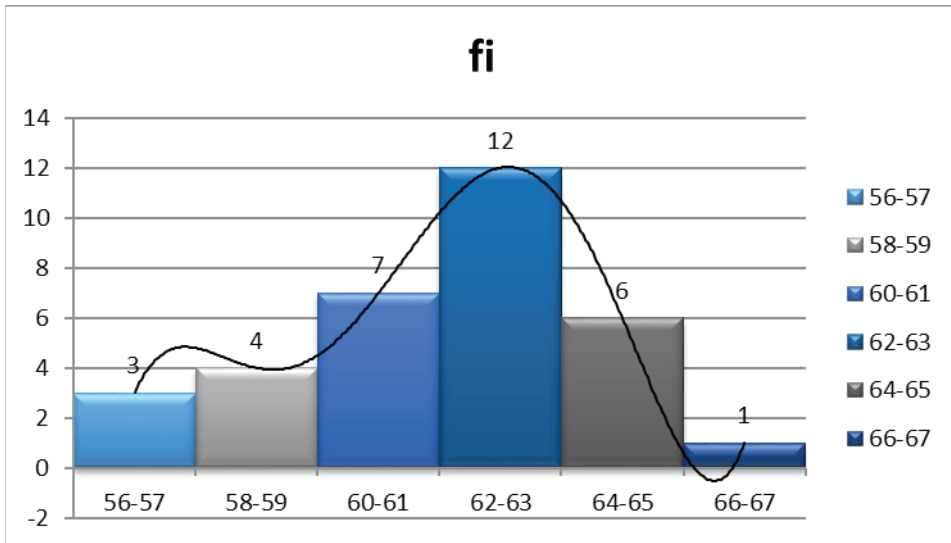
Figure 1

The Histogram and Polygon of the Pre-Test Writing Scores of the Students Taught by Using Flipped Learning Method

2. The Description of the Pre-Test Writing Scores of the Students Taught by Using Conventional Teaching Method.

The pre-test writing scores of the students taught by using conventional teaching method are presented in table 4.

Table 4

The Pre-Test Writing Scores of the Students Taught by Using Conventional Teaching Method

Teaching Method	N	Mean	Median	Mode	S	Max	Min.
Conventional Teaching Method	33	56.04	54.97	53.78	2.69	62	51

From the table 4, it is revealed that the mean score of the students' writing is 56.04, the median is 54.97, the mode is 53.78, and the standard deviation is 2.69. Then, the frequency distribution, the polygon, and the histogram of the pre-test writing scores of the students taught by using conventional teaching method are described in table 5 and figure 2.

Table 5

Frequency Distribution of the Pre-Test Writing Scores of the Students Taught by Using Conventional Teaching Method

Class Limit	Mid Point (Xi)	fi	Xifi	Xi^2	$fiXi^2$
51-52	51,5	3	154,5	23870,25	71610,75
53-54	53,5	10	535	286225	2862250
55-56	55,5	7	388,5	150932,25	1056525,75
57-58	57,5	5	287,5	82656,25	413281,25
59-60	59,5	4	238	56644	226576
61-62	61,5	4	246	60516	242064
N=		33	1849,5		4872307,75
Mean=			56.04		
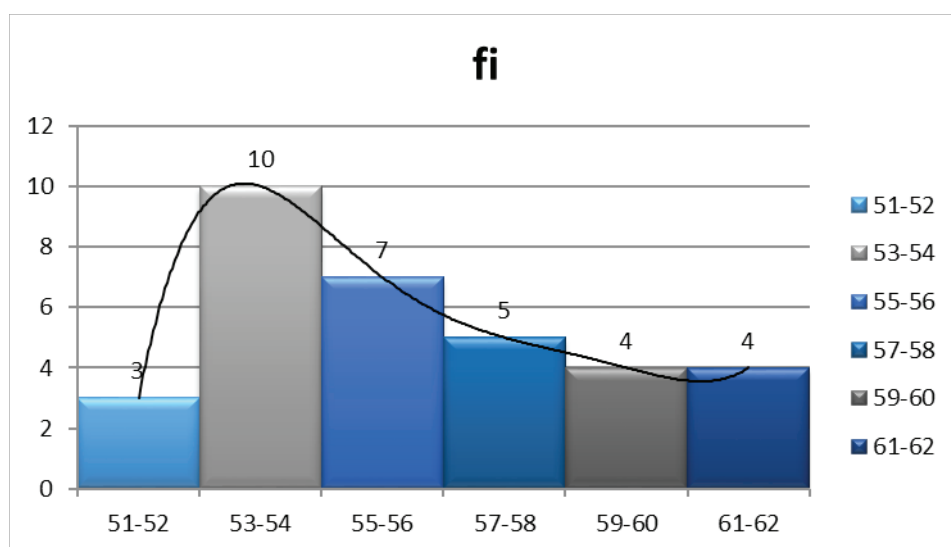
Figure 2

The Histogram and Polygon of the Pre-Test Writing Scores of the Students Taught by Using Conventional Teaching Method

3. The Description of the Post-Test Writing Scores of the Students Taught by Using Flipped Learning.

The post-test writing scores of the students taught by using flipped learning are presented in table 6.

Table 6
The Post-Test Writing Scores of the Students Taught by Using Flipped Learning Method

Teaching Method	N	Mean	Median	Mode	S	Max	Min.
Conventional Teaching Method	33	82.45	82.79	82.90	3.55	89.5	72.5

From the table 6, it is revealed that the mean score of the students' writing is 82.45, the median is 82.79, the mode is 82.90, and the standard deviation is 3.55. Then, the frequency distribution, the polygon, and the histogram of the pre-test writing scores of the students taught by using conventional teaching method are described in table 7 and figure 3.

Table 7
Frequency Distribution of the Post-Test Writing Scores of the Students Taught by Using Flipped Learning Method

| Class Limit	Mid Point (Xi)	fi	Xifi	Xi^2	$fiXi^2$
72-74	73	2	146	21316	42632
75-77	76	2	152	23104	46208
78-80	79	2	158	24964	49928
81-83	82	13	1066	1136356	14772628
84-86	85	11	935	874225	9616475
87-89	88	3	264	69696	209088
N=		33	2721		24736959
Mean=			82.45		
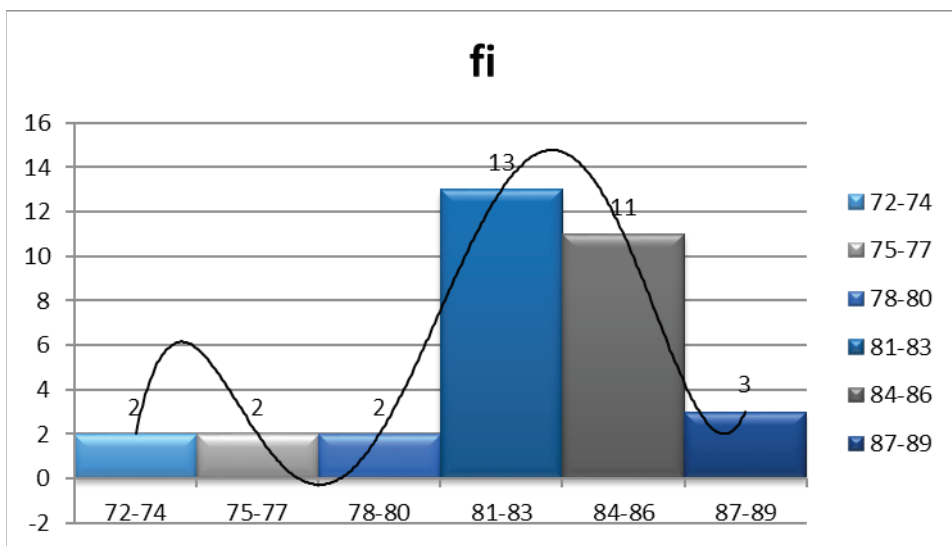
Figure 3
The Histogram and Polygon of the Post-Test Writing Scores of the Students
Taught by Using Flipped Learning Method

4. The Description of the Post-Test Writing Scores of the Students Taught by
Using Conventional Teaching Method.

The post-test writing scores of the students taught by using conventional
teaching method are presented in table 8.

Table 8
The Post-Test Writing Scores of the Students Taught by Using
Conventional Teaching Method

Teaching Method	N	Mean	Median	Mode	S	Max	Min.
Conventional Teaching Method	33	73.5	73.62	73.74	4.26	83.5	60

From the table 8, it is revealed that the mean score of the students'
writing is 73.5, the median is 73.62, the mode is 73.62, and the standard
deviation is 4.26. Then, the frequency distribution, the polygon, and the
histogram of the post-test writing scores of the students taught by using

conventional teaching method are described in table 9 and figure 4.

Table 9
Frequency Distribution of the Post-Test Writing Scores of the Students
Taught by Using Conventional Teaching Method

Class Limit	Mid Point (Xi)	fi	Xifi	Xi^2	$fiXi^2$
60-63	61,5	1	61,5	3782,25	3782,25
64-67	65,5	1	65,5	4290,25	4290,25
68-71	69,5	8	556	309136	2473088
72-75	73,5	12	882	777924	9335088
76-79	77,5	9	697,5	486506	4378556,25
80-83	81,5	2	163	26569	53138
N=		33	2425,5		16247942,75
Mean=			73.5		
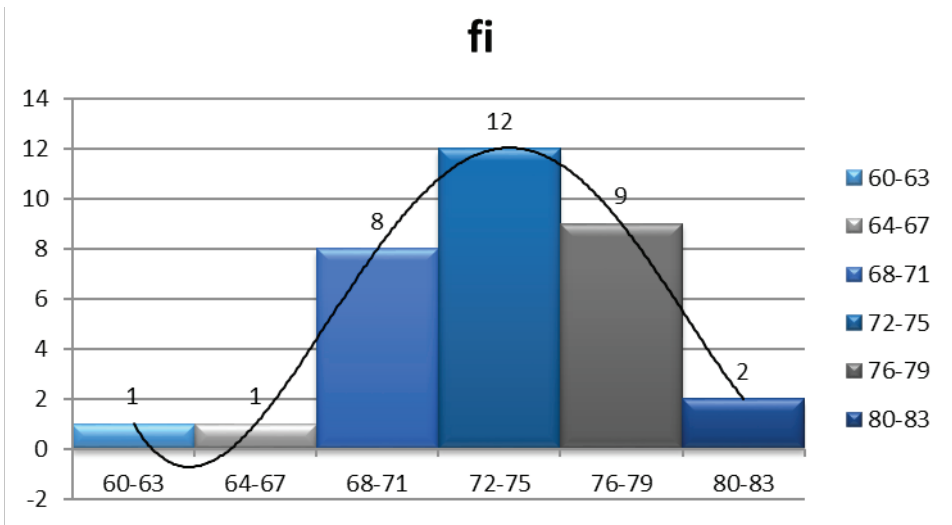
Figure 4
The Histogram and Polygon of the Post-Test Writing Scores of the
Students Taught by Using Conventional Teaching Method

B. Data Analysis

Prior to analyzing the data using inferential analysis, the distribution of the sample must be normal and homogeneous. The followings are about the results and the computations of normality and homogeneity tests applied to the obtained data.

1. Normality Test

Employing normality test is aimed to know whether a population is normal or not. In this research, the normality test was applied to the pre-test and post-test writing scores of experimental and control classes. Afterward, *Lilliefors* test was employed to find out the normality of teaching methods. The tests results are described in the table 10.

Table 10 The Summary of Normality Test using *Lilliefors*

No	Variables	L_o	Number of Data	L_{table}	Test decision	Description
1	Pre-Test Writing Scores of the Students Taught by Using Flipped Learning	0.1727	33	0.8860	H_o is accepted	Normal
2	Pre-Test Writing Scores of the Students Taught by Using Conventional Teaching Method	0.7562	33	0.8860	H_o is accepted	Normal
3	Post-Test Writing Scores of the Students Taught by Using Flipped Learning	0.0983	33	0.8860	H_o is accepted	Normal
4	Post-Test Writing Scores of the Students Taught by Using Conventional Teaching Method	0.0537	33	0.8860	H_o is accepted	Normal

The summary of the normality using *Lilliefors* test shows that all of the values (L_o) gained are lower than L_{table}. Therefore, it can be concluded that all of the samples based on both flipped learning method and conventional teaching method are normal.

2. Homogeneity Test

    a. Homogeneity Test of the Pre-Test

It is stated that the data are homogeneous if $\chi_0^2 \chi_0^2$ is lower than χ_t^2 χ_t^2 at the level of significance α = 0.05. The result of the homogeneity test of the pre-test can be seen in table 11.

Table 4.19 The Summary of Homogeneity Test of the Pre-Test
Writing Scores on Both Classes

Sample	df	1/(df)	s_i^2	log s_i^2	(df) log s_i^2
1	32	0.03125	6.172348485	0.7905	25.2944
2	32	0.03125	9.075284091	0.9579	30.6515
		0.0625	15.2476		55.9459

s_1^2 = 6.17
s_2^2 = 9.07
s^2 = 7.62
Log s^2 = log (7.62) = 0.882
B = (log s^2)$\sum(n_i$-1) = 0.882 (64) = 56.45
χ^2 = (ln 10){B-$\sum(n_i$-1)log s_i^2}
    = (2.302) (56.45-55.94)
    = 1.181

Based on the result of homogeneity test of the pre-test, it can be seen that the score of $\chi_0^2 \chi_0^2$ = 1.181. According to the table of Chi-Square distribution with the significance level α = 0.05, the value of $\chi_t^2 \chi_{t\,0.05}^2$ is 3.99. Due to $\chi_0^2 \chi_0^2$ (1.181) is lower than $\chi_t^2 \chi_{t\,0.05}^2$ (3.99) or $\chi_0^2 \chi_0^2 < \chi_t^2 \chi_t^2$ (1.181 < 3.99), it can be concluded that the date are homogeneous.

    b. Homogeneity Test of the Post-Test

The result of the homogeneity test of the post-test can be seen in table 12.

Table 12 The Summary of Homogeneity Test of the Post-Test
Writing Scores on Both Classes

Sample	df	1/(df)	s_i^2	log s_i^2	(df) log s_i^2
1	32	0,03125	14,3494	1,1568	37,0187
2	32	0,03125	22,3357	1,3490	43,1680
		0,0625	36,6851		80,1867

s_1^2 = 14.34

s_2^2 = 22.33

s^2 = 18.34

Log s^2 = log (18.34) = 1.263

B = (log s^2)$\sum$(n_i-1) = 1.263 (64) = 80.86

χ^2 = (ln 10){B-$\sum$(n_i-1)log s_i^2}

= (2.302) (80.86-80.18)

= 1.554

Based on the result of homogeneity test of the post-test, it can be seen that the score of $\chi_0^2\chi_0^2$ = 1.554. According to the table of Chi-Square distribution with the significance level α = 0.05, the value of $\chi_t^2\chi_{t\,0.05}^2$ is 3.99. Due to $\chi_0^2\chi_0^2$ (1.554) is lower than $\chi_t^2\chi_{t\,0.05}^2$ (3.99) or $\chi_0^2\chi_0^2 < \chi_t^2\chi_t^2$ (1.554 < 3.99), it can be concluded that the date are homogeneous.

C. Testing Hypothesis

In testing hypothesis, the independent t-test is used to find out if there is a significant difference between the scores of the experimental class and the control class. The researchers tested the hypothesis using the independent t-test for both the students' pre-test and post-test writing scores. Based on the result of the independent t-test on the students' pre-test writing, it can be seen that the t-count was 8.117. According to the table of t-distribution with the significance level α = 0.05, the value of t-table is 1.695. Because the t-count (8.117) is higher than the t-table (1.695), it can be concluded that there is a significant difference on the students' pre-test writing scores in both classes. The researchers did another testing on the students' post-test writing scores. From the calculation using the independent t-test, it can be found that the t-count is 8.377 and the t-table is 1.695. due to the

t-count (8.377) is higher than the t-table (1.695), it can be concluded that there is a significant difference on the students' post test writing scores in the experimental class and control clas. In other words, the flipped learning applied in the experimental class is more effective that the conventional teaching method used in the control class. It can also be proven from the mean score of the post-test in the experimental class is 82.45, while the mean score of the post-test in the control class is 73.5. because the mean score of the post test in the experimental class is higher than that in the control class, it can be concluded that using flipped learning differs significantly from conventional teaching method to teach writing.

D. Discussion of the Findings

This research is an experimental research conducted to find out the effectiveness of flipped learning method to teach writing to the eleventh grade students of Baturraden Senior High School in Banyumas regency. According to the research findings, it can be said that the flipped learning method is more effective than the conventional teaching method to teach an analytical exposition text writing.

Flipped learning method or flipped classroom is a method which enables the students to watch the video of the lecture and have a discussion using Edmodo and WhatsApp group about the video they are watching at home. In the following day the students come to the classroom and have in-class activities. The students have peer-review about the video they have watched at home beforehand and they may ask questions to the teacher about what they have not understood about the content of the video. The teacher ensures the students have the same perception about the materials seen in the video. Then, the teacher gives them some other additional activities such as problem-solving, exercises, discussing and collaborating, and creating. All of these activities allow the students to employ digital learning since they have to watch the video online and have a chat using Edmodo. Besides, the flipped learning method helps the students to have interaction with each other. The student interactions with each other, the teacher and the content have increased with the flipped learning method. The interaction takes place when the students start writing the text both outside the classroom and inside the classroom. The flipped learning method encourages the students to develop their ideas and then write their ideas effectively. The

teacher facilitates the students with exercises in the classroom which enable the students to improve their writing. Bergman & Sams (2012) states that the flipped learning method is an innovative way to restructure the classroom in order to focus attention on the learner.

On the contrary, the conventional teaching method allows the students to join the class of writing with one-way interaction because the teaching and learning process mainly focuses on the teacher or what so-called teacher-centered learning. The students will not work productively and effectively if the conventional teaching method is used to teach writing because they have lack of exercises and interaction with each other.

CONCLUSION

Based on the result of the hypothesis testing, the research finding is that the flipped learning method is more effective than the conventional teaching method to teach writing an analytical exposition text.

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APPENDICES:

PRE-TEST

WRITING TEST

POST-TEST

WRITING TEST

Community Outreach through Technology by Mobile Apps Extracurricular in Karangturi Senior High School

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Abstract: This project was organized by an Information System Department because there was a request from Karangturi Senior High School to hold mobile apps extracurricular there. Before the program started we are invited to join in extracurricular expo in Karangturi Senior High School. The purpose of this expo is to introduced what we are going to do in this mobile apps extracurricular. After the expo students who attended the expo decided what extracurricular they are going to take this semester. Finally there are five students who are joined to our extracurricular. The main objective of this project is to introduce the making of mobile apps to senior high school students. Another goal is to introduce the Information System Department of Unika Soegijapranata so that it is expected that there are senior high school graduates from Karangturi who are interested in continuing their education in the Unika Soegijapranata Information System Department. The next goal is to train Information System Department college students to implement their knowledge while learning to teach Karangturi Senior High School students. The hope is that by training Information System Department college students to teach from early stage, the Information System Department does not have difficulty in regenerating lecturers in the future.

Key words: community outreach project, mobile apps, knowledge bridge

INTRODUCTION

Outreach is the effort of someone who is a member of an organization or group with the aim of conveying their ideas or solutions for the benefit of other organizations, groups, specific audiences or the general public, while the community is a collection of people with similar interests, who usually

live in certain areas. Community Outreach Project (COP) is a project carried out by a particular organization or group with the aim of transferring the knowledge and skills they have for the benefit of other communities or groups in need (Weide & Zlotnikova, 2013). There are many examples of COP that are implemented all over the world, the method of grouping has been presented by Weide and Zlotnikova (2013).

In this study, the focus is on the COP with the theme of introducing the creation of mobile applications in high school students. The special interest of researchers is mainly at the COP which emphasizes collaboration between lecturers, students from the Information Systems Department of Unika Soegijapranata and high school students from Karangturi. Researchers call this collaboration a bridge of knowledge. The researcher will explain the concept of the knowledge bridge later in this paper.

LITERATURE REVIEW

A. The Model of Knowledge Bridge

The main assumption made in this study is that researchers consider COP as a bridge of knowledge between two (or more) partners in universities and high schools. The concept of knowledge bridge itself was introduced by Pscheidt and Weide (2010). The researcher also assumes that the transfer of knowledge mostly takes place in one direction - from more experienced partners to less experienced partners. Our assumption is that building a successful knowledge bridge will contribute to the continued introduction of the creation of mobile applications.

We further assume that, in the initial stages of introducing the creation of a mobile application, partners on the receiving side may indicate a lack of knowledge about creating a mobile application to be introduced (how to create a mobile application, what software to use, how to compile and try it on a mobile phone, etc.), especially if creating mobile applications is unstructured. Thus, there is a need for skills and knowledge to be transferred effectively from more experienced partners (what we call "knowledge partners") to less experienced partners ("intermediary partners"). The intermediary partner then subsequently transfers knowledge to target high school (functioning as an intermediary). We call this knowledge transfer mechanism a bridge of knowledge (Pscheidt & Weide, 2010). The knowledge bridge model is shown in Figure 1.

Figure 1:
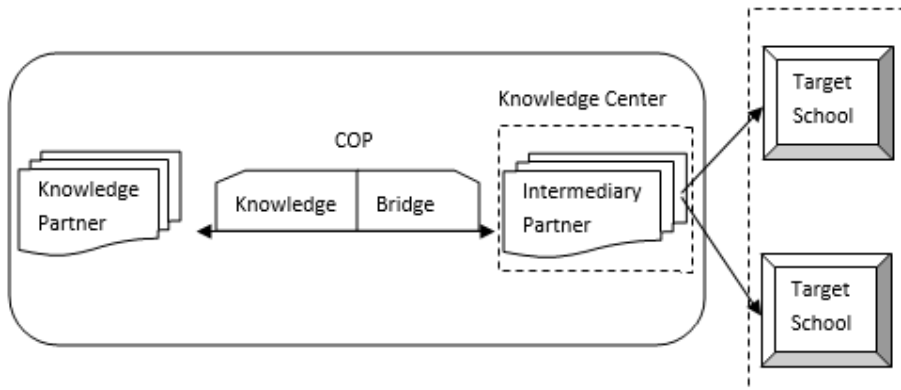
The knowledge bridge is intended to describe a situation where, in addition to the introduction of actual mobile application development (for example, in schools), there is also infrastructure that must be built to support the training. The bridge of knowledge connects two partner organizations that might stand at completely different levels of development. Although knowledge is largely transferred in one direction - from knowledge partners to intermediary partners - there is also feedback coming from intermediary partners.

B. MIT App Inventor 2

MIT App Inventor is an online development platform that can be used by anyone to solve real-world problems. MIT App Inventor provides a web-based "What you see is what you get" (WYSIWYG) editor for building mobile applications that target the Android and iOS operating systems. WYSIWYG editor we can see in Figure 2.

Figure 2:
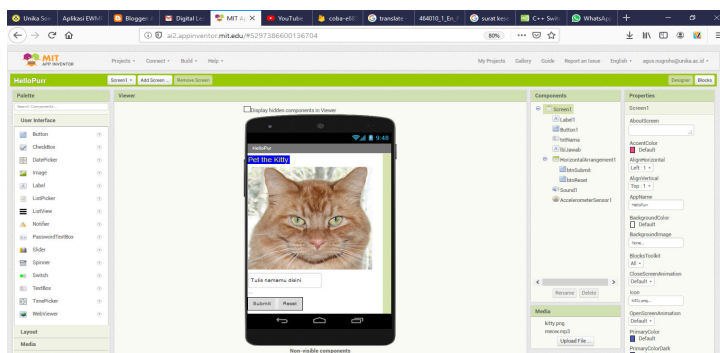
MIT App Inventor uses block-based programming languages built on Google Blockly (Fraser, 2013) and is inspired by languages such as StarLogo TNG (Begel & Klopfer, 2007) and Scratch (Resnick et al., 2009; Maloney, Resnick, Rusk, Silverman, & Eastmond, 2010), allowing anyone with different levels of knowledge to build mobile applications to meet needs and solve problems in society. Block-based programming language in MIT App Inventor 2 we can see in Figure 3. To date, 6.8 million people in more than 190 countries have used MIT App Inventor to build more than 24 million applications. MIT App Inventor offers interfaces in more than a dozen languages. People around the world use MIT App Inventor to provide mobile solutions to real problems in their families, communities and the world. This platform has also been adapted to serve the needs of more specific populations, such as building applications for emergency / first responders (Jain et al., 2015) and robotics (Papadakis & Orfanakis, 2016).

Figure 3:
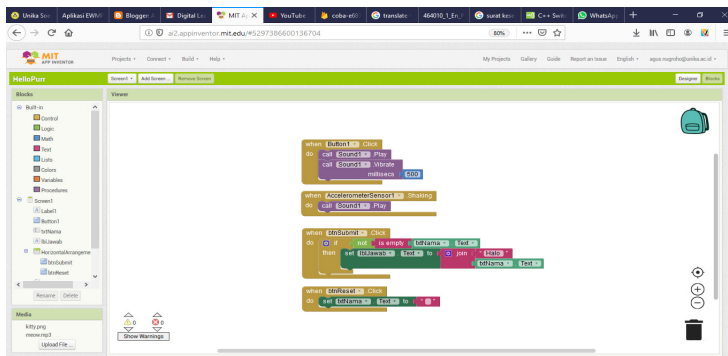
C. Empowerment through programming

By generating student programming output on mobile devices, MIT App Inventor 2 enables students to move from their work from conventional computer laboratories into their daily lives and communities. This transition has a strong impact on what students create, what solutions they provide to solving a problem and how they develop themselves as a digital generation. This allows students to shift their perceptions about themselves from individuals who "know how to code" become part of several communities that are empowered to have real solutions in their lives and those of others. MIT App Inventor 2 has transformed computational education from a focus on theory to a focus on practice, MIT App Inventor 2 has successfully conceptualized computational education through the lens of computational

action and supports students to engage in the wider community of digitally empowered content creators (Kong et al, 2019).

METHODOLOGY

A. Type of research

This research uses quantitative and qualitative methods. Quantitative methods are used because one measure of the success of this activity is determined by the final score obtained by the participants. Another success parameter is that it is hoped that this training will continue to be held in the future with an increasing number of participants. In addition, this training is also a promotional medium to introduce the Soegijapranata Information Systems Department to high school students so it is expected that the number of students coming from high schools where the training will be held will increase in terms of numbers.

Whereas the qualitative method is used because the measure of success of this training is expected to instill the soul of educators towards students who become trainers in this training. So that in the future there will be students interested in becoming lecturers, especially in the Information System Department at Unika Soegijapranata. This certainly makes it easier for Information System Department to regenerate lecturers in the future.

B. Research subjects

There are 5 Karangturi High School students who participated in the introduction training of making this mobile application, 3 people came from 10th grade and 2 people came from 11th grade. While students who helped as trainers were 3 people with 5 and 6 semester backgrounds from the Information Systems Department Unika Soegijapranata. While the lecturer who accompanied the research was the researcher himself who also came from the Information Systems Department of Unika Soegijapranata. The three entities above are the subject of this research.

The reason for having students from Karangturi High School, students and lecturers from the Unika Soegijapranata Information Systems Department was because Karangturi High School initially contacted the Unika Soegijapranata Information Systems Department and said that it needed the help of teaching staff to organize an extracurricular introduction

to making mobile applications. This was then well responded to by the Information Systems Department of Unika Soegijapranata. The Information Systems Department of Unika Soegijapranata then formed a team to provide the training with an accompanying lecturer assigned to assist and conduct a selection of students who were deemed capable of providing material regarding the introduction of making mobile applications. After that the team made a presentation in front of the Karangturi High School academic board and was approved. Furthermore, the Karangturi High School academic management invited a team of trainers to take part in an extracurricular introduction expo at Karangturi High School. This Expo aims to introduce what extracurriculars are offered by schools in that period. The expo was attended by approximately 150 students. After the expo ended, finally there were 5 students who decided to join the extracurricular introduction of making mobile applications.

C. Research procedures

With regards to a research procedure theorized by (Kumar, 2019), who believe that the following procedures must be made to make the research valid :

1. Interviewing

    At the first extracurricular meeting, interviews were held with participants. The first question is why they chose extracurricular introduction to making mobile applications. The second question is whether they have learned programming languages before, if the answer is yes what application was previously made. The last question is what are their hopes or expectations after completing this extracurricular activity. The purpose of this interview is to find out why they are interested in participating in this training. Then to find out the level of their knowledge of the material to be provided. Finally, to know the expectations or expectations after completing this extracurricular activity.

2. Pre-test

    Pre-test is given at the first meeting. Students are asked to make their first mobile application based on the modules provided. The first mobile application created was called HelloPur. This application is more or less the same as making a program to print Hello Word sentences in other programming languages. In this pre-test students are only allowed to read the modules provided without internet access

and may not ask each other questions. So they can focus on following the steps in the module. In addition the module uses English so that we can also find out the competence of students in following the instructions given in English. The pre-test results are used as one indicator to classify students' competencies with the material that will be provided during extracurricular activities.

3.   Observation

In making observations, teachers use checklists to observe student participation in class activities and student behavior. Field notes relating to student habits, interactions and behavior were also made. By observing, we can find out the level of student curiosity of the material provided, students 'efforts in trying to develop applications, students' resilience in facing applications that experience errors and accuracy in finding and correcting errors. In addition we can also see the willingness of students to share knowledge by teaching other students who are experiencing difficulties. Because one of the best ways to learn is to teach others.

4.   Letting the college student to teach

After the 5th meeting it is time for college students to teach high school students independently in class. Previously at the 1-4 meeting the supervising lecturer still accompanied college students in teaching high school students in class. This is because the first is to provide introductory and adaptation time both for high school students and university students to get to know and interact with each other. This is important in order to build a sense of comfort and not hesitate to one another. Second is to know each high school students character so trainer can treat them appropriately.

In addition, there are also obstacles which is college student schedules collide with extracurricular class schedules. But finally after coordinating with the Head of Information Systems Department finally found a solution that is by changing the schedule of college student class one hour early. So that after class they can still teach extracurricular at Karangturi High School.

5.   Post-test

Post-test is as important as Pre-test with the aim of knowing the level of competence of students and whether they are able to implement the material obtained during extracurricular activities. Besides not

only implementing the material obtained during extracurricular students are also expected to be able to further develop and explore the material that has been given so that students will have many options when faced with real problems in the community. Post-test will be given after every 4 extracurricular meetings so that the trainer can evaluate the students' ability to understand and implement the material. Post-test will be given in the form of presentations by each student regarding the development of the mobile application they make. At the presentation the trainer will ask about the components and how the block program they use. In addition the trainer will also ask about the obstacles encountered during the process of developing the mobile application. Other students are also given the opportunity to ask questions and give input when their friends make presentations.

RESULTS AND DISCUSSIONS

A. Results

During the interview at the first extracurricular meeting the introduction of making the car application 3 students gave reasons why they were interested in participating in this activity in order to be able to make a mobile application as we demonstrated during the expo before the extracurricular activities began. While 2 other students said that why they were interested in participating in this activity was because they wanted to learn to make a simple game that we also demonstrated during the extracurricular expo.

2 students also said that they had previously learned programming languages but were still at a basic level. While 3 other students said that they had never learned a programming language.

The results of this study provide information about how students are enthusiastic about joining this extracurricular activity. With more positive student perceptions, students will be more diligent in coming to class. A number of evaluations have been carried out, thus, showing that student learning outcomes have been obtained.

The results are based on the Pre-test, which shows that 3 students scored B or 60% of the total 100% of participants. Then 2 student gets an BC score or 40% of the total 100% of the participants. The following table

shows the results in more detail :

Table 1:
Students' score range

Range	Grade letter	Students	Percentage
81-100	A	0	0%
71-80	AB	0	0%
66-70	B	3	60%
61-65	BC	2	40%
56-60	C	0	0%
46-55	D	0	0%
0-45	E	0	0%

Another results are based on the Post-test, which shows that 2 students scored A or 40% of the total 100% of participants. Then 1 student gets an AB score or 20% of the total 100% of the participants. One student gets a B score or 20% of the total 100% of the participants. Last student gets a BC score or 20% of the total 100% of the participants. The following table shows the results in more detail :

Table 2:
Students' score range

Range	Grade letter	Students	Percentage
81-100	A	2	40%
71-80	AB	1	20%
66-70	B	1	20%
61-65	BC	1	20%
56-60	C	0	0%
46-55	D	0	0%
0-45	E	0	0%

We can compare the pre-test and post-test results above. Where the pre-test results were taken at the beginning of the extracurricular to find out the basic competencies of the students participating in the extracurricular activities. The result is that 3 people have sufficient competence to obtain a B value to take part in this training because they have learned programming languages before. Whereas 2 people did not have sufficient initial competence to obtain a BC value because they had never learned a programming language. But after attending extracurricular activities for about 4 meetings we can see through the results of the post-test that the average value of the participants has increased to 2 people succeeded in getting an A value, 1 person got an AB value, 1 person got a B value and 1 person gained BC value.

Other results achieved were that college students had the courage and confidence to teach without being accompanied by a lecturer. This happens because they already have enough adaptation time to get to know and interact with the trainees. The college students also more or less already know the character of extracurricular participants. Where according to the results of joint observations there are 2 students who need special attention. The participants also began to feel comfortable studying with the college students as evidenced by the active participants to ask questions when they had difficulty while doing the question exercises. In addition, the extracurricular participants also often asked the accompanying lecturer where the college students were when they were unable to teach because the class schedule was still colliding with the extracurricular activities schedule.

CONCLUSION

The conclusion of this project is to introduce making mobile applications to high school students MIT app inventor 2 is the right choice. Because the interface that supports what you see is what you get and summarizes lines of complex program code into programming blocks.

This extracurricular activity has also succeeded in increasing the competency of the participants from the beginning never having learned a programming language and making an application to gain new experience by learning programming languages through program blocks at MIT App Inventor 2 while creating various kinds of mobile applications and simple games at their gadget. Another goal is to introduce the Unika Soegijapranata Information Systems Department, which has also been successfully carried out, just waiting for high school graduates from Karangturi to be interested

in continuing their education at the Unika Soegijapranata Information Systems Department. This extracurricular activity has also successfully trained Information Systems Department students to apply their knowledge while learning to teach Karangturi High School students. Just waiting for the future whether any of these college students who choose the teaching profession in the future.

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From Field to Virtual: Developing Hybrid-Learning Media of Earthquake and Tsunami Disaster Resilience Strategy of Fishing Village Community in Bandar Lampung

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Abstract: Indonesia is an earthquake and tsunami prone area, therefor, disaster resilience strategy is important for surviving and living. The topic of disaster resilience strategy of earthquake and tsunami and case study at Kangkung village in Bandar Lampung then become a topic of hybrid-learning for students with videos as media. It brings a case study of earthquake and tsunami disaster resilience strategy from field to the class by virtual learning media. The research conducted by mix method of (1) Fieldwork approach; (2) Hybrid-learning media production; and (3) Qualitative approach. Fieldwork conducted by observation and documentation (pictures and movies) of Kangkung fishing village community in Bandar Lampung while qualitative approach conducted by questionnaires and in-depth interview to students of Department of Infrastructure and Environmental Engineering, Soegijapranata Catholic University. The results have been analyzed by scoring method. Several conclusions can be described as: (1) five aspects of attractiveness,

delivery, learning atmosphere, understanding, and motivation inflicted, can be applied in scoring method; and (2) hybrid-learning media is very good to implemented to learn disaster resilience strategy of earthquake and tsunami at Kangkung fishing village in Bandar Lampung.

Key words: hybrid-learning, media, disaster, resilience, strategy, earthquake, tsunami.

INTRODUCTION

It is a fact that Indonesia is vurnerable to earthquake and tsunami. Several earthquakes followed by big tsunami had destroyed coastal areas happened such as in Palu 2018. Early warning system of tsunami generated by earthquake even announced in August 2, 2019, with magnitude of 6.9 SR, 48 km depth and epicentrum in Pandeglang, West Java. Some coastal cities from Lampung in Sumatera to Purworejo suffered the impact of the earthquake vibration. More than 100 houses collapse and people run for evacuation to higher land.

Fishing villages along the earthquake prone coastal line are the most vulnerable areas to the earthquake and tsunami. The hazard of earthquake and tsunami must be coping with good Disaster Risk Reduction (DRR) for resilience. Since the fishing villages and coastal community in Indonesia generally have some characteristic of poverty, bad livelihoods, and low educational level (Gai, et.al., 2018; Susilorini, et.al., 2019), their future and sustainability being uncertain. Hence, this research conducted to picture out the resilience strategy of earthquake and tsunami in coastal area, especially in fishing village community in Bandar Lampung, by delivering hybrid learning media to the students. The students may not experience those disasters by themselves, but the will learn from hybrid-learning media as clear and good explanation of the course delivered to them.

It is important to know that we have field experience that which was delivered to students and helped them to have better learning session in Department of Infrastructure and Environmental Engineering. We expected that our field investigation can also experienced by students "virtually" which increase their the understanding of the course and achieve the learning outcome. Therefor, the research is aimed to inflict student motivation and

awareness of earthquake and tsunami at fishing village community related to earthquake and tsunami disaster issue in Bandar Lampung.

Hence, prior to the goals, the objectives of the the research can be determined as: (1) To develop hybrid-learning media for learning program in Department of Infrastructure and Environmental Engineering with topic of earthquake and tsunami disaster resilience strategy of fishing village community in Bandar Lampung. The hybrid-learning media will provide audio visual media that is accessible in Youtube and contains knowledge and science earthquake and tsunami disaster resilience strategy of fishing village community as whole person education also become an issue to explore; (2) To implement the hybrid learning media with topic of earthquake and tsunami disaster resilience strategy of fishing village community in Bandar Lampung in Course Program of "Introduction of Infrastructure Engineering" at Department of Infrastructure and Environmental Engineering; and (3) To review and to analyze the implementation of hybrid learning in Department of Infrastructure and Environmental Engineering with topic of earthquake and tsunami disaster resilience strategy of fishing village community in Bandar Lampung.

LITERATURE REVIEW

A. Disaster and Resilience Strategy of Earthquake and Tsunami

Figure 1:
Map of source and hazard of earthquake in Indonesia in 2017
(Pusat Studi Gempa Nasional, 2017)
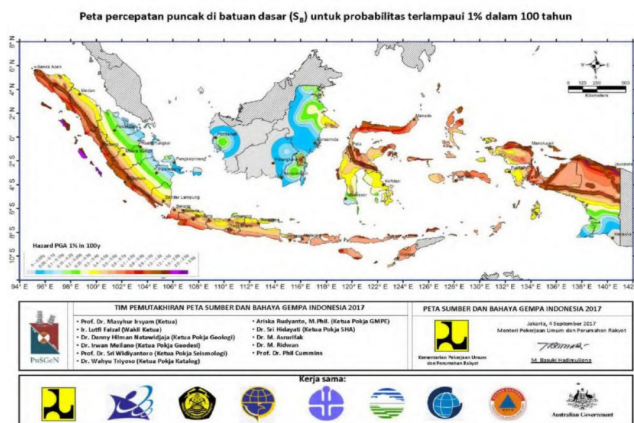
Indonesia is a prone are of earthquake (Figure 1) and tsunami (Figure 2). Since few centuries, those disasters have taken many lives and destroyed buildings, city, infrastructure, etc. We still believe that Palu earthquake and tsunami in 2018 was a big shock and gave great lesson about the importance of resilience strategy of earthquake and tsunami.

Figure 2:
Map of tsunami prone area in Indonesia in 2017
(BNPB)
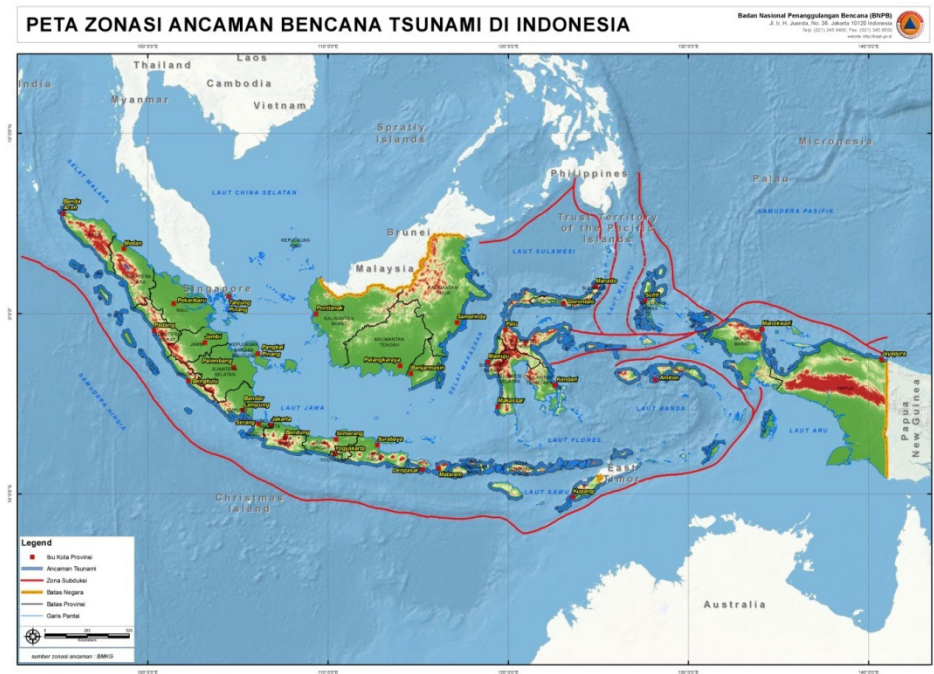
People should implement resilience strategy of disaster as part of Disaster Risk Reduction (DRR). A community with good disaster resilience has the best safety, knowledge to design and to build in disaster hazards context, and minimize the vulnerability by maximize the application of DRR counting (Twigg, 2009). Hence, they will survive and has capability to live with disaster. Disaster resilience strategy of earthquake and tsunami have to be learnt by students in engineering Faculties to make them have awareness and good ethics in designing and planning. Therefor, learning from Kangkung fishing village, Bandar Lampung, that is earthquake and tsunami prone area, is very good experience for students, although they have it by hybrid-learning.

B. Hybrid-Learning in Higher Education Development

Learning should be a fun and interesting processes to gain knowledge. By creativity and imaginative development of technology based learning, collaborative learning system on campus experience may be improved and supported students with many personal learning style preference. It is obvious that by implementing hybrid-learning system, students have an opportunity to adopt and feel different learning experience and gain a community because they have unlimited access to the face-to-face virtual campus without mind about distance and self-learning experience through audio visual media technology that can be accessed anytime and anywhere or so called *ubiquitous learning environment* (Hwang & Chen,2017).

Media and technology take students to the different learning atmosphere which can give a positive values of internet era, such as students will have an opportunity to learn, discuss, and collaborate in problem solving both in class or even in outside of class (Halili, et al., 2015). As the young generation nowadays demand more knowledge more than they got in the classroom and the needs of various learning atmosphere, it necessary to higher education and other educational institution to provide an access for students to get those experience to encourage students to study independently to sharpen students critical thinking in solving problems.

Hybrid-learning is an alternative method that is highly relevant to applied in recent digital era with integrates the conventional learning method and audio visual or multimedia technology. Traditional and conventional learning method which only focusing on teacher or lecturer as a center of learning process and knowledge is no longer relevant in this digital era and should be supported by the technology (Wang & Heffernan, 2010). Hybrid-learning is one of the learning methods where teacher is a facilitator, motivator, and even classmate on the learning process. On this learning method, teacher or lecturer share their ideas and share knowledge with students. Hence, hybrid-learning inflict students to learn as flexible as needed, critical thinking in problem solving, through well-planned learning material (Zainuddin & Attaran, 2015).

C. Hybrid-Learning Pros and Cons

Hybrid learning will supports students to interact not only physically in the classroom but also through online connection outside the classroom. Through discussion activities which take place either offline in class or online outside of classroom learning session to discuss the learning materials.

The discussion activities take place both between learners with teachers and among the students themselves in unlimited time (Kuo et al., 2014).

In the last decades, hybrid learning becomes an interesting alternative approach to replace the face-to-face learning methos (Graham 2005). With hybrid-learning, students will be more active and have more chance to develop their ideas. Many education experts believe that hybrid-learning will make the learning process more interesting, fun, accessible, and effective for university students. Despite of the advantage of this learning method, hybrid-learning also has shortcomings that must be considered. The challenge of hybrid-learning method implementation in the real-learning activity is preparation of the teachers or lecturer to apply this method. Teachers or lecturers should have skills in using technology and should be well prepared. Hence, it is important that teachers or lecturers prepare materials from various digital sources like multimedia, or audio visual animation and those preparation need more time than the conventional teaching method. One thing that should be considered is if the teacher or lecturer do not obtain sufficient training to do this method, the implementation of hybrid learning method will be failed. Other thing that should be focused in using hybrid learning method is the understanding ability and the awareness of the students. Teacher as the facilitator and motivator need to motivate students to use technology and explore their curiosity in many ways. In the same way, students also being motivated to use technology for entertainment purpose, this is why teacher need to give students understanding about other function of technology and creates interesting course material.

There is no doubt of advantage of hybrid-learning, but not all students have same learning habit and styles. Problems appear when not all students able to learn independently outside the classroom. Most students still need guidance or even stop watching the course material uploaded online because the course material looks unattractive and boring (Woo et al, 2008). The problems will become big challenge for researchers and teachers to be able to design course material and hybrid learning implementation in an interesting and fun for the students.

D. Scientific Principle of Soegijapranata University

Soegijapranata Catholic University has Academic Scientific Principal of "*Eco-Settlement*" that is implemented by Department of Infrastructure and Environmental Engineering in motto of "*Embracing Ecological Infrastructure*", especially in field of civil engineering, urban design and planning, and

environmental science and engineering. The motto has become fundamental reference in academic atmosphere and activities in the Department as emphasized in vision and mission and stated in learning outcomes.

According to "*Eco-Settlement*", innovation on learning system is a must and conducted very progressive by Soegijapranata Catholic University. Learning system in Soegijapranata Catholic University follows the development of latest issue of information technology that is hybrid-learning or blended learning as regulated by Ministry of Research, Technology, and Higher Education, General Directorate of Learning and Students Affair. It is also supported by MOOC and Speda, which is very promising in introducing AR (Augmented Reality) in modern virtual library. Every Department has driven to thrive and develop contents for Speda. Therefore, Department of Infrastructure and Environmental Engineering by this project conducted a hybrid learning media with topic of earthquake and tsunami disaster resilience strategy of fishing village in Bandar Lampung for Speda that will be implemented in "Student Orientation Program" and Course Program ("Introduction of Infrastructure Engineering").

The fundamental issue of this research is humanity in engineering and technology. It means that the project will conducted in engineering way but basically it talks about human being, nature, and passion in embracing the "poor" by educating young generation (the students) to be completely whole person. It talks about earthquake and tsunami disaster and how the people can get to be resilience and how we can educate young generation to have knowledge and science of earthquake and tsunami disaster and fishing village as well as have empathy, awareness, and passion to embrace "the poor".

METHODOLOGY

A. Research approaches

The research conducted by mix-method approaches, they are: (1) Fieldwork approach; (2) Hybrid-learning media production; and (3) Qualitative approach. Fieldwork conducted by observation and documentation (pictures and movies) of Kangkung fishing village community in Bandar Lampung while qualitative approach conducted by questionnaire and in-depth interview to students of Department of Infrastructure and Environmental Engineering, Soegijapranata Catholic University.

B. Research subjects

Fieldwork conducted by observation and documentation of Kangkung fishing village (Figure 3, the area surroundings red circle) in Bandar Lampung. The observation and documentation have become material to produce hybrid-learning media.

Figure 3:

Research site at Kangkung fishing village in Bandar Lampung city
(https://earth.google.com/web/@-5.4505617,105.26638622,6.65727664a,
1119.95300444d,35y,4.13359096h,48.4449195t,0r/
data=ChYaFAoML2cvMXowc3A5eF9kGAEgASgC)

Production of hybrid-learning media included 2 videos. First video contained slides and movie, and the second video contained movies without slides. Materials for hybrid-learning media obtained from fieldwork at Kangkung fishing village in Bandar Lampung and also some slides and movies about knowledge of earthquake and tsunami.

Questionnairs have been distributed to survey participants and in-depth interview conducted to the same persons. Survey participants selected by purposive-sampling technique, they are 4 and 3 students (for first and second questionnaris) of Department of Infrastructure and Environmental, Soegijapranata Catholic University.

C. Research procedure

The research activities consisted of 4 stages that took place at Kangkung fishing village in Bandar Lampung for first activity, and Department of

Infrastructure and Environmental, Soegijapranata Catholic University for others following activities.

1. Fieldwork
   This activities included observation by researchers and supported by documentation (pictures and videos).
2. **Hybrid-Learning media production**
   This activities conducted in Urban Development Laboratory at Department of Infrastructure and Environmental, Soegijapranata Catholic University. There were 2 videos production as explained above.
3. Questionnaires
   There are two questionnaires for surveys that were attended by 4 survey participants (first survey) and 3 survey participants (second survey). The survey participants were first grade students of Department of Infrastructure and Environmental Engineering, around 18-19 years old.
4. In-depth Interview
   Same survey participants also had in-depth interview. First in-depth interview involved 4 survey participants while second in-depth interview involved 3 survey participants. It is also noted that tThe survey participants were also first grade studentsof Department of Infrastructure and Environmental Engineering Department of Infrastructure and Environmental Engineering, around 18-19 years old.

RESULTS AND DISCUSSIONS

A. Results

The fieldwork has documented Kangkung fishing village and the activities of the community living there. Documentation was taken as pictures and videos. Some pictures (Figure 4) may describe about the Kangkung fishing village. It is obvious that Kangkung fishing village is a slum area and 95% of the population are fishermen. Although Bandar Lampung city is earthquake and tsunami prone area, surprisingly, the population in Kangkung fishing village are not worry about the hazard of earthquake and tsunami as they said in the observation. It is still uncertain, if they have already implemented the disaster resilience strategy or have little awareness about the disaster.

Figure 4:
Kangkung fishing village in Bandar Lampung city

Documentation of Kangkung fishing village then became material for hybrid-learning media production, combined with other supporting materials such as text slides, animation movie, etc. Two videos produced by this research can be found by link https://drive.google.com/open?id=1SQDPs-p9dUSIm-7q92FWIpHj9taJWKS3 for first video; and https://drive.google.com/open?id=171Fg7iExVgGFHmQp4ZtZLGz5jwDsWVCU for second video.

The activitiy after the hybrid-learning media production is survey with questionnaires. There were two questionnaires were distributed to survey participants prior to in-depth interview with time interval of one month. Response of survey participants were recorded by Table 1 (for first video) and Table 2 (for second video).

Table 1:
Response of survey participants of Video No. 1

NO	RESPONSE	VG	G	F	P	VP	TOTAL RESPONSE
1	attractiveness	0	3	1	0	0	4
2	learning atmosphere	1	0	0	3	0	4
3	delivery	0	0	3	1	0	4
4	understanding	0	0	0	3	1	4
5	motivation inflicted	0	0	1	3	0	4

Table 2:
Response of survey participants Video No. 2

NO	RESPONSE	VG	G	F	P	VP	TOTAL RESPONSE
1	attractiveness	3	0	0	0	0	3
2	learning atmosphere	0	0	3	0	0	3
3	delivery	1	2	0	0	0	3
4	understanding	1	0	2	0	0	3
5	motivation inflicted	0	2	1	0	0	3

The analysis of in-depth interview will be discussed in the next sub-chapter. Response of survey participants were marked by 5 criterias, they are: VG = very good; G = good; F = fair; P = poor; and VP = very poor. Result shown by Figure 1 tell us that most survey participants have noted the first video contained slides and movies was poor in learning atmosphere, delivery, understanding and also motivation inflicted. It was even very poor in understanding (even the slides were in Indonesia language). There are only few participants remarked the first video good or very good in attractiveness and learning atmosphere. However, survey participants remarks for second video. Most survey participants have remarked as 'fair" to learning atmosphere, understanding, andmotivation conflicted to second video, and similar number of participants gave very good remarks on attractiveness, delivery, and understanding.

B. Discussion

Primary data of survey participants response doesn't perfom very good to characterize the responses. Hence, the result needs certain score which includes weighting to deeper analysis of survey participants response to both videos. Scoring analysis can be found by equation (1) as follow.

$$S=(NR \times R\_max \times w)/NP \tag{1}$$

Where:
S = score
NR = number of response
R_{max} = maximum remark
w = weighting (see Table 3)
NP = number of survey participant

Table 3:
Analysis of survey participants response to hybrid-learning media

FACTOR	WEIGHTING				
	VG	G	F	P	VP
remark	5	4	3	2	1

Figure 5 desribes that good attractiveness has highest score compare to other responses of survey participant (15). The highest score of attractiveness followed by fair delivery (11.25). Three bad responses (7.5) of poor learning atmosphere, understanding, and motivated inflicted take position after the fair delivery and followed by very good learning atmosphere (6.25). Fair attractiveness and motivation inflicted take the next lower position after very good learning atmosphere (3.75). Poor delivery (2.5) and very poor understanding (1.25) have become the lowest positions in response scoring for first video. It is interesting that very good learning atmoshphere was the best response but the core was lower than Three bad responses of poor learning atmosphere, understanding, and motivated inflicted.

Figure 5 :
Response scoring of survey participants of Video No. 1
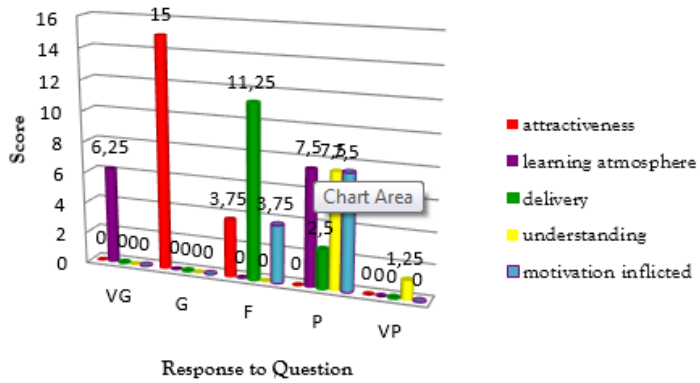
Result of participants responses to second video (Figure 6) is better than first video since there was improvement in materials. Response of very good attractiveness still takes first place or the highest score of response. Very good attractiveness has followed by good delivery (13.33) and good motivation inflicted (13.33) and also fair understanding (13.33) as lower responses. Its was also found that lower responses after the very good attractiveness (8.33) were very good delivery and understanding (8.33). The lowest responses were fair motivation inflicted (6.67) and fair learning atmosphere (5). It is obvious that in the second video, there is a big gap between very good attractiveness to other responses of survey participants.

Figure 6:
Response scoring of survey participants of Video No. 2
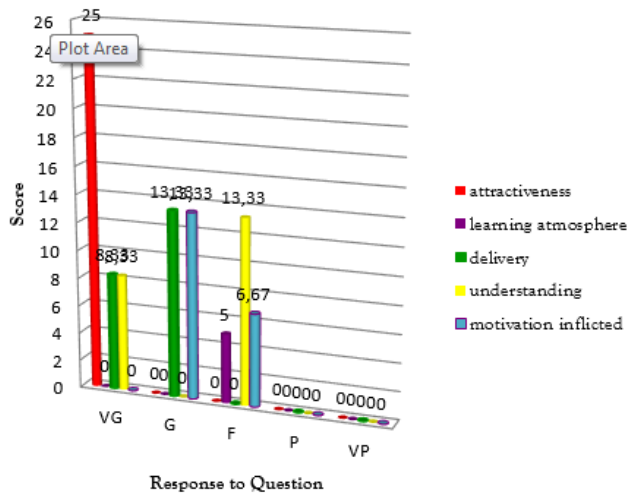
Learning the disaster resilience strategy of earthquake and tsunami was expected easier and more attractive by delivering those two videos. Howerver, in-depth interview to the survey participants revealed that there were obstacles in delivering the media to the students (as survey participants) as described by Table 4. This research found that several aspects give hard impact to the hybrid-learning implementation which delivered one new topic for the students. When students have zero knowledge about the topic, especially new and rather 'difficult' topic, they feel uncomfortable, great independency, and difficulty in understanding caused by langeage barrier (English versus Indonesia language).

<div align="center">

Table 4:

Analysis of survey participants response to hybrid-learning media

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NO	RESPONSE	VIDEO 1	VIDEO 2	ANALYSIS
1	attractiveness	N/A	interesting animation and story, easy to understand	Animation (vision and movement) and also sound (hearing) stimulate attractiveness to the learning media and attract the students. The human senses take important role in attract the students to the learning media.
2	learning atmosphere	no lecture, unconducive situation, no supervision	no session of Q&A would be obstacle in learning and understanding	Student needs supervision of lecture as well ass Q&A session to build understanding of the learning media. The existance of lecturer will give comfortable feeling during the learning session.

3	delivery	prefer to Indonesia language	need explanation by lecture instead of video	Language is a problem and will became obstacle to achieve learning outcome. Since there is difficulty to understand the material, the assistance of lecture may be very important.
4	understanding	hard to understand because there is no lecture to supervise, the slide show is too fast	prefer to Indonesia language	The need of supervisor/fasilitator is very crucial for student during the session. The understanding become more difficult while the media delivered to them in English. It looks like unindependency happened as well as fearness and unconvidence to learn by themselves.
5	motivation inflicted	need fasilitator to supervise and give explanation, need explanation of aim of the video and inflict motivation	the absecence of lecturer decrease the motivation to attend the session	The role of supervisor/fasilitator is very important to inflict student motivation to attend and understand the learning media. It doesn't sound good since less motivation may bring unsuccesfull learning outcome.

The research has noted that reponses affected the hybrid-learning implementation (Figure 3 and ; Table 4) on topic of earthquake and tsunami disaster resiliance strategy of fishing village community in Bandar Lampung. Those responses are attractiveness, delivery, learning atmosphere, understanding, and motivation inflicted. Since the topic is specific, then the responses of survey participants can be explained by order from the most affected as follow.

1. Attractiveness

   Students will be attracted by hybrid-learning when the media contains materials which is stimulating the senses, especially vision, hearing, and movement. It is also emphasized that to attract the students more, it needs movie, rather than slide show. However, the movie content could be not interesting when it is monotonic and have 'bad' scenario. Attractiveness is comfort feeling and satisfactory that grow intention to get the things which is served. We have to make sure that our hybrid-learning media attract the students for successful learning outcome achievement. In this case, first video failed to perform attractive description of the harzard of earthquake and tsunami and the importance of disaster resilience strategy. However, the second video generated more attractiveness because there were animation of tsunami which was fun and enjoyable to watch and learn as well as the video of people activity in Kangkung fishing village.

2. Delivery

   The topic of earthquake and tsunami disaster resiliance strategy of fishing village community in Bandar Lampung is new and rather difficult to understand for first grade students, hence the delivery is the key of successful hybrid-learning of this topic. When language is a big constraint in delivery of the topic of earthquake and tsunami, the students must be prepared for English proficiency. Then, the understanding and the development of students creativity will come along the learning process. Materials are also important aspect in delivery, since materials become tools to make students understand easier. Delivery also needs infrastructure such us techonoly, information, and communication, hence, strong efforts should

be done for fulfilling the needs. It is should be noted that the survey participants still need supervisor who can assist them in learning process, that mean this kind of delivery is not suitable form them, or they actually didn't ready to have independent study.

3. Learning atmosphere

Both student and lecturer need good leaning atmosphere to achieve the learning outcome. After delivery issue, we face that learning atmosphere is one issue that should be generated and even created. Good delivery needs condusive learning atmosphere. Hence, when the hybrid-learning is an activity where in some events students must learn independently, so they must used to learn with absence of lecturer and no supervision. The lecturers still take care of the students by fasilititing rather than teaching or supervising. Independet study perhaps 'new' for some persons, but it build independency, creativity, and dynamics. With good learning atmosphere, students will be more comfortable as well as the lecturers, and the learning outcome can be achieved. It seems that bringing fieldwork in Kangkung fishing village to the classroom has no obstacle in learning atmosphere, since the survey participants remain experiencing the events virtually and achieving the learning outcome.

4. Understanding

It is important to understand the materials of hybrid-learning media. In this research, the media is video. In-depth interview tell us that language was barrier to understand the content. It was also difficult to understand the topic because there is no supervision by the lecture. The slides were also running too fast, that make the students cannot understand the explanation or the text in the slides. It is not easy to have deep understanding of earthquake, tunami, and disaster resilience strategy, when everything in the movie have just passed by in second. When the students have lack information of the topic, they may have different interpretation of the topic. Therefor, it is better to supply some references that students must read before they watch the video. When students have difficulties in understanding the video because of language barrier, they should be prepared to improve their English proficiency. Understanding is important

aspect, so it is also better when the knowledge of earthquake and tsunami can be a media that is 'easy-read' and 'easy-understand'. First video was too fast in showing slides that make uncomfortable to watch and understand. The second video, as self-evaluation, it seems that some scenes of case studi in Kangkung fishing village could be improved and developed better than only show unstructured scenario.

5. Motivation inflicted

    The four responses mentioned above are supporting aspects to build motivation inflicted. By good attractiveness, delivery, learning atmosphere, understanding, the motivation may be inflicted. Hence every constraint should be removed and each problem should be solved, the the four responses will generate motivation inflicted.

CONCLUSION

This research meet conclusion that: (1) Learning the disaster resilience strategy of earthquake and tsunami in Kangkung fishing village in Bandar Lampung can be delivered by hybrid-learning media such as video and delier to the student virtually; (2) There are five aspects that hardly affected to the hybrid-learning media, they are attractiveness, delivery, learning atmosphere, understanding, and motivation inflict. Each aspect should be improve to make other aspects also being improved; (3) Language is barier in understanding the hybrid-learning media, then the students must be prepared to improve their English proficiency; (4) The indepencency of student is very important in hybrid-learning, since the lecturer wil take care them as fasilitator rather than teacher or supervisor; (5) Materials of hybrid-learning media should be well prepared and structured to make learning outcome achieved.

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ANALYSING APOLOGY STRATEGIES AND PATTERNS IN INDONESIAN ONLINE ENGLISH NEWSPAPERS

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Apology expresses guilt or regret which its function to restore and maintain harmony of social relation between the speaker and the hearer/s (Ogiermann, 2009). Various studies on apology have been conducted by Deutschmann (2003); Wouk (2006); Kadar (2007), Ogiermann (2009), Adrefiza (2010), and Ancarno (2011) which dealt with multiple apology expressions, apology and gender, historical apology, and apology in press representations. Ferguson (2007) studied responses to 2002's apology statement produced by Irish Republican Army (IRA) on printed media in Ireland, Britain, and USA. Those studies leave the online English newspapers open, and this present one is interested in investigating apology strategies and patterns used in written discourse, Indonesian online English newspapers. The data of this study will be taken from three reliable Indonesian online English newspapers, namely The Jakarta Post, Jakarta Globe, and Tempo.co English. The collected data will be analyzed using the framework of apology strategies and patterns suggested by Ogiermann (2009) and Deutschmann (2003).

This study hopefully will be beneficial to students of linguistics or to those interested in linguistics since they will get more exposure on apology utterances in various texts and they will also be able to deepen their understanding about apology, especially in written contexts. Students of English as a foreign language would learn how patterns and strategies of apology are used in real contexts and this will enhance their communication skills, especially in the foreign language they are learning. Moreover, this study will also provide Indonesian journalists writing news in English with various uses of apology strategies and patterns so that they will have more

choices to utilize when they are required to.

This study is focusing on written apology using the Indonesian online English newspapers as the source of the data. The news mentioned in the newspapers are basically translated and edited by the newspaper editors since the original apology is in Bahasa Indonesia as it aims for international readers. Online newspapers, especially the English ones, can be used as reliable sources to learn various things for students who are learning English as a foreign language. They can use them as sources of written exposure on how language forms used in various contexts and purposes in authentic communication. The students will get mediums of enhancing their communication skills so that they will know how to use those strategies and patterns properly. Apology is a form of language functions commonly encountered in both oral and written social interactions. It is unusual that regrets or guilt come up during their written interrelation communications. Knowing the apology patterns and strategies enables the students to pick up the proper ways of mending the unpleasing situations occurred that makes them better persons.

APOLOGY STRATEGIES

Some researchers have defined apology as a speech act responding to an offence with strategies to turn over the imbalance of the relation between speaker and hearer during the process of reconciliation (Leech 1983 as cited in Ogiermann, 2009; Alter 1999 as cited in Kirchoff, Wagner, & Strack, 2012). Shortly, apology can be inferred as a remedy action to an offence that causes a rift in the balance relationship between the speaker and the hearer/s with a hope of reconciliation. In an apology, there are strategies and patterns involve. The strategies are a necessity to fulfill the speaker's intention to apologize and restore the speaker's dignity. The classification in the Ogiermann's study (2009) as the complete apology strategies' scheme consists of three main strategies which derived from Searle's study (1969), Fraser's study (1981), and Blum-Kulka's study (1989) about CCSARP (Cross Cultural Study of Speech Act Realization Patterns) coding manual; it consists of main strategies, subsumed strategies, and subdivided strategies distributed as follows:

1. **Negative politeness** - the act of politeness where the speaker has to lower his/her social image (Brown and Levinson, 1987).

a. **IFID (Illocutionarry Force Indicating Device)** - utterances used to specify the force of apology that is constantly employed and routinized. The expressions that are often expressed are *I'm sorry*, *I apologise*, *I'm afraid*, *Forgive me*, *Excuse me*, *Pardon me*, and *I regret.*

2. **Positive politeness** - an apology strategy used by the speaker which has positive impact to both the speaker and the hearer/s as the relationship balance is restored

   a. **Offer of repair** - a strategy when the speaker offers to give a solution to the damage inflicted on offended party, the hearer, by an action restoring hearer's entitlements.

   b. **Promise for bearance strategy** - generally offered in potentially recurrent offensive situations, where the speaker feels responsible to promise hearers that the speaker will avoid the recurrence of the offense.

   c. **Concern for hearer** - strategy is when the speaker shows concern for the offended party which later results in efforts to appease the hearer.

3. **Accounts** - expressions reflecting the speaker's willingness to admit responsibility for the offensive outcome of the situation.

   a. **Upgrading strategies** – strategies that are used as elements to increase the apologetic force where the speaker feels the need taking on responsibility.

      i. **Lack of intent** – does not attempt to reduce the speaker's responsibility and there is a level of acceptance and responsibility in its expressions.

      ii. **Expression of embarrassment** – when the speaker implicitly accepts the responsibility focusing on the discomfort the speaker's experience from the offence.

      iii. **Acceptance of responsibility** – when the speaker admit the offense.

      iv. **Self-criticism** - the speakers consider to blame themselves in front of the hearer without explicitly acknowledge the responsibility with expressions like *How stupid of me* and *I'm completely useless.*

   b. **Downgrading strategies** – strategies used in association with the responsibility or severity of the offense, reducing the speaker's

liability for the offense and reducing severity of the offense.

i. **Opt out** – non-verbal reaction to avoid confrontation from the hearer and the speaker refuses to accept responsibility by remaining silent or ignoring the offended party.

ii. **Denial of responsibility** – when the speaker denies the responsibility by shifting the blame to other people or the hearers.

iii. **Acting innocently** – when the speaker claims ignorance by denying the responsibility where there is a possibilty of accidental involvement to the offfence.

iv. **Minimization** - reduce severity of the offense which are not necessarily the speaker's responsibility.

v. **Excuse** - the speaker does not deny the involvement to the offence but blames external factors as if the offence had not taken place.

vi. **Admission of facts** – the speaker problematizes a precondition with an attempt to save the speaker's face.

vii. **Justification** - the speaker admits that the offence has occured and accepts some responsibility for it but projecting the offence to be more acceptable to the hearer.

APOLOGY PATTERNS

Apology patterns are sequence of lexemes and syntactic patterns regularly found in certain utterances, actions or situations of apology. Based on their co-occurence in apology IFIDs expressions, the apology verbs such as *apologise, be sorry, forgive, excuse,* and *pardon* are considered as the lexemes of apology (Olsthain & Cohen, 1983, as cited in Deutschmann, 2003). Besides, the apology utterances have their own syntactic patterns ranging from simple to complex ones. Based on the syntactic patterns, there are three main classifications namely as 'detached' apologies, 'detached' apologies with additional markers, and syntactically complex forms (Deutschmann, 2003). Detached apologies are a stood alone apology since the utterances only constitute on lexemes of apology and no reference to the offence. Detached apologies with additional markers are constituted on lexemes of apology and various markers usage to intesify the apology. The stuctures of complex forms are used in actual apologies as a remedy to a serious offence. Table 1 below

shows Deutschmann's framework of syntactic forms of apology with detailed structures and examples from each sub-classifications.

Table 1. Deutschmann's framework on sytactic form of apology

PATTERNS: Syntactic	Examples
'Detached' Apologies	
Detached Unmarked	*Sorry, pardon, excuse me*
Detached Exclamation marked	*Sorry! , pardon! , excuse me!*
Detached Question marked	*Sorry?, pardon?, excuse me?*
Partialy/fully expanded, detached unmarked or exclamation marked	*I'm sorry, I beg your pardon*
Partialy/fully expanded, detached question marked	*I'm sorry?, I beg your pardon?*
'Detached' Apologies + markers	
Interjection + apology: Exclamatory emotive + apology	**Oh**, *sorry*
Interjection + apology: Downtoner + apology	**Well**, *pardon me!*
Interjection + apology: Hesitation marker + apology	**Erm,** *sorry.*
Explicit apology + proper name	*Sorry,* **Bob**
Explicit apology + Epithet	*I am sorry,* **love.**
Intensifier/emphatic 'do' + apology	*I* **do** *apologize!* *I'm* **really** *sorry!*
Apology + *please*	*Forgive me* **please**
Complex Forms	
Apology + *about/for* + Demonstrative (*this/that*)	*I'm sorry about* **that** *I apologise for* **this**
Apology + *about* + NP	*I'm sorry about the interruptions*
Sorry + *to* + VP	*Sorry to say this*
Apology + (*for*) + NP	*Pardon me for being so rude!*

Apology + (*that*) + S'	*I'm afraid I was a long time*
Apology + *if* + S'	*We apologise if anyone's been offended*
Modal marker of intent + apology	*I must apologise for ...*
Request form	*Would you excuse me?*
Others	*Perhaps you'll hopefully find that you can forgive me*

(Deutschmann, 2003)

ONLINE NEWSPAPERS

In this study, online newspapers as a text type refer to the media of the digital era that can be accessed anywhere and anytime as long as the devices used are connected to internet. The advantage of media text in electronic form on the world-wide-web is to ease out collecting process of repeated issues or events which are reported for a significant period of time and facilitated anyone with its production and distribution of content (O'Halloran, 2010). Thus, anyone can retrieve specific information automatically with the targeted keywords where the search engine matches the keywords with its own database as a permanent record. Moreover, online newspaper as a type of written language has a capability to translate between languages, dialects, or styles where it is meaningful and has the same content as in spoken language; its observable data helps to construct social reality (Stubbs, 1996). Therefore, the written media such as online newspapers is the best representation responding to any complex matter such as an offence with a carefully considered and strategic response where the speaker and the hearer can exchange their views effectively and maintain the image of the speaker whether is a personal, organization, or public matter and its records can be used openly and respectively as a reference for any party.

This study will use Ogierman's framework of strategies on apology (2009) which will be used in identifying the data of this study. For investigating the apology patterns, the study will use Deutschmann's study (2003) based on British corpuses.

METHODOLOGY

This study was based on the 66 articles referred to apology collected from 2014 to 2018 in 3 online newspapers publishers; The Jakarta Post, Jakarta Globe, and Tempo.co English. The data were the apology statements on the published articles found in the online newspapers regarding news related to Indonesian contents written in English. The instrument was an observation checklist developed using frameworks of Ogiermann's (2009) apology strategies framework and Deutschmann's (2003) apology patterns framework.

Table 2. The framework of strategies of apology

STRATEGIES
Negative Politeness
IFID (Ilocutionary Force Indicating Devices)
Positive Politeness Strategies
Offer of Repair
Promise for Bearance
Concern for Hearer
Accounts: Downgrading
Opt out
Denial of responsibility
Acting innocently
Minimisation
Excuse
Admission of facts
Justification
Accounts: Upgrading
Lack of intent
Expression of embarassment
Acceptance of responsibility
Self criticism

Table 3. . The framework of patterns of apology

PATTERNS: lexemes
Apologise
be sorry
Forgive
Excuse
Pardon
Regret
Afraid
PATTERNS (Syntactic): 'Detached' Apologies
Detached Unmarked
Detached Exclamation marked
Detached Question marked
Partialy/fully expanded, detached unmarked or exclamation marked
Partialy/fully expanded, detached question marked
PATTERNS (Syntactic): 'Detached' Apologies + markers
Interjection + apology: Exclamatory emotive + apology
Interjection + apology: Downtoner + apology
Interjection + apology: Hesitation marker + apology
Explicit apology + proper name
Explicit apology + Epithet
Intensifier/emphatic 'do' + apology
Apology + *please*
PATTERNS (Syntactic):Complex Forms
Apology + *about/for* + Demonstrative (*this/that*)
Apology + *about* + NP
Sorry + *to* + VP
Apology + (*for*) + NP
Apology + (*that*) + S'
Apology + *if* + S'
Modal marker of intent + apology
Request form
Others

Procedure

First, the writer decided the number of reliable, trusted, and well-known Indonesian English online newspaper publishers that would be fitted to this study by finding and reading the sample of online articles found in every English Indonesian online newspaper. Then, the writer selected the intended articles in the internet as the sources of the data with Google search engine and search bar function in each publishers' website acting as the web corpuses to find and capture the proper articles containing apology phrases using the targeted keywords. The method of data gathering was using a search bar function from each website of the chosen newspapers which allowed the researcher to specify the searched words (keywords) which were similar to the KWIC (Key Word in Context) format, and the output of the search included a concordance of links to the texts matched with the keywords (Adolphs, 2006). The keywords were useful to sort and align the words, in this case apology lexemes, within each article to allow each word to be searchable from the search engine's database. The keywords were *apologize, sorry, forgive, excuse, afraid, regret, pardon, the jakarta post, jakarta globe, and tempo*. The keywords helped to narrow down the data search into a concordance of online news articles that carried the keywords only. Both search functions were used to ensure that the phrases containing the apology strategies and apology patterns were precise as the writer intention and a complete record from the appointed period. Second, the writer selected the articles containing statements of apology and also delivered the message of apology which would be analyzed in the study..

Data Analysis

Once all the articles were gathered, the researcher took the text fragment containing apology statement apart from the whole text of an article. Then, the researcher created the study's collated data by listing the publisher, year, URL, and text fragment as an index on Microsoft. Excel to make it easy to access and to transform into different file types.

Apology strategies

With observation checklist (Appendix 1), the researcher classified each text fragment from its apology strategies through each sub-strategy element listed on the framework whether or not the phrase showed negative politeness

startegy, positive politeness strategies, and/or account strategies. A phrase like *I'm sorry* was considered as negative politeness strategy. A phrase like *I'll pay for the damage* was considered as positive politeness strategy. A phrase like *but the road was closed* was considered as an account strategy.

Apology patterns

The researcher identified its apology patterns on the lexemes' elements through each lexeme listed on the framework whether or not any lexeme was being used. For example, a phrase contained *apologize* was put under the *apologise* category. After that, the researcher classified its apology patterns on the syntactic elements through each sub-structure element listed on the framework; deathced apology, detached apology with markers, and complex forms. For example, a phrase contained *excuse me, Sir* was put under detached apology with markers.

After analyzing the data through observation checklist, the researcher began counting the number of cases from each sub-strategy element of apology strategies, the number of cases from each lexeme element of apology patterns, and the number of cases from each syntactic element of apology pattern using Antconc freeware through its concordance tool and N-Grams tool. Then, the researcher sequenced the result from highest to lowest frequencies of apology strategies that would be shown in the Table 4 as to display the distribution of strategies found in the data. There would be explanations of the highest frequency and lowest frequency of apology strategies. This step would be applied in the same way for lexeme elements on apology pattern, Table 5, and syntactic elements on apology pattern, Table 6.

The elements from apology strategies and apology pattern that would be discussed further in the discussion section. As well as, the critical discussion about the structure of 'other' form of syntactic apology pattern found in the data and the use of apology lexemes that its function differed from apology intention would be examined further.

FINDINGS AND DISCUSSIONS

Findings

Apology Strategies

Main Strategies	Sub Strategies	Frequencies
Negative Politeness		**61**
	IFID (Illocutionary Force Indicating Devices)	61
Positive Politeness Strategies		**18**
	Offer of Repair	8
	Promise for Bearance	2
	Concern for Hearer	8
Accounts	Downgrading	**31**
	Opt out	0
	Denial of responsibility	3
	Acting innocently	4
	Minimisation	2
	Excuse	6
	Admission of facts	10
	Justification	6
	Upgrading	**27**
	Lack of intent	10
	Expression of embarassment	0
	Acceptance of responsibility	17
	Self criticism	0
	Total of frequency	137

Negative Politeness

There are three forms of the negative politeness strategy found in the data; *I'm sorry*, *I am sorry*, and *I apologize*. These forms are the most common expressions found in the data analysis in term of IFID strategy.

Positive Politeness

- Offer of repair strategy

    Consider the following cases found in the data:

    (1) ... we will investigate ... (Jakarta Globe, 2015).

    (2) ... we have taken the story down from the Asia Sentinel website ... (Jakarta Post, 2018).

    The first case, the use of will indicate the the action that will be taken after the apology act has been occured. On the second case, the statement shows that the offender has repaired the offence after the apology.

- Promise for bearance strategy

Consider the following cases found in the data:

    (3) ... I won't let it happen (Jakarta Globe, 2015).

    (4) ... hopefully this won't happen again (Jakarta Globe, 2017).

    The two cases show that there will be no recurrence of the same offence in the future by the offender.

- Concern for hearer strategy

Consider the following cases found in the data:

    (5) ... [we] extend our condolences to the families of those who died (Jakarta Globe, 2016).

    (6) ... we are trying to make sure [Monday's] flights run normally (Jakarta Globe, 2016).

    The two cases show that there is a sympathy to the victim's concern but at the same time the speaker does not offer a remedy as in the offer of repair strategy.

- Denial of responsibility strategy

Consider the following case found in the data:

(7) ... which were caused by some unidentified, irresponsible people (En-Tempo.co, 2014).

The case shows that the speaker denies the responsibility by shifting the blame to other people.

- Acting innocently strategy

Consider the following cases found in the data:

(9) ... If I had focused on that, as I should have during my visit, I would have behaved in a different way (Jakarta Globe, 2016).

(10) ... I spontaneusly lit a cigarette and tossed it to him [orangutan], without thinking about the impact of what I was doing (Jakarta Post, 2018).

The cases show that the speakers claim their ignorance by denying the responsibility of accidental involvement to the offence.

- Minimisation strategy

Consider the following cases found in the data:

(11) ... this is the reality (Jakarta Post, 2015).

(12) ... we must accept that we didn't advance (Jakarta Globe, 2017).

The cases show that the speakers want to reduce the severity of the offense and to emphasis that it is not necessarily the speaker's responsibility and the hearer must accept the reality as an outcome of the offense.

- Excuse strategy

Consider the following case found in the data:

(13) ... but winds carried the haze to the north (Jakarta Globe, 2015).

The case shows that the speaker does not deny the involvement to the offence but blames external factors.

- Admission strategy

Consider the following cases found in the data:

(14) ... These policies are affecting our life in a negative way (Jakarta Globe, 2015).

(15) ... over the weekend there were 321 BRI ATM units and 124 BRI working units affected by the Telkom-1 problem (Jakarta Globe, 2017).

The two cases show the speakers problematize the precondition with an attempt to save their faces.

- Justification strategy

Consider the following case found in the data:

(16) ... I love my wife and children very much [as well as family dogs] Choky and Snowy. I can't afford to leave them alone in this world. (Jakarta Post, 2018).

The case shows that the speaker admits the offence has occured and accepts responsibility for it but projecting the offence to be more acceptable to the hearer.

Apology Lexeme Patterns

Table 5 below shows the frequency of apology lexical patterns in Indonesian English newspapers.

Table 5.
The frequency of apology lexical patterns in Indonesian English newspapers

Lexemes	Frequency
apologise	42
be sorry	19
forgive	1
excuse	1
pardon	0
regret	2
afraid	0

Apology Syntactic Patterns

Table 6 below shows the frequency of apology syntactic patterns in Indonesian English newspapers.

Table 6.
The frequency of apology syntactic patterns in Indonesian English newspapers

PATTERNS: Syntactic	Frequency
'Detached' Apologies	
Detached Unmarked	3
Detached Exclamation marked	0
Detached Question marked	0
Partialy/fully expanded, detached unmarked or exclamation marked	5
Partialy/fully expanded, detached question marked	0
'Detached' Apologies + markers	
Interjection + apology: Exclamatory emotive + apology	0
Interjection + apology: Downtoner + apology	0
Interjection + apology: Hesitation marker + apology	0
Explicit apology + proper name	1
Explicit apology + Epithet	0
Intensifier/emphatic 'do' + apology	12
Apology + *please*	1
Complex Forms	
Apology + *about/for* + Demonstrative (*this/that*)	0
Apology + *about* + NP	1
Sorry + *to* + VP	1
Apology + (*for*) + NP	12
Apology + (*that*) + S'	4
Apology + *if* + S'	4
Modal marker of intent + apology	6
Request form	1
Others	17

Table 7 below shows the cases found in the Indonesian English newspapers for apology syntactic patterns.

Table 7.
The cases found in the data for apology syntactic patterns

Type of syntactic patterns	Cases
Detached Apology: Detached Unmarked	(17) Sorry (Jakarta Post, Jakarta Globe, Tempo.co).
Detached Apology: Partialy/fully Expanded Detached Unmarked	(18) We're sorry [partially] (Jakarta Post, Jakarta Globe, Tempo.co). (19) I apologize [fully] (Jakarta Post, Jakarta Globe, Tempo.co).
Detached apology with markers: intensifier/emphatic 'do' + apology	(20) I am really sorry (Jakarta Post, 2018). (21) We're very sorry (Jakarta Globe, 2015).
Detached apology with markers: explicit apology + proper name	(22) I apologize, Mr. President (Jakarta Globe, 2016).
Detached apology with markers: apology + please	(23) Please excuse me ... (Jakarta Post, 2017)
Complex form: apology + about + NP	(24) We are sorry about the incident (Jakarta Globe, 2015).
Complex form: Sorry + to + VP	(25) Sorry to dissapoint you (Jakarta Globe, 2018).
Complex form: Apology + for + NP	(26) We are terribly sorry for the inconviniences (Tempo.co, 2014). (27) We regret (for) the error (Jakarta Globe, 2016).
Complex form: apology + that + S'	(28) We apologize that Malang Strudel can only be bought in Malang (Jakarta Globe, 2017). (29) We are sorry (that) we could not save her life (Jakarta Post, 2018)
Complex form: apology + if + S'	(30) I also apologize if any words were mistaken (Jakarta Globe, 2017) (31) I apologize if my remark offended some people (Jakarta Post, 2018)
Complex form: modal marker of intent + apology	(32) I want to apologize ... (Jakarta Post, 2016). (33) We further wish to apologize completely and unequivocally ... (Jakarta Post, 2016).

Complex form: request form	(34) I'm asking for forgiveness … (Jakarta Post, 2018)
Complex form: others	(35) Apology + to + NP: (a) We apologize to the surrounding community and the parents (Jakarta Post, 2014). (b) I apologize to all the fans (Jakarta Globe, 2017) (36) Apology + to + NP + clause: (a) I apologize to Muslims who felt insulted (Jakarta Globe, 2016). (37) Apology + to + NP + for + VP + clause: (a) I apologize to the public for saying something that had not been confirmed yet (Jakarta Post, 2018). (b) I apologize to all Indonesians for not meeting the SEA Games target (Jakarta Globe, 2017). (38) Apology + for + VP: (a) I apologize for not showing maximum results over these past four months (Jakarta Globe, 2017). (39) S + VP + to +NP + clause: (a) We the organizing committee of the art performance from Gadjah Mada Theater offer an apology to any parties who feel offended or who disagree with the circulating posters (Jakarta Post, 2015). (40) Apology + but + S' (a) I'm sorry but we suggest the president remove this minister (Jakarta Globe, 2015). (b) Sorry but there are thousands queuing up to replace them (Jakarta Globe, 2014). (41) Apology + to + NP + for + NP (a) We still apologize to our customers for the inconvinience (Jakarta Globe, 2017). (42) Apology + to + NP + for + NP + S' (a) I apologize to the passengers for any inconvenience we may have caused (Jakarta Globe, 2017)

Discussions

Apology Strategies

From the findings on apology strategy, the most frequent strategy is negative politeness. IFID as the sub-strategy of negative politeness is the basic strategy that applicable in all societies including Indonesian culture (Ogiermann, 2009). Most of the people will commonly start their apology utterance with I'm sorry or I apologize which are considered as IFID strategy.

The least frequent strategy is positive politeness strategy. From the speaker's perspective, admitting the offence and offer a settlement will be cost more loss to the speaker in term of financial and authority. The offer of repair strategy and concern for hearer strategy has more frequent use because the apologies were made for public. The public and the readers expect the speaker's commitment to repair the situation with promised actions (Ogiermann, 2009).

In the downgrading strategy as sub-strategy of account, the opt-out strategy is not found in the data because its the speaker's physical response to the confrontation of the victim which cannot be expressed in the written communication. Opt out is a body language that indicates the speaker wants to avoid the hearer/s in oral communication which is found in across cultures (Ogiermann, 2009).

In the upgrading strategy as sub-strategy of account, the lack of intent strategy and the acceptance of responsibility strategy are the most frequent strategies that are used for public apology. In the acceptance of responsibility strategy, the speaker chooses to admit to the offence when weighing the hearer/s expectation to admit the offence and avoiding further implications since the fact is clearly pointed to the speaker. In the lack of intent strategy, the speaker expects the hearer/s to accept the speaker's flaws as unintentional. The strategies like expression of embarassment strategy and self criticism are suitable for verbal apology to minimize risk; it means otherwise when apply in written. If uttered publicly, the victims or the readers would think that the speaker try to divert the attention to their feelings instead of admitting the offence and being responsible to the offence (Ogiermann, 2009).

Apology patterns

In the lexeme pattern, the lexeme of apologise has the highest occurence

because the lexeme is appropriate and expected for written, formal, public contexts. The second highest of the frequency, be sorry, has two meanings; the speaker wanted to make the apology looks sincere from their heart or the speaker overuses the foreign word, English, instead of using the local word, Bahasa Indonesia.

The other lexemes has low occurences since the lexemes are not purposely implemented for apology but rather for other usage. The use of regret in the articles is incline to mark the feeling of remorse or disappointment. The use of excuse is mostly being implemented as an actual excuse to justify unacceptable behavior of someone or a party. The use of forgive is mostly being implemented to seek forgiveness in Ied Fitr. The lexeme of pardon is associated with giving tax amnesty and remission or forgiveness from jail punishment from the authority to the offender. The lexeme of afraid is associated with a feeling of fear and a feeling of being bold towards a situation that is frightening to the speaker.

In terms of apology syntactic patterns, the complex forms become the highest frequency in the data because the situation is formal public appearance and newspaper is formal written text which validated by the editor of the newspaper. Moreover, the hearers need a complete and clear clarification from the speaker so the hearers can somehow accept the remedy offered by the speaker. Meanwhile, detached apology can be use in personal and casual communication where there is a high degree of understanding from the relationship closeness between the speaker and the hearer.

The findings of present study show that complex forms pattern and multiple strategies usage are used in Indonesian English online newspapers. Those patterns and strategies are also found in oral form as reflected in both Wouk's study (2006) and Adrefiza's study (2013). In relation to the strategies, Cedar's study (2017) also discovered similar findings namely negative politeness strategy and accounts strategy. Nevertheless, the present study has contradictory findings with Wouk's study (2006) since the opt-out strategy and silence strategy cannot be found in written context.

Similar to the Ferguson (2007) and Ancarno (2011), each newspapers' editors has its own style to translate oral communication to written communication especially news language. The Jakarta Post and Tempo.co have similar style; both edited and filtered the oral language into suitable written language which is formal, appropriate, and acceptable for public

consumptions. Jakarta Globe has a style to keep the original oral language in written language without concerning the appropriateness of written form.

CONCLUSION

From the findings, there are three main results from the data, apology strategy results, apology lexical results, and apology syntactic results. In the strategy results, IFID strategy has the highest frequency of occurence as the strategy is the basic in apology utterance. In the apology lexical results, the use of apologise/apologize has the highest frequency since the data is written apology which the formality of the language is expected. In the apology syntactic results, the use of complex forms has the highest frequency as the apology is uttered in the formal and public setting where the speaker expected some sort of forgiveness from the hearers.

Some apology strategies have a lesser occurrence as those are suitable for verbal usage or suitable for a personal and casual communication requires high degree of closeness between the speaker and the hearer/s. For the apology lexical pattern, the lexemes that have zero occurence in the data are served as other speech act instead of apology. Concerning the apology syntactic pattern, the patterns that have zero occurence are suitable for verbal and non-formal setting.

The written apology differs from verbal apology. It shows from the findings that not all strategies and patterns are employed in the written form. Written apology do not convey pitch, intonation, gesture, facial expressions, and posture between the speaker and the hearer/s (Ogiermann, 2009). The patterns that have low and zero frequency are meant for verbal apology since it is used to response with pitch, intonation, gesture, facial expressions, and posture to the exact situations.

Therefore, not all strategies and patterns can be applicable in written discourse depending on the formality of the setting. Also, there is a distinction of meaning when the apology is uttered verbally or written because of the degree of relationship closeness between the speaker and the hearer/s. The strategies will help the speaker restoring both faces and the harmony of the relationship with the hearer depending on the seriousness of the offence. The patterns are useful to produce a simple or complex apology depending on the speaker's perspective that is viewed as necessary to deal with the

situation. The complexity of the offence makes the speaker wants to choose more strategies with an interpretation that the strategies can minimized the risk of further damage.

This apology study will be the continuation of future written apology study especially in Indonesia. In terms of the data, the future study can compare the original article in Bahasa Indonesia with the English version of the same article within the same newspaper to see whether the message and pattern had been altered or similar. In relation to the instrument, it would have been better if there are a software and/or web corpus that support similar studies to analyze strategies and patterns of speech acts from different kind of text types without being converted. Also, there are potentials of future study to analyze in Indonesia's historical books to see the apology revolution and to explore apology in social media if that differs from others.

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APPENDIX

Appendix 1

The following template is intended for apology phrases found in Indonesian Online Newspaper observation.

Apology Phrases Observation Checklist

Publisher   :
Date of the article origin   :
URL   :
Text fragment on apology   :

APOLOGY STRATEGIES

STRATEGIES	Y/N*	Comments/Patterns
Negative Politeness		
IFID (Illocutionary Force Indicating Devices)		
Positive Politeness Strategies		
Offer of Repair		
Promise for Bearance		
Concern for Hearer		
Accounts		
Downgrading		
Opt out		
Denial of responsibility		
Acting innocently		
Minimisation		
Excuse		
Admission of facts		
Justification		
Upgrading		
Lack of intent		
Expression of embarassment		
Acceptance of responsibility		
Self criticism		

APOLOGY PATTERNS

PATTERNS: lexemes	Y/N*	Comments/ Patterns
Apologise		
be sorry		
Forgive		
Excuse		
Pardon		
Regret		
Afraid		
PATTERNS: Syntactic	**Y/N***	**Comments/ Patterns**
'Detached' Apologies		
Detached Unmarked		
Detached Exclamation marked		
Detached Question marked		
Partialy/fully expanded, detached unmarked or exclamation marked		
Partialy/fully expanded, detached question marked		
'Detached' Apologies + markers		
Interjection + apology: Exclamatory emotive + apology		
Interjection + apology: Downtoner + apology		
Interjection + apology: Hesitation marker + apology		
Explicit apology + proper name		
Explicit apology + Epithet		
Intensifier/emphatic 'do' + apology		
Apology + *please*		
Complex Forms		
Apology + *about/for* + Demonstrative (*this/that*)		
Apology + *about* + NP		
Sorry + *to* + VP		
Apology + (*for*) + NP		
Apology + (*that*) + S'		
Apology + *if* + S'		
Modal marker of intent + apology		
Request form		
Others		

*Y = yes and N = no

Appendix 2

The following template is intended for apology phrases found in Indonesian Online Newspaper observation.

Apology Phrases Observation Checklist

Publisher   : Jakarta Globe

Date of the article origin : 2015

URL   : http://jakartaglobe.id/news/s-sumatra-governor-apologizes-haze/

Text fragment on apology : "We're very sorry. We never had any intention to send the smoke to other areas, but winds carried [the haze] to the north," he said.

APOLOGY STRATEGIES

STRATEGIES	Y/N*	Comments/Patterns
Negative Politeness		
IFID (Illocutionary Force Indicating Devices)	Y	We're very sorry
Positive Politeness Strategies		
Offer of Repair		
Promise for Bearance		
Concern for Hearer		
Accounts		
Downgrading		
Opt out		
Denial of responsibility		
Acting innocently		
Minimisation		
Excuse	Y	but winds carried [the haze] to the north
Admission of facts		
Justification		
Upgrading		
Lack of intent	Y	We never had any intention to send the smoke to other areas
Expression of embarassment		
Acceptance of responsibility		
Self criticism		

Appendix 3
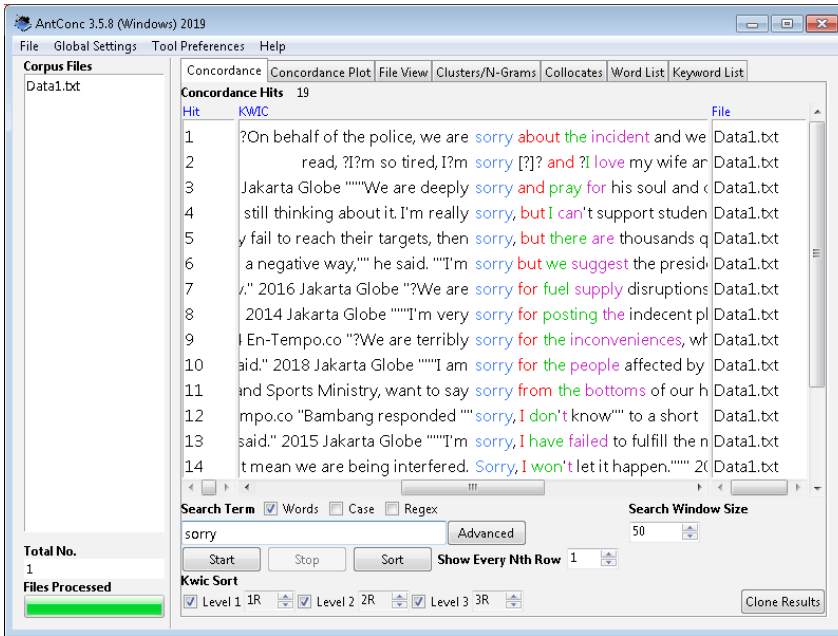
Appendix 4
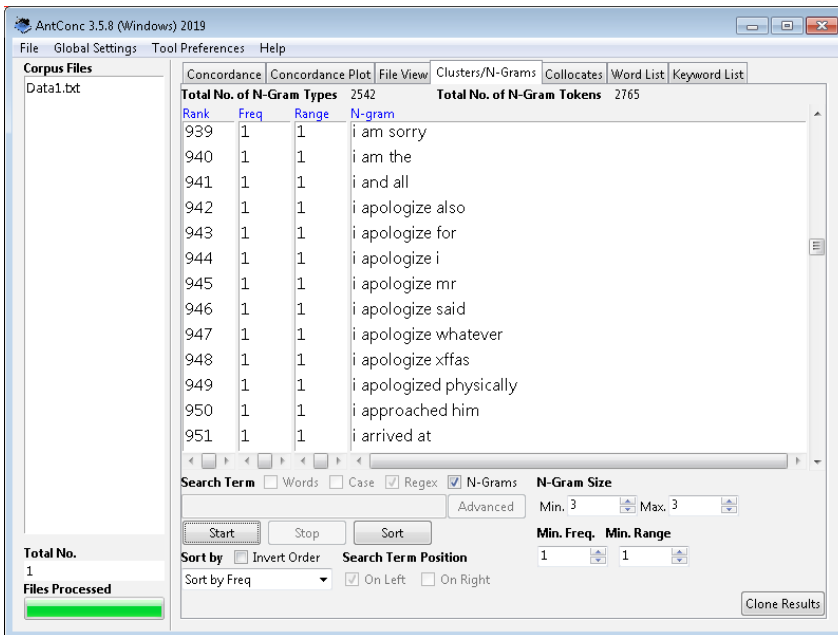
Critical Reflection as a Tool for Deep Learning: DIKW Model Revisited

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Abstract: The acronym DIKW itself stands for D data, I information, K knowledge, and W wisdom. These four components are hierarchical arranged moving from data to wisdom. The notion of this model resonates with theological education within the context of Christian higher Christian Education where I involve with. The challenge of the younger generation nowadays, in theological institutions including, is overloaded with raw data and quick answer. Pertaining to the idea that education ultimate goal is for life, wisdom should be what education aims for. This paper seeks to explore how critical reflection could be applied as a tool for moving from data to wisdom; how critical reflection could be enhanced in its effective use for deep learning; and finally how critical reflection is implemented in a classroom. Drawing upon the principle of Transformative learning theory, introduced by Jack Mezirow in 1978, helps to add depth to this study in terms of how learning takes place through reflective practice.

Keywords: DIKW hierarchy, critical reflection, theological education

INTRODUCTION

The technology era brings both opportunities and challenges into educational disciplines On one hand, it makes knowledge accessible to everyone. On the other hand, acquired data does not promise success in education. Deep learning requires more than raw data but turning it into a higher level of learning. The question addressed in this paper is how to bring education into greater depts amid overflowing data. Two related

themes include in this paper: DIKW hierarchy and Critical reflection in Transformative Learning theory. The paper seeks to present critical reflection as an educational strategy in attaining wisdom in the digital age. It is expected that big data should lead to big wisdom when understanding the relationship among these elements within the hierarchy to manage the learning process effectively.

DIKW CONCEPT

The term *DIKW* stands for data, information, knowledge, and wisdom. The DIKW hierarchy or pyramid describes how data evolve into information, knowledge, and wisdom respectively. The origin of this concept is uncertain. However, the term became known in the discipline of information science. Russell Ackoff (1989)has been recognized for organizing the theory and used it in the knowledge management practice. Now, the concept is widely used in many diverse disciplines. The following is the meaning of each element.

- *Data* is a series of random or raw facts that could have meaning or no meaning.

- *Information* is the data that has been given meaning applied to raw data

- *Knowledge* is the appropriate collection of information that makes sense to the situation.

- *Wisdom* is the application of experience, knowledge, and good judgment. Also, it is the ability to discern how and what knowledge could inform decisions.

The process of moving from data to wisdom looks like 1) gathering of data 2) connection of raw data parts 3) formation of whole meaningful contents 4) conceptualizing and joining those whole meaningful contexts. In *The Data/Information/Knowledge/Wisdom Hierarchy Goes to Seminary* (2013), Robertson explains the concept of DIKW elements concretely by using the metaphor of preparing the meal. He describes "the data are the ingredients (flour, salt, yeast, water, sugar, etc.); information is the loaf of bread baked using the ingredients; knowledge is analogous to the eating and digesting the

bread; and wisdom is getting stuff done with the energy derived from the bread." (Robertson, 2013, p. 7).

The model is not without any limitations. Some scholars argue that the distinctions of each category are difficult to define. Others note that the relationship between each element is ambiguity. However, with contextual-appropriate definitions and delimitations, the DIKW hierarchy can still be useful for specific applications in information literacy pedagogy. The paper utilizes the DIKW hierarchy to differentiate the identity of each of the elements. The construct of the hierarchy is also useful for specific context applications in theological education. This is illustrated in the context of theological education by using the construct to differentiate the identification of primary sources to higher literacy sources in the seminary disciplines.

A. Wisdom is the ultimate goal of theological education

Wisdom is when one analyze, synthesize, conceptualize, and apply what they have learned to make a wise decision and put it to the right action. From this perspective, the end of wisdom is holistic in nature as it brings character development to people whom it belongs to. Any educational model aiming for deep learning should not settle when facts or information are acquired by the students; yet, it should address the complex process of deep learning as a human being. In the digital age, educators should aim for knowledge competency and not merely bringing satisfaction to the brain or receiving a quick fix in the complexity of life situations. It should include moving data into making a decision wisely in a new situation and context.

Even though there here are some slight emphasis on educational goal in different contexts and disciplines; as a theological education institution, wisdom is grounded in Christian values. The concept of wisdom is drawn from a Christian perspective. The term *wisdom* emerged as practical wisdom of life that brings success, respect, and personal well-being. When gleaning the concept from the Bible, wisdom comes from reflection on life experience (Job 12:12), but is also learned from tradition (Proverbs 19:20) and from other persons of wisdom (Isaiah 19:11).

From a Christian perspective, it appears that wisdom is the highest purpose of education. Therefore, the ultimate aim of theological education is to attain wisdom. While data, information, and knowledge connote the cognitive domain; wisdom is more holistic by engaging the total person.

Therefore, the outcome of theological education is to become wise. In addition, Groom (2001) cites from Aristotle's notion that "knowledge should enhance people as human beings and be realized in their lives as wisdom." (p. 275). He also affirms that the task of educating students to become wise requires effort. This task demands commitment, intentionality, and awareness, especially on the part of educators.

Eliot (1934) foreshadows the challenge of education in this digital age in his poem, "Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?"[1] These questions call our attention to a great need in enhancing and developing critical reflection skill among educators and learners in order to bring deep learning into the realm of big data.

B. The nature of theological education context

As an educative agent, the institutions find their primary task is to cultivate wisdom among the student body. On one hand, the learning mode of the students has been formed from today's digital culture. On the other hand, wisdom is the primary goal, slow knowledge has to be attained. This is our contemporary challenge, near and real. Some students wonder whether it is worth to spend time in the classroom anymore. Why bother looking at church historical facts when you can search Wikipedia and find any fact you want? Why spend time exegeting original Greek and Hebrew language text while you can google search or utilize software? And why do educational institutions need to exist at all? The next part will address these questions.

CRITICAL REFLECTION: TOWARD THE CONCEPT

Boud et al. (1985) give a broader meaning of reflection as "an activity in which people recapture their experience, think about it, mull it over and evaluate it" (p. 19). In addition, Dewey (1933) suggests another term, reflective thinking, is an active, persistent, and careful consideration of a belief of supposed form of knowledge, of the grounds that support that knowledge, and the further conclusions to which that knowledge leads. These ideas of thinking reflectively lead to the concept of critical reflection which this paper will present. While these meanings of reflection given are broader, TLT carries a deeper sense of meaning. The term has derived from Transformative Learning theory introduced by Jack Mezirow (1978).

A. Overview of Transformative Learning Theory (TLT)

TLT explains the process by which adult learners arrive at new understandings (Mezirow 1991, 2000). The main concept of the theory is that individuals change their frames of reference by critically reflecting on their assumptions and beliefs. In this study we will find learning via the transformative process leads to change attitudes, behaviors, and thinking that resonates with wisdom. This paradigm-shifting process is defined as "making meaning of one's experience" (Cranton, 2006, p. 19). TLT is not focused only on the content of *what* one knows but the way of *how* one knows.

Critical reflection is marked by a reflection on presuppositions or assumptions of prior learning (Mezirow, 1990). It has been argued that having experience does not generate learning simultaneously. Only thinking of one's experience or reviewing the circumstances without critical reflection does not generate transformative learning. Criticos (1993) asserts that "effective learning does not follow from a positive experience but from effective reflection" (p. 162). One needs to go through the process of critical reflection in order to examine the frame of reference – that is, existing assumptions and belief systems, or worldviews. It is a process of reflection and revision of one's beliefs and assumptions until they have transformed their learning (Mezirow, 1981). The necessity of the practice echoed by the statement "quantity of information does not equal quality education. Students would learn much more and would develop critical, lifelong learning habits if "we taught them to reflect rather than regurgitate" (Cannell and Liefeld, 1991, 23).

B. Critical Reflection Process as a Path to Wisdom

Build on the notion of Transformative Learning theory, the concept of deep learning resonates with wisdom attained. As described by Mezirow:

> the process by which we transform our taken-for-granted frames of reference (meaning perspectives, habits of mind, mindsets) to make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action" (Mezirow, 2000, pp. 7-8).

Critical reflection, in context, does not mean criticizing which carries a negative sense. Its root sense means to discern or judge. From TLT, it brings a paradigm shift from the prior knowledge and guides future action. It is an emergence of wisdom when one has the capacity to make use of experience,

knowledge, and good judgment which drives the decision.

CONNECTION BETWEEN CRITICAL REFLECTION AND DIKW HIERARCHY

The importance of receiving the data and turning into wisdom calls for the need for reflective practice. As mentioned earlier, critical reflection is an essential element in the learning process. It is an educational practice that promotes higher levels of learning. The task of bringing the reflective mode of learning into the education process is quite a challenge in the digital age while information is flooding to us from every direction. Mankind is encountering a Data Tsunami. While it is useful in many ways, we cannot deny that big data brings big challenges. Critical reflection is critical in the digital age since technology tends to promote the idea of think fast and act fast.

However, if anyone agrees that wisdom is an ultimate goal of education, authentic learning should not take the critical reflection practice lightly. By considering TLT, this part will explore how to manage DIKW by the use of critical reflection in practice. According to TLT, experience alone does not promise to learn. It implies the raw data that is bombarding people every moment needs to go through the critical reflection process in order to turn the raw data into wisdom.

IMPLICATIONS AND SUGGESTIONS FOR THEOLOGICAL EDUCATION

While this part of the implication is primarily concerned about theological context; thus, other settings that have the same ultimate aim of education in bringing wisdom to the life of students may find it is helpful as well. This paper proposes three ways to apply critical reflection into the classroom, both in physical and virtual setting.

A. Retrospection on prior DIKW

The term *retrospection* in this paper is used for a specific data coming across when doing research on data and looking at new data and turn into information, knowledge, and wisdom. Doing a literature review is one form of retrospection on prior DIKW when doing it with valuation and discernment. The role of reviewing literature is to identify areas of

prior scholarship and existing knowledge on the topic. Also, technology development in researching at a faster rate. Today, students can electronically access millions of previous research studies and publications which organize data in a relevant way. There are browsing and searching tools available for anyone to use without purchasing or carrying around textbooks. Database which is a huge collection of data, or information, is organized for rapid search and retrieval.

Reflective practice play a role in retrospection on prior DIKW as follows: 1) Looking back at their prior DIKW and how the prior and the new connect 2) Evaluating the value of data and information 3) Constructing the meaning for usage, and 4) Being able to apply the knowledge into a new situation.

B. Experiencing the content

True education is not informing alone; it is about forming and transforming.

Critical reflection helps students to experience the theological content in their own life context. Theological reflection is the tool in bringing the concept to life. Reiser states the following:

> 22 the religious truths that we profess need to be confirmed in terms of what happens in our daily lives; in other words, through practice or "experience." Otherwise, beliefs remain at the level of abstraction and the assent we give to them remains merely cerebral or notional (Reiser, 2010, p. 2).

Furthermore, Boud et al. practically give the idea how to practice reflection by picturing it as an activity where individuals "recapture their experience, think about it, mull it over and evaluate it" (Boud et al., 1985, p. 19). Deep learning takes place when one can connect their understanding of content or subject matter to life context. To promote learning to a higher level, critical reflection should be involved in every step, starting from researching the *data*, interacting with *information*, managing *knowledge*, and absorbing *wisdom*.

Experiencing the subject matter involves personalizing and internalizing the concept. One should be able to process the concept to life rather than carry it as an abstract form or idea. Teachers should continually

train the students to ask questions "What this data or information personally means to you?" "Have you ever experienced this kind of information into your personal life, family, or your circles?" "How to apply this knowledge when you walk away from this classroom?" These are some questions that the students should habitually be reflecting and pondering on.

C. Community of reflection

Social media nowadays can foster a "networked individualism" that limits true collaborative learning. However, wisdom could be developed much more in a learning community as there is explicit knowledge that is embedded in the community so called *collective wisdom.* In this context, technology enhances the learning environment where students learn from information and interact with one another. It helps building community with a seamless transition between in-class and at-home learning. From the community, one can exercise discernment of how and what data should be utilized. Collaborative learning has been promoted for years as an effective strategy in a classroom environment. It is when students work together to help each other learn in face-to-face instruction. However, as the rise of asynchronous online learning, the strategy is even a necessity in terms of encouraging discussion among the virtual classroom. The technology advances of today bring a higher comfort level in the interaction among the students. Stegmann et al. (2012) found that the use of "collaboration scripts" (e.g. templates to organize discussions, debates, etc.) assisted students to develop stronger arguments and elaborate their understanding by incorporating content knowledge acquisition and argumentation skill into one activity.

Moreover, Noroozi et. Al. (2012) discovered that providing supportive information as needed during learning tasks (rather than prior to the learning tasks) showed better results on knowledge construction. Examples of collaborative activities in an online setting that promote critical reflection include group problem solving, exam preparation through students creating and posing questions to each other and providing feedback on responses, group reports, and peer tutoring via asynchronous (e-mail, discussion boards) or synchronous tools (e.g. shared whiteboard, chat) (Mallet, 2008).

CONCLUSION

In the digital age where big data has a great impact on the world, it brings both opportunities and challenges into educational disciplines. Therefore, it is appropriate in our time and space to reconsider educational strategy in the education sector. It is beneficial when teachers or schools use technologies for more effective education to engage the students. However, there is a misleading that merely utilizing technology would promise successful in learning. This paper relates two themes of DIKW (Data-Information-Knowledge-Wisdom) hierarchy and proposes an educational strategy to bring wisdom which is the goal of education. Learning involves analyzing the data, conceptualizing the information, applying the knowledge, and synthesizing it before evaluating a wise decision in a new situation. It is that after this process has been done, true learning can occur. Unfortunately, this lacks in the learning process due to the fast moving world provides a vast of available answers online. In addition, for many, there is no effort to verify the resources. Therefore, this paper explores some implications that critical reflection can be applied 1) Retrospection on prior DIKW 2) Experiencing the content and 3) Community of Reflection

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ICT for LEARNING and INSTRUCTION

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Abstract: The aims of this paper is to describe the lecturers' motivation to improve their instruction and to find out the opportunities of using google apps in the learning and instruction process. In industry 4.0 era, a digital learning and instruction is more popular in a university. Lecturing's method have adapted to this popularity.. On May-June 2019, Faculty of Education and Language, Atma Jaya Catholic University of Indonesia has implemented ICT for learning and instruction workshop program. There were 19 lecturers of faculty of Education and Language joined in this wokshop. The main goal of this program is lecturers are able to design and implement an integrated digital lecturing in their lecturing. The topics of the are a a ra a the lecturers' motivation to joint in ICT workshop is in high level and securing. For analysing data, researcher used descriptive qualitative research method. The evaluation of ICT workshop result is used as the main data.**Key words:** ICT, Google Apps, Learning, Instruction

INTRODUCTION

Education system in this century is influenced by industrial revolution 4.0. Industry 4.0 means machines are enhanced with wireless connectivity and sensors, connected to a system that can visualise the entire production line and make decisions on its own, or called digitalization 4.0 in the sense of its innovative dan qualitative nature is taking place. The main goal of industry 4.0 is to reach and to improve the quality and efficiency of work or study (Nagy, Olah, Erdei, mate, & Popp, 2018, p. 2). In the other word the purpose of industry 4.0 is to achieve an effectiveness. Now, the higher education system is implementing digitalization principles. Using computers and internet is a common learning activity in the class room and virtual class. Some lectures deliver subject material via online and students submit their work result through online system. Wherever and anywhere, as long as,

there is internet connection, lectures and students are able to connect to one another. Learning and instruction is not limited by place and time. Learning and instruction process is managed and supervised in an integrated way and is flexible.

Lecturers need to realize the condition of the higher education environment, now and in the future. They need to reflect on four conditions: 1). Condition and conventions within the environment are changing; 2). They are changing faster than they have changed in the past; 3). Changes will continue to rapidly occur as we progress into the twenty-first century; 4). Sensitivity to these changes is imperative and their implication for universities must be anticipated (Smith, 1994, pp. 2-5). In industry 4.0 or digital era, the quality of learning and instruction need to be improved. High Order Thinking Skill (HOTS) has been introduced by Benjamin Samuel Bloom since 1956, but, honestly, the implementation of it, the aim formula of learning and instruction is still in the lowest level skills, such as remembering or retrieving previously learned material: knowing, identifying, relating, listing, defining, recalling, memorizing, repeating, recording, naming, recognizing, acquiring. This fact is still far away from industry 4.0 demands, which require each individual, community, institution, and organization are able to implement the automation and data exchange in manufacturing technologies and to process program or activities by using cyber-physical systems (CPS), the internet of things (IoT), industrial internet of things (IIoT), cloud computing, cognitive computing and artificial intelligence. We need to improve our skills.

Mahdum, Hadriana, and Maria Safriyanti, lecturers of University of Riau, Pekan Baru, Indonesia, have completed "Exploring Teacher Perceptions and Motivation to ICT Use in Learning Activities in Indonesia" reasearch in 2019. Based on the research results, they concluded several points. First, the teachers in Indonesia have a good level of perception and motivation toward ICT integration in learning activities. Second, self-eficacy, the fruit of their efforts to use ICT in their learning process, the good impact of ICT on their teaching, and course, are the sources of teachers'motivation to use ICT in learning activities. Third, teachers have been familiar with computers, internets, e-mails, PPTs, and smartphones. Fourth, they still face several issues related to fasicilities and technical expertise. Fifth, the statistic test of relationship between ICT training and teacher perceptions and motivation did not indicate statistically significant result (Mahdum, Hadriana, & Safriyanti, 2019, p. 309).

They further explained that in 2004, ICT was implemented as a subject which was thought in primary, midle dan senior high school. Government included this subject in the 2004 national curriculum of Indonesia, named "Information and Communication Technology". In 2013, Indonesian government had decided that ICT must be integrated into all subjects . Indonesia needs nine years for having an awarenes of an urgency of using ICT in all aspect of life. It's better late than never, as long as, we still have dreams to be a great nation and are ready for the worldy competition. Mahdun, et al., have done their research in four rural districts in Indonesia. Their respondents were 616 certified teachers. They are teachers of Kuantan Singingi, Indragiri Hilir, Rokan Hilir, and Kampar senior public school. The data showed that rural districts teachers have a good level of perceptions and motivation toward ICT integration in learning activities. (Mahdum, Hadriana, & Safriyanti, 2019, p. 294). Given this, we can imagine that logically, urban districts teachers in Indonesia should be better than rural districts teachers who still faced with several issues related to facilities and technical expertise. However, this logic imagination is not found correct because urban districts teachers are still in the process of adaptating and putting their efforts to engage with ICT. This point will be discussed later.

ICT implementation in higher education level research needs to be implemented. Lewis and Smith noted six reasons for this urgency when they talk about the environment of higher education. First, universities are preservers, transmitters, and generators of knowledge. Second, universities are the place for each person to develop potential and carrier and economic weel being in the future. Thirth, universities engange with the responses/demands of the public. Eventhough, "the respon of the public is pessimism about their potential acces to higher education in the face of an increased conviction that collage education is a critial means to employment and economic security", as Lewis and Smith mentioned (Smith, 1994, p. 2). Fourth, life expectations. "Universities's stakeholders have increasing expectation of higher education and are willing to commit funds to evaluate the performance of universities in light of these expectation. For example, students expect of universities what they demand elsewhere: better service, lower cost, higher quality, etc" (Smith, 1994, p. 3). These points can be responded by using digital learning provided by universities. At least, e-books and essays or paper assignments are uploaded in server or learning applications system, such as free classroom in google. Students are able to read and do their assigment online directly, without printing (paperless).

Fifth, institutions of universities or higher education need to have a high level of esteem and trust. If the primary focus most universities is to protect disciplines and the culture of academy, it does not work anymore, in this day and in the future. The result is a loss of confidance (Smith, 1994, p. 5). HOTS need to be implemented if they want to elavate the level of esteem and trust. Sixth, educational process is related to the funding education system. Economic conditions are able to influence educational funding implementation, both directly and indirectly. A good quality of education system is supported by a good financial system. In this era, lecturers need to be more creative and innovative in their lecturing. Effective and eficiency principles are the spirits of being a creative and innovative lecturer.

Google has been providing some effective and integrative applications that can be used in learning and instruction. The following are some example of google apps: Google form, YouTube, Docs, Books, Hangouts, Keep, Classroom, Collection, Duo, Jam board, etc. These examples reflect the products of industry 4.0 way of thinking that support education system development.

Internet, social media development and needs of students demanded lecturers have adapted to these situation. Now, the popular lecture is digital based lecturing. Based on this condition, Faculty of Education and Language of Atma Jaya Catholic University of Indonesia has designed and implemented an ICT for Learning and Teaching program for lecturers on May-June 2019. The target of participant number was 35 lecturer, but in fact, there were 19 lecturer who joined in this ICT Program. **LITERATURE REVIEW**

ICT for Learning and Instruction

Lecturers who master ICT are able to optimize the use computers in lecturing, creating activities instruction, implementing their teaching process, assessing and analyzing students' learning outcomes, as well as conducting remedial or enrichment activities (Mahdum, Hadriana, & Safriyanti, 2019). IT literacy is knowing how to use the software tools to help students learn (Magliaro, 2006, p. 173). According to Lev S. Vygotsky, there are three unique characteristics of human intelligence, human can learn (discoveries, inventions, ideas), human can develop knowledge (place, events), and human can adapt the environment to themselves (Gredler, 2002, p. 3).

Meyer in (Grace, 1999) has defined:"learning as the relatively permanent change in a person's knowledge or behavior due to experiences, feelings, and thoughts. There are three components in this concept: 1) the duration of the change is long-term rather than short-term; 2) the locus of the change is the content and structure of knowledge in memory or the behavior of the learner; 3) the cause of the change is the learner's experience in the environment rather than fatigue, motivation, drugs, physical condition or physiologic intervention."

According to B.F. Skinner, the important event in changing behavior is the outcome produced by the action. Skinner introduced the operant conditioning as the concept of learning and instruction. Singing a song, may "operate" on the environment to produce consequences such as praise, applause, or money. These behaviors were named operant (Gredler, 2002, p. 91). When we talk about learning and instruction, of course, we should explore Skinner's Operant Conditioning concept. When a student shows discouragement, a teacher should quickly come to his aid. However, in reality, a teacher can react carelessly that strengthen an undesirable behavior. The role of lecturer's understanding in this context is very important. A student who demonstrated poor reading skill will also perform poorly in his academic subject. The problem is a lack of reading skill. So, a lecturer needs to provide some reinforcement strategies or appropriate stimulus, to increase the student's reading skill.

Skinner defined learning as a behavior changing. When student learns, his responses increase. Learning is a change the likelihood or probability of a response. We know that, the likelihood of responding is difficult to measure. So, rate and frequency of responding is measured during learning process. Learning is behavior change. Learning is functionally related to changes in environment or condition (Gredler, 2002).

Skinner mentioned three major problems of contemporary education. First, contemporary education takes place in an artificial setting. School prepare students for a world that lies in future. Second, the number of private tutors needs to be increased. The larger the class, the worse the problems faced by the lecturer. Third, each student has equal right and need to have fair treatment. The fact shows that students are placed in groups to read and hear about events rather than experience them, the individual student seldom does anything that is immediately successful. Skinner warned that when a teacher is responsible for 20-30 students at one time, several problems

for instruction arise. They are the infrequency of positive reinforcement, the excessive length of time between behavior and reinforcement, and the lack of programs that lead the child of through a series of approximations to the final behavior (Gredler, 2002, p. 106). In this situation, the lecturers cannot provide the needed reinforcement. So, machines, such as computer and other current technology are necessary in the classroom. Appropriate applications of these aids would then free the lecturers to spend more time listening and talking with individual students.

There are three assumptions that supported Skinner's approach to technology of teaching. First, the experimental analysis of behavior also applies to the classroom. Second, behavior repertoires in the classroom may be shaped in the same manner as other behavior. Third, technology is needed to provide the large number of reinforcements for behavior response (Gredler, 2002). Skinner asked us to realize that teaching in more than telling. Teaching occurs when a response is evoked for the first time and is then reinforced. So, to design of effective instruction requires careful attention to two important issues: selecting the stimulus and providing reinforcement.

A. ICT as an opportunity

Implementing ICT as integrated lecturing is one of the implementations of total quality in higher education principle.

> The principles and practices associated with total quality provide a framework consistent with the best existing practices in higher education, but one that allows a positive response to conditions in the environment, viewing them as opportunities, not as threat (Smith, 1994, p. 6).

Universities defining their world in term of threat may engange in defensive action, focusing on preservation of the past. While, universities defining their world in term of opprtunities focus on the future, carrying forward the best of the past and bringing the two together in innovative activities, Lewis and Smith noted (Smith, 1994). ICT is not something new but only few lectures are fluent enough in using it as integrated and digitalized leacturing. ICT is an opportunities to build developed education, digital learning. Lecturers need to have the technology skill as the basic of instructional technology literacy.

B. ICT : Technology Skill-Instructional Technology Literacy

Literacy is seen as more than the ability to read and write. Instructional technology (IT) literacy is more than knowing how to use computer software. IT literacy is knowing how to use the software tool to help students learn (Magliaro, 2006, p. 173). Lectures need to do a first step, for becoming IT literate, which is mastering how to use the tool. Becoming IT literate, lectures need to realize what they have known, via self-assesing. Lectures are able to self-assess their knowledge, skills, and experience in technology in two ways: 1). Curriculum integration skill, or how they have used media and technology in the classroom, 2). Specific skill with technology tools. The following are some questions which can help lectures to understand their curriculum integration skills: 1). What experiences have you had in using media and technology in your lecturer? 2). What curriculum integration skill would you like to develop? Meanwhile, for helping lectures realize their technology tool use skill, some following questions can be used: 1). What media and technology tools do you use? Characterize your expertise level (novice, intermediate, or expert) (Magliaro, 2006, p. 174). Developing IT literacy requires acknowledging what lecturers know about media and technology for educational use. Therefore, the background or the prior knowledge or information and skill of lecturers is very important for increasing their ICT skill.

The experience of using media and technology in lecturing informs us lecturers' ability in using media, using technology, and integrating curriculum. By knowing media and technology tool they used, we know their expertise level.

C. ICT as An Instructional Media and Technology

There are alot of medias and technologies. When a media and technology is mentioned as an instructional media and when a technology is called as an instructional technology? Smaldino, Russel, Heinich, and Moldena in Magliaro (2006) stated that media and technology becoming an instructional media and an instructional technology when they carry messages with an instructional purpose. Media and technology which are used by an educator, it is an instructional media and an instructional technology. Computer and internet are not instructional media and technology if they are not used for learning, teaching or lecturing. Person, purpose, moment/event named what the media and technology are. ICT for learning and instruction is a clear

concept that ICT is an instructional media and an instructional technology.

D. ICT for Learning and Instruction

The American Education Communication and Technology (AECT) organization explained two kinds of technologies. They are educational technology and instructional technology. The educational technology such as accounting, grade reporting, data bases, and communication technologies. Meanwhile, the instructional technology such as theory and practice of design, development, utilization, management and evaluation of process and resources for learning" (Magliaro, 2006, p. 175). So, the role of ICT for learning and instruction is as an educational technology. ICT is used by lecturers for some purposes, such as delivering subject material via online system, publish asssignment, quiz and grading, online discussion, and giving feedback or evaluation.

E. Some Caveats

There are some caveats when lecturers try to implement the ICT system in lecturing. Conventional educational system focused on adminitrative function. Academic function need to be improved as well as techology development. Creative and innovative lecturers some time need to do some improvements in lecturing method and content. Digital lecturing is kind of interdepartement work, interdisciplinary and system-wide collaboration on problem and project. In this case, the lecturers need to have good communication skill and collaborative work. It is not individual job or task. Implementing ICT system in lecturing is an implementation of team work principle. It is an integrated leadership. Without active presidential support it is difficult to initiate and successfully implement a university-wide total quality program, through digital lecturing.

METHODOLOGY

To collect the data, I used the google form app to get a clear picture of the motivation of the lecturers to improve their quality of instruction, to analyze the readyness of lecturers to implement Information and Communications Technology (ICT) principles in the learning and instruction, and to find out some opportunities of using google apps in the learning and instruction process.

A. Type of research

This research used qualitative descriptive research. Researcher examined some parts of the ICT for learning and instruction program in a workshop, the way facilitators delivered the materials of program, and input or sugestions from participants (lecturers) toward the ICT program.

B. Research subjects

Based on PPDKTI's data (Kemenristekdikti, 2019), number of permanent lecturers of Faculty of Education and Language, Atma Jaya Catholic University of Indonesia, are:

Table 1.
Number of Permanent Lecturers of four study programs of Faculty of Education and Language

Study Program	Number Of Permanent Lecturer	Number Of Ict Proram Participants	%
G&CEd	8	4	50%
EEd	12	7	58%
CEd	7	3	42.8%
PSEd	10	5	50%
TOTAL	37	19	51%

Participants who joined in ICT program are 19 lecturers. Participant target number is 35 lecturers. So, there are 51% number of lecturers joined the workshop. As long as researcher observation result, 19 lecturers who are from different study program, they have different frequencies in using ICT tool. Some of them seem able to follow facilitator's instruction fastly. Others, they need extra time for following each instruction. Sometime, facilitator need to come to the table and explain privaetly and slowly. Around 90 % from 19 participant they have using power point text in their lecture. Less than 40% of participant do not use google apps, such as Classroom, google form and online game, Kahoot in their class.

C. Research procedure

This study referred to a research procedure theorized by Williamson (2019) and Rinnert, Nogami & Iwai (2015), who believe that Questionnaires

make the research valid by giving out a questionnaire that follows the Technology Acceptance Model (TAM) theorized by Henderson (2016, pp. 34-36). I used google form as an online instrument to obtain the participants' experiences and responses.

RESULTS AND DISCUSSIONS

A. Results

The following tables show the result in more detail:

Table 2.
Workshop Evaluation

Study Programs	Satisfactory Level Toward General Ict Program	Topics And Subject Relevance	Is The Topic Helpful?	Performance Of Committee Of Workshop	Evaluation Of Workshop Supported Media	Evaluation Of The Vanue Of Workshop
G&CEd	4	5	5	4	5	5
G&CEd	4	5	4	4	4	5
G&CEd	4	5	5	5	5	5
EEd	5	5	5	5	5	5
EEd	5	5	5	5	5	5
EEd	5	5	5	5	5	5
EEd	5	5	5	5	5	5
EEd	5	5	5	5	5	5
EEd	4	5	5	4	5	5
EEd	4	5	5	5	5	5
CEd	4	5	5	4	4	4
CEd	5	5	5	5	5	5
PSEd	5	5	5	5	5	5
PSEd	5	5	5	5	5	5
PSEd	5	5	5	5	5	5
PSEd	4	5	4	5	5	5

PSEd	5	5	5	5	5	5
MP	5	5	5	5	5	5
	5	5	5	5	5	5
	4.6	5	4.8	4.8	4.9	4.9

Based on the data above, the score of motivation of the lecturers to improve their quality of instruction is high. The average score for satisfactory level toward general ICT Program is 4.6 from 5. It means 92% of participant were satisfied with this program. They thought that the ICT program was able to fulfill their expectations or needs. In other word, the ICT program was acceptable, and though not outstanding or perfect. Researcher assume that satisfaction of participants joining the workshop shows high motivation in using ICT. This part need to be studied deeper. Today, we need this spirit for achieving a better education system in the higher education. In digital era, the higher education needs to be changed. Lecturer is the main actor of this change. Based on the participant's responses, 100% topics of ICT program were relevant with subjects in each study programs. The topics of ITC program were Power Point Text, Powtoon App, Flip Learning System, Google Classroom App, Google Form, and Kahoot Educative Online Game. All progams and apps seem useable and implementable for each subjects.

Power Point Text (PPT) is one of the familiar application programs. This program is usualy used by lecturers during their lecturing. Eventhough, they used it regularly, but for interactive, creative, and innovative PPT one is still relatively new for them. When designing PPT in a new way, participants were surprised and interested in learning more. Powtoon, Flip class, Google Classroom, and Kahoot, for several participants, are new. Eventhough, these apps are in google, many of them are not aware of it. The score for this variable is 4.8. It means that the topic is usefull and meaningful for them.

The appreciation of workshop participants toward ICT Program committee was very good. 4.8 out of 5 is given to the facilitators, who ran and assited the workshop. It is good point for lecturer's ICT skill development.

Atma Jaya Catholic University of Indonesia has supported ICT tools and system. There are two computer lab in its campus. Each computer lab consist of more than 20 units of computer with a good internet access. Students and lectueres may use computer lab as much as they need. As long as they follow the rules, computer lab is always ready for lecturing. Workshop participants feel that the supported media used during the ICT program

were good. Score 4.9 out of 5 is given for the availability of supported media and the vanue of ICT Program. In each classroom, university has provided a projector and a lecturer computer. In the classroom, students use their own gadget and internet acccess. University has provided internet access, but sometime the quality is not really good. Through this ICT Program, now, the lecturers be more aware that they have supported ICT media and computer lab which can be used in their lecturing.

Based this data we can say that to face digital era, each lecturer need ICT training to increase their skills. ICT workshop program is an opportunity for lecturers to increase their skill in their busy time preparing lecturing, research, and community services program. They need this because of the importance of increasing ICT skill. Without this skills, lecturing method, content, and spirit may be not relevant and supported anymore.

Readiness of lecturers in implementing Information and Communications Technology (ICT) principles in the learning and instruction is still in progress. It means that they need more time to be more confidence in using ICT in their lecturing. Some participants shared that duration of ICT workshop program need to be added. It is clear that google apps in the learning and instruction process are implementable and useable.

Tabel 3.
Evaluation of 1st Workshop Trainer

Study Program	Knowledge Mastery Of 1st Workshop Facilitators	The Way Of 1st Workshop Facilitators' Presentation	Relevance Of Topic	Interaction Of 1st Workshop Facilitators With Participants	1st Workshop Facilitators Using Media/Tool Evaluation
G&CEd	4	3	5	4	5
G&CEd	4	4	5	4	4
G&CEd	5	5	5	5	5
EEd	5	4	5	5	5

EEd	5	5	5	5	5
EEd	5	5	5	5	5
EEd	5	5	5	5	5
EEd	5	5	5	5	5
EEd	5	4	4	5	4
EEd	5	4	5	5	5
CEd	4	4	4	4	4
CEd	4	5	5	4	4
PSEd	5	5	5	5	5
PSEd	5	5	5	5	5
PSEd	5	5	5	5	5
PSEd	4	4	4	4	4
PSEd	5	5	5	5	5
MP	5	5	5	5	5
MP	5	5	5	5	5
	4.7	4.6	4.8	4.7	4.7

Table 4.
Evaluation of 2nd Workshop Facilitators

Study Program	Knowledge Mastery Of 2nd Trainer	The Way Of 2nd workshop facilitators' Presentation	Relevance Of Topic	Interaction Of 2nd workshop Facilitators With Participants	2nd workshop facilitators Using Media/Tool Mastery
G&CEd	5	5	5	5	5
G&CEd	5	5	4	5	4
G&CEd	5	5	5	5	5

EEd	5	5	5	5	5
EEd	5	5	5	5	5
EEd	5	5	5	5	5
EEd	5	5	5	5	5
EEd	5	5	5	5	5
EEd	5	4	5	4	4
EEd	5	5	5	5	5
CEd	5	5	5	4	4
CEd	5	5	5	5	5
PSEd	5	5	5	5	5
PSEd	5	5	5	5	5
PSEd	5	5	5	5	5
PSEd	5	5	5	5	5
PSEd	5	5	5	5	5
MP	5	5	5	5	5
MP	5	5	5	5	5
	5	4.9	4.9	4.9	4.8

Participants agreed that the facilitators who train them during ICT workshop program have good capability. For mastering the workshop topic they score the facilitators 4.85 point. The trainers are the lecturers of faculty of education and language who hold a technology education degree. Based on this information participants know that they are not alone in increasing their ICT skills. Whenever they need, as long as the trainer, who are their collegas, have time, they can ask for help. It is good potential that faculty of educationa and language has. Increasing ICT skill of lecturer no need spent much money if we can manage what the university has. Lecturer trains lecturer or peer teach peer is the effective way to develop the quality of the faculty. The implementation of ICT program is teamwork. The important thing that should be designed by a dean or head of study programs is how to utilize of lecturers' ICT skill and competency.

Tabel 5.
Inputs and Sugestions

Study Program	Inputs	Sugestions
G&CEd	We need to practise a learning mobile apps	We need manual book
G&CEd	Plan for workshop about classcraft	We need other products or applications for the next time
G&CEd	Good	We need design this program seriously, full day or two days (duration of this workshop is to short)
EEd	We need a same workshop	Very good
EEd	Very good	Go on
EEd	We need to learn how to integrate online application to Atma Jaya e-learning system	
EEd	We need ICT for learning	Meaningful
EEd	Please, do more next time	Design this program periodically
EEd	How to deliver lecturing via Skype	Topic need to be implemented directly (1 subject in one session of workshop)
EEd	We need online class for enhancing our learning process	Time managemen. Don't schedule the workshop during week test.
CEd	Please, design this program in the beginning of semester time.	Peer teaching is needed
CEd	We need real followup, make sure that we master it	Need energizing activity during break

PSEd	Oke	Need monitoring system after workshop
PSEd	This program answers lecturers and stundent's need in digital era	Hope that in each class we have good internet access
PSEd	Need followup	The topic need to be separated so participant can choose it
PSEd	Make sure that participants are able to master the topic of this program	
PSEd	We need more time and opportunities	
MP	The Team need to followup this program and evaluate it	

Some expectations can be found in the table 4. The lecturers who teach in higher education level, eventhough they have a lot of experiences, knowledges, and skills, they are still eager to learn something new and update. They know that ICT workshop program is one of the important step in increasing their ICT skill effort. So, they wrote some inputs and suggestions. They need more workshop time, manual book, more number of apps program, internet access, and follow up of training. They thought and felt the benefit of ICT for their lecturing. Good spirit of increasing ICT skill need to be maintained well. It is not only the responsibility of the dean or the heads of study program, but also all lecturers of all subjects.

CONCLUSION

The motivation of the lecturers of Faculty of Education and Language of Atma Jaya Catholic University of Indonesia to improve their quality of instruction is quite good. Supported policy, tools, capacity of internet access, and digital media have been provided, eventhough improvement is needed. Good motivation in increasing ICT skill shows good understanding about the importance and urgency of using ICT in the lecturing process. The good understanding about it motivates lecturers to learn and practice the ICT in their lecturing. Who have implemented ICT shows the readyness

of implementing ICT principles. After worskhop time, some lecturers of Faculty of Education and Language, implemented it directly. Others are still practicing on how to implement digital lecturing by trying using some free google apps, such as google form, google classroom, some online educative game such as Kahoot, and interactive presentation tool such as Powtoon and online PPT. The implementation of ICT in lecturing has to be continously practiced. Lecturers need to have open-mindset and spirit to upgrade their skills continuously. Based on this research, researcher thinks that next time, ICT development team of Faculty of Education and Language need to analyze the readyness of lecturers to implement Information and Communications Technology (ICT) in the learning and instruction

ACKNOWLEDGEMENT

The following are some abbreviations used:

G&CEd: Guidance and Counseling Education

EEd: English Education

CEd: Catholic Education

PSEd: Primary School Education

MP: Master Program

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Enhancing English Speaking Proficiency in Disseminating Da'wah Through A Video Making Project: Undergraduate Students' Perceptions

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Abstract: This article explores the undergraduate students' perceptions in the Department of Islamic Religion Education at State Islamic Institute of Kudus to a video making project to improve their English speaking proficiency in supporting the da'wah. The study was done as qualitative research and data were gathered through the administration of a 12-item questionnaire to the students regarding the perception of the video making project in enhancing their speaking proficiency in disseminating da'wah. The result showed that majority of the students agreed that the video making project could facilitate them in learning English. It was showed by their positive attitudes towards its use and high percentages of their perceptions. Additionally, the video making project could enhance them to enrich English vocabularies and support their performance when disseminating da'wah or Islamic teaching.

Key words: English Speaking Proficiency, Da'wah, Video Project, Undergraduate Students

INTRODUCTION

The digital era has been marked by the rapid development of technologies that may lead to the great opportunities for the community especially in da'wah media. Da'wah or Islamic preaching can be defined as a way to deliver proper teachings and good values in Islam to others (Murthado, 2017, p. 86). In the past time, preachers and da'i are preaching through traditional media by which they spread da'wah to others in face-to-face ways. Nowadays, in this digital era, they have altered their da'wah in better ways through internet and social media. In this sense, the internet is more likely becoming meaningful resources for preachers and da'i by which they can inevitably spread their teachings and thoughts to others. In addition, Da'wah has become such online means positioning a main role in disseminating religious teachings around the world (Shan-a-alahi & Huda, 2017, p. 1). Along with it, the acquisition of English adequately may become vital in enhancing da'wah which can be accessed by people around the world. In order to achieve it, preachers and da'i are highly recommended to have a speaking proficiency in da'wah since it has a vital role in delivering ideas and thoughts that is different from the written language.

These differences could be clearly viewed from qualities of voice, facial expressions, gestures, intonation, pronunciation, stress, rhythm and pausing. In fact, speaking English is not easy especially for beginners, the undergraduate students in the department of Islamic Religion Education at State Islamic Institute of Kudus. As the beginners, they may encounter several problems in speaking English which may be more complex and different from their mother tongue. Inadequate vocabularies, the complicated grammar or structure, inappropriate intonation and pronunciation, lack opportunities of speaking English in class and society, lack of language curriculum development and input poor environment outside the classroom may become the problems commonly encountered by the students (Gan, 2012).

Additionally, the vital aspects in speaking skills are social and cultural rules. It relates to the way of how to do turn-taking, roles of participants, circumstances, and so forth. In this case, the roles of teachers or instructors are badly needed to help their students develop the speaking skill. Lecturers should enhance their students to produce grammatical utterances, logical and meaningful sentences. In an interactive linguistic environment, such as with the EFL classroom, the right amount and the right kind of verbal interaction must occur simultaneously for learning to take place (Talley & Hui-ling, 2014, p. 40).

Regarding this, in order to associate with this digital era, lecturers should be aware of the use of social media in teaching speaking in responding the development of technology and attract the interest of students in speaking English. Online social media have played a crucial part for college students especially in language learning (Bunus, 2010). Furthermore, it can be considered as effective tools in fostering social learning (Buzzetto-more, 2014). A tremendous amount of research related to the use of technology in teaching English have been undertaken by some previous researchers. Videos in YouTube had some benefits in fostering student to have a critical engagement (Jackman & Roberts, 2014, p. 274). In addition, YouTube can be used as a project-based learning to foster students' speaking ability in broadcasting(Wahyuningsih & Dewi, 2019, p. 6). Furthermore, video blogs can be utilized as a tool to develop the performance of EFL students in their oral presentation (Hung & Huang, 2015, p. 614). Likewise, the use of video conferencing in increasing the English pronunciation among Korean students (Joohee Son, 2014, p. 199).

Likewise, various efforts of improving the ability in speaking English for students are badly crucial. One of them is by designing a media to improve the effectiveness of language teaching and learning through the assignment of making video projects. By making a video, students hopefully are able to speak up using English and they will feel confident when they deliver da'wah or Islamic preaching. This article mainly explores the perception of the undergraduate students from the Islamic Religion Education Department at State Islamic Institute of Kudus to the importance of enhancing their English speaking proficiency in delivering da'wah through the project of making English videos and their strategies to enhance them to speak English so that they could be professional da'i and preachers in this digital era.

LITERATURE REVIEW

A. Teaching Speaking for EFL Learners

Speaking English may become the primary target for some EFL learners. It is used for some certain purposes and contexts that cover cultural, political, social, economic and educational setting. In political area, promoting people with better quality chances to speak in public community indicates promise for enhancing crucial democratic skills (Andolina & Conklin, 2018, p. 379). Regarding it, EFL learners particularly students at state Islamic Institute of

Kudus from the department of Islamic Religion Education Department are highly enhanced to master English especially speaking skill in order to foster their professional career development in facing the industrial revolution 4.0 era considering that they can be categorized as the beginner of learning English. It can be actualized by teaching English using appropriate methods, techniques, and strategies. It is in conjunction with Zhai & Gao (2018, p. 2) reporting that teachers have played a principal role in promoting EFL students to master English well, particularly in speaking, in order that they can make use of meaningful interactions in their careers development.

B. Speaking Tasks

In order to promote a successful speaking ability, providing speaking tasks is considerably crucial for EFL students. Harmer (1998) has highlighted three kinds of speaking tasks needed for students. Those cover rehearsal, feedback, and engagement. In rehearsal activity, teachers can provide students to have a free discussion in order to promote them an opportunity to speak well. In speaking task, feedback both from teachers and students are needed to know the students' speaking proficiency. Additionally, providing engagement is highly needed in enhancing students' motivation to speak English. It is in line with Zhai & Gao (2018, p. 4) emphasizing that speaking task are meaningful tools in teaching speaking to EFL students since it can attract them to focus on their oral production and meaning. Referring to it, teachers are highly enhanced to provide various speaking tasks in speaking class especially for EFL students. This is in line with Becker & Roos (2016b, p. 11) highlighting the importance of giving a task-based approach for learners in speaking class. It has been perceived as the potential means to arouse learners in building interaction and constructing some utterances. Furthermore, providing communicative tasks and activities for having improvisations are merely needed in supporting the students' speaking creativity. Additionally, giving improvisation is believed as an effective means to have a more flexible way to provide opportunities for students to create independent works related to the materials. Another way to promote the students' speaking skill is by providing corrective feedback (Zhai & Gao, 2018, p. 4).

C. The Role of English in Islamic Studies and Da'wah Management

The rapid development of technology will lead to the increase of da'wah management and Islamic studies. Further, English has a main role in

supporting da'wah dissemination in the digital era. The views of Islam and management of knowledge are nowadays based on the concept of modernity and understanding (Ghafar, Don, & Awang, 2009, p. 63). Referring to it, the students from the Islamic Religion Education Department are highly enhanced to master English in order to support their career development. Considering that they are the beginner in learning English, it is needed to provide them the effective ways in responding the industrial revolution 4.0 era. One of them is by using project-based learning to motivate them in English class. In this sense, students are merely asked to make a video project of delivering da'wah in English.

METHODOLOGY

A. Type of research

The study belongs to a qualitative research. Although the findings are in the form of frequencies (e.g., the number of perceptions among undergraduate students dealing with the video making project) and percentage, the final product is in the form of a descriptive analysis or interpretation. Along with a qualitative research, it mainly seeks to probe deeply into the research setting to obtain in depth understanding about the way things are, why they are that way, and how the participants in the context perceive them (Gay, Mills, & Airasian, 2011).

B. Research subjects

There were 12 students of the second semester from the Islamic Religion Education Department, of Tarbiyah Faculty at State Islamic Institute of Kudus, Indonesia as subjects for this research. The reason for having students was to obtain more data in detail regarding their experience of making the English video project to foster their motivation in speaking English given by the lecturers. In addition, they were asked about the strategies of improving their English proficiency especially for their career development in delivering da'wah.

C. Research procedure

In accordance with the data collection, a 12-item self-assessment inventory is conducted to describe self-perceptions of undergraduate students dealing with the importance of the speaking proficiency and the

assignment of making a video project of delivering da'wah in English. This research is conducted in the Islamic Religion Education Department of the State Islamic Institute of Kudus, consisting of 12 students of the second semester. In addition, they are informed that their perceptions to the open-ended and closed ended questions of self-assessments inventory are used just for purposes of research. The study adopts the formula of data analysis formulated by Nalliveettil & Alenazi (2016, p. 267) adding up the number of responses given for the scale Agree + the number of the responses given for the scale Strongly Agree = Total percentage. Furthermore, they have the same procedure for the category– Disagree and Strongly Disagree except the third scale - undecided. In fact, this study adopts the self-assessment inventory comprising of five scales namely: Strongly Disagree, Disagree, Undecided, Agree and Strongly Agree. In addition, this study also adopts the analysis proposed by Nalliveettil & Alenazi (2016, p. 266) where the students who mark Disagree and Strongly Disagree are grouped under one category because revealing a different perception when compared to the students who mark Agree and Strongly Agree are grouped to be agreeing with the self-assessment statements. Besides, an in-depth interview was done to get the more detail information towards the students' perception towards the project of making video in enhancing their speaking proficiency in disseminating da'wah.

RESULTS AND DISCUSSIONS

A. Results

Based on the self-assessment given to the students, the finding reveals that the majorities of students in Islamic Religion Education Department has positive responses and attitudes towards the use of a video-making project in fostering their English speaking proficiency and support their career development in Islamic da'wah. Furthermore, through a video making project, most students have encouraged themselves to read a number of sources in English Islamic literatures and enrich their English vocabularies to support their da'wah. Additionally, the video making project can foster the students to be more confident when speaking English and enhance their appearance. On the other hand, the process of making video project has taken more time making the students have well preparation in order to obtain the best result.

In order to enhance the English speaking proficiency in delivering

da'wah, the undergraduate students in the department of Islamic Religion Education have some strategies. First, they are motivated to watch English videos on YouTube. Second, they are encouraged to enrich their English vocabularies by having both intensive and extensive reading. In this sense, intensive reading is achieved by reading sorts of English references particularly Islamic and da'wah literatures. Further, extensive reading is achieved by having English readings for pleasure such as English videos, English movies, YouTube, public speaking program and so forth.

B. Discussion

In order to provide detail elaborations regarding the perceptions of the undergraduate students in the department of Islamic Religion Education to the video making project in enhancing their English speaking proficiency in disseminating da'wah, the graphs below give an overview of the individual percentages of each of the scales consisting of a set of 12 items which are grouped together in a graphic form:

Graph 1:
Analysis of Item 1-6
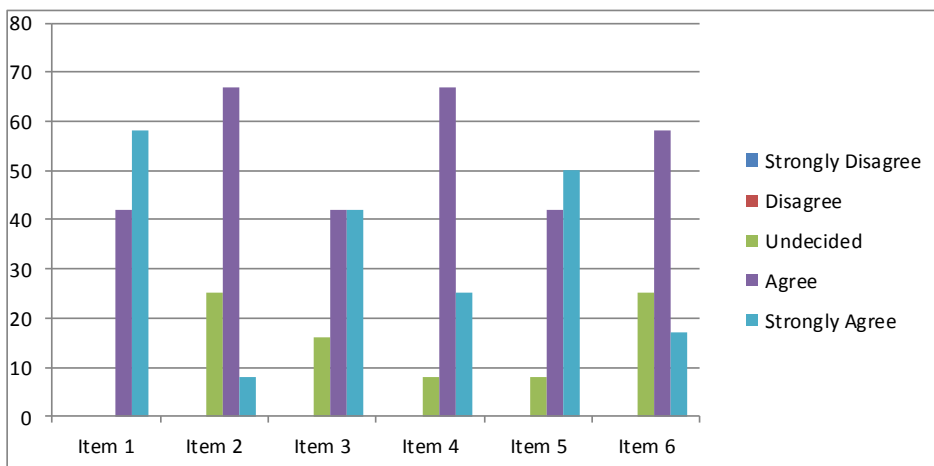
Graph 2:
Analysis of Item 7-12
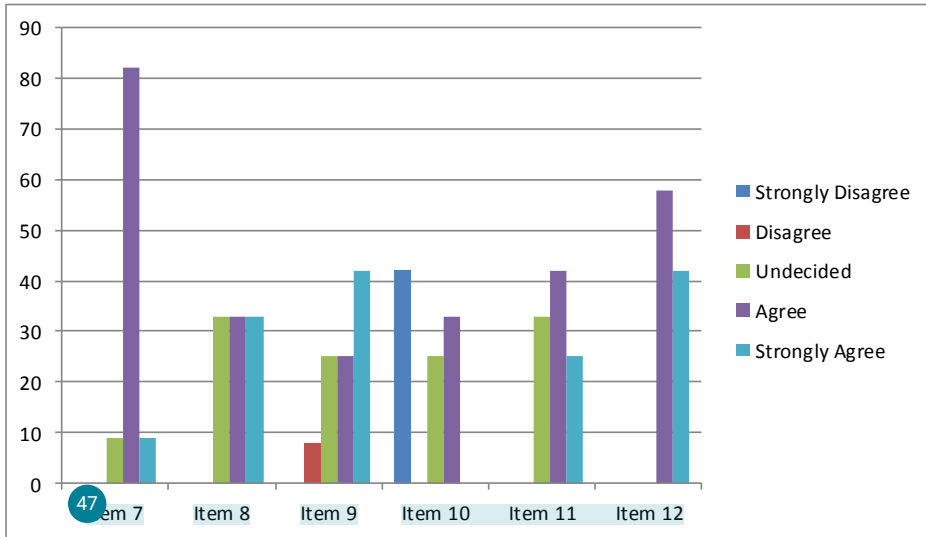
For the sake of giving a more detail an overview of the undergraduate students' perceptions especially in the Islamic Religion Education Department regarding the use of a video making project in enhancing their English speaking proficiency in disseminating da'wah, the table below is presented:

Table 1:
List of Items 1 to 6

Item No.	Self-evaluation statements
1	By making a video project, learning English is pleasurable and enjoyable
2	By making a video project, I become confident when speaking English
3	A video project can motivate me to speak English
4	By making video, I can practice English communication delivering da'wah in English
5	A video project can support me in delivering da'wah
6	A video project can enhance my appearance when delivering da'wah.

The percentages of each of the items above are highly explored in graphic below

Graph 3:
Analysis of Items 1 to 7
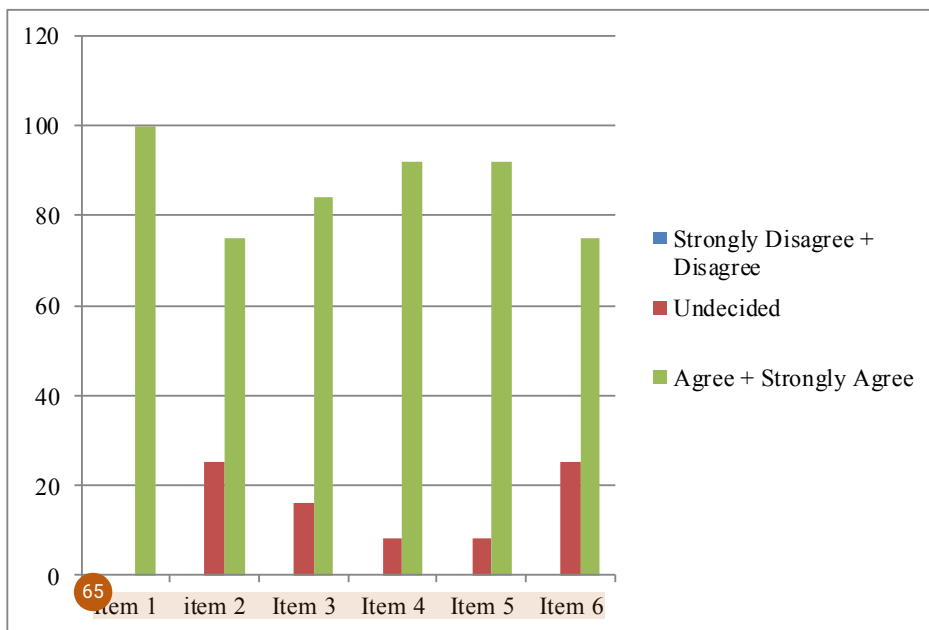
The graph 3 above shows that the undergraduate students in the department of Islamic Religion Education at State Islamic Institute of Kudus mostly agree that the video making project can be considered as a meaningful way to foster their English speaking proficiency and motivation to disseminate da'wah around the world. This could be proved by their positive response towards the use of video making project as a project-based learning. First, all of them do agree that the project of making video can highly enhance a pleasurable and enjoyable English learning. Unfortunately, they seem unsure that the video making project can enhance their confidence in speaking English shown by their neutral responses. This is probably due to the fact that they are from Islamic Religion Department which can be considered as the novice learner in English. Second, although the students seem not too confident in speaking English, they mostly have highly motivation in learning English through the video making project while others give their neutral or undecided responses. Third, most students give their positive comments that by making video, they can practice English communication

and disseminate da'wah in English. Meanwhile, other students show their undecided response. Fourth, the majority of students give their response that a video project merely supports them in delivering da'wah. Fifth, most students do agree that a video project can enhance their appearance when delivering da'wah. However, other students show their neutral responses.

In conjunction with the next items regarding the elaborations of perceptions among the undergraduate students in the department of Islamic Religion Education to the use of a video as a project-based learning to foster their speaking proficiency in delivering da'wah, the table below is presented:

Table 2:
List of Items 7 to 12

Item No.	Self-evaluation statements
7	I have positive attitude towards making video
8	A video project facilitates me in delivering da'wah using English
9	It takes time when making video and uploading video to social media
10	After some time, learning English with video making project may turn out be boring.
11	I feel more comfortable while delivering da'wah using video project
12	A video project facilitates learning vocabulary

The percentages of each of the items above are mainly elaborated in the graphic form below:

Graph 4:
Analysis of Items 7 to 12
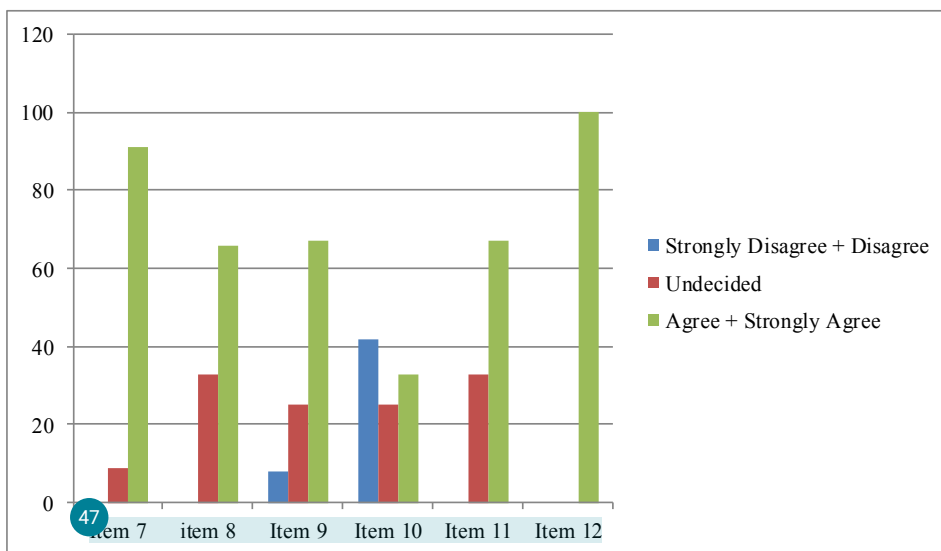
The graph 4 denotes that the majority of undergraduate students from the Islamic religion education have the positive attitude towards making video. It is proven by the higher percentage, 97 %. The others show their neutral response. In addition, some of them agree that the project of making videos has facilitated them while others give the neutral response. In fact, they have less motivation in learning English before being assigned of making a video project. Indeed, through this project, they have more efforts regarding the English teaching and learning process such as reading English articles related to Islamic sources both from journal and book, watching English videos in YouTube and so on. In accordance with the process of making videos, some students agree that making video has taken more time while others show their neutral and disagreement responses. In addition, the higher percentage of the students show the disagreement response that the learning English with video making project may turn out be boring. Meanwhile, other students give their neutral and agreement responses. In conjunction with the comfortable feeling when delivering da'wah using video project, the students give agreement and neutral responses. It is proven by the percentage of 67 % and 33 %. Finally, all of them highly do agree that a video project can

facilitate them in learning English vocabulary particularly related to Islamic terms.

On the other hand, this project could be one of the ways to foster their motivation in learning English. This result coincides with Riasati (2018, p. 4) advocating that learning can be more effective when students have more willingness in making use of the language. Furthermore, the project of making videos has enhanced them to develop their higher level thinking skill. Indeed, they have to design better preparations in making English videos including preparing scripts, practicing speaking English, enriching the English vocabularies, preparing customs to support the qualified video when they are uploaded into social media. This is in line with Greenhow & Robelia (2009) reporting that students are supposed to develop their skill of higher thinking such as making decision, solving problem and using social media. In this sense, video can be considerably a meaningful instruction in learning English. Interestingly, through the project of making videos, students get more active and innovative in using social media. They can make use of sorts of improvisation for having qualified and better qualities in producing videos. In fact, improvisation and innovation are crucial for students in English classrooms (Becker & Roos, 2016a). Surprisingly, students have engaged themselves to use movements, gesture, voice which are presumably essential in public speaking especially in producing videos containing Islamic da'wah dissemination. In this case, the video project has benefits for them to practice speaking English in supporting their career development in da'wah setting. Furthermore, those videos can be uploaded into social media such as YouTube, Facebook, Instagram which can be insightful resources for people especially preachers by which they can disseminate their teachings and thought to others around the world. In fact, da'wah may become an online means having a meaningful role in delivering religious thought and teaching in the world.

However, the students may have a number of challenges in learning English particularly speaking skill. First, the influence of their first language, Javanese and Indonesian to their English acquisition. The majority of students in Islamic religion Education department can be categorized as the novice learners since they are not from English Department. Second, the lack of input and interaction of English. They play a main role for the L1 and L2 learning acquisition (Troike, 2006, p. 105). Indeed, input and interaction can be considered as data for innate linguistic and cognitive processes. Furthermore, social approach plays an essential role in building interaction.

Referring to it, the students in the department of Islamic religion education department have less input and interaction of English in their society. Indeed, they never speak English at home. Thus, the quality and the quantity of English input are needed to increase their competence in building discourse structure and expressing meanings. Consequently, they need to strive and have more efforts in learning English to promote their career development of disseminating da'wah. Otherwise, they will have no English speaking proficiency that may hinder them to get involved in the workforce. Finally, it can be assumed that those who lacked proficiency in English both speaking and writing will obtain the big challenges to get involved in the workforce (Pithers & Lim, 1997).

Considering English is a foreign language for the students in the department of Islamic religion education, they need to strive for the language learning. This can be achieved by applying some strategies. These include:

1. **Reading English Islamic literatures**

Islamic literatures are considered as a main component and source needed by the students in disseminating da'wah. Further, the students are highly motivated to have English Islamic literatures to support their career development as a preacher. In this sense, they have accessed a number of English Islamic books including Islamic studies books comprising of numerous grades, from grade one through grade twelve. The materials cover 'Allah is One', 'Allah is the Creator', 'Allah is the Giver of life', 'Allah is All-Hearing', 'The Faith of A Muslim', 'The Angels', 'The Books of Allah', 'In the Name of Allah', 'The Five Pillars of Islam', 'How Do I Perform Wudhu', 'Prophet Muhammad', 'The Five Daily Prayers', 'Using the Right Hand', 'Dhikr and Du'aa', 'Some Surahs in the Qur'an', 'The Prophet's Kindness', 'Etiquette of Using the Toilet', 'Etiquette of Eating and Drinking', 'Kindness to Parents', 'Etiquette of Sleeping' and so on (Aziz, 2011, p. 6).

By having these Islamic literatures, the students have been more capable in expressing Islamic teaching and thought in English. Indeed, they learn a lot regarding various Islamic terms for certain topics. Interestingly, their English vocabulary increases gradually. This, therefore, helps them deliver their da'wah in English.

2. **Watching English videos regarding Islamic da'wah on YouTube**

Nowadays, YouTube can be a meaningful means in educational setting. The students of Islamic religion education make use of YouTube to watch English videos of Islamic da'wah. Through YouTube, they could identify the appropriate videos containing the Islamic teaching to advance their performance in delivering da'wah. This finding is in line with Jackman & Roberts (2014, p. 275) suggesting that the social media users including students need to select meaningful videos to enhance the teaching and learning process. In addition, students are more knowledgeable of how to perform public speaking well through watching videos on YouTube.

3. **Getting up to date to the English news and information through social media**

Besides the Islamic sources, the students are motivated to get up to date to search English news and information in order to widen both their knowledge and experience in the era of globalization. Indeed, they are demanded to be more knowledgeable for getting in touch with others around the world.

4. **Consulting English terms and words through online dictionaries**

The students in the department of Islamic religion education are highly encouraged to consult some English words through online dictionaries when they hesitate to pronounce them. By consulting them first, they do learn more regarding the better English pronunciation and fluency. Consequently, they become more confident in speaking English especially when delivering da'wah in English.

With regard to these elaborations, it could be deduced that the students in Islamic religion education Department of State Islamic Institute of Kudus have more efforts to foster themselves in speaking English by making use of strategies such as enriching literatures and sources through social media.

CONCLUSION

To this point, this study presents the undergraduate students' perception to the use of a video making project in encouraging their English speaking proficiency in disseminating da'wah. The result reveals that most students have more positive attitudes and response regarding the project of making video of delivering da'wah in English. This has been proved by the high percentages of their responses. Interestingly, they become more aware of using English as the meaningful means to disseminate their Islamic teaching and thought through videos and upload them into social media particularly YouTube. Besides, they have encouraged themselves to have more strategies to advance their career development including Reading English Islamic literatures, watching English videos regarding Islamic da'wah on YouTube, getting up to date to the English news and information through social media, and consulting English terms and words through online dictionaries. It should be considered that this present study has investigated the perception of the students in the department of islamic religion education to the use of the video making project in supporting their English speaking proficiency. It is highly suggested that future researchers undertake such studies in other disciplines from different perspectives. By undertaking this study, we would gain more insightful knowledge on how the project of making English video can be beneficial for students' English proficiency.

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C.

Social Media & Social Networking in Education

Universe of Education in hands of Social media and Social Networking

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Abstarct: Social Media is rapidly changing communication and the educational setting academic life of today's social world. Social media and social networking have a natural, characteristic and collaborative element. Students of today are increasingly expected to develop technological fluency and digital citizenship. There is a wide instability in the quality of learning opportunities in the colleges and institutions of higher education provide. The emergence of social media and social network are significantly influencing academic life of students. Institutions and academicians are continually trying social media technologies and Social Networking Sites (SNS)to improve the interpersonal communication and standard of training of education to rise up to international standards. Institutions should help students to develop their critical thinking skills, collaboration, and knowledge construction and reconstruction. This therefore calls for situations to explore and examine how social media has impacted on students' academic life. In our study we discuss how learning with such innovations might be incorporated into the students' overall learning network to reduce educational inequities and how current organized methodologies may move to suit such change. This would enable students to keep abreast with development of technology, thereby compete in the world and raise their career options and ultimately elevate themselves from the stringent social structures they are bound to.

Keywords: academic life, critical thinking skills, knowledge construction, social media, social network, Social Networking Sites.

INTRODUCTION

When we talk about 21st century education, we are living through an educational revolution. The pace of change is staggering. Schools, regions, entire counties are turning education on its head and redefining the experiences of students and of teachers. The impact is felt by millions of children and their families around the world. We live in such a world with so much knowledge. People are creating 2000 new websites ever hour. They are uploading 35 hours of video every minute and watching 2 billion YouTube videos every day. By the time the students leave the school he/ she might probably have around 1000 Facebook friends. They connect with people thousands of miles away as if they were in the same room. They consume, produce and communicate information in previously unimaginable ways. Truly, they are the children of a globalized world. And they are heading up to a hyper-connected world with more people and fewer resources. And we have to believe that they are in a busy and competitive world full of uncertainties.

Over the past decadescholars and experts have explored and inspected many sides of social media. Evaluating the number of usage of social networking sites in the education system, it is significant to conclude whether these sites led to any impact on student education and success. Social Networking sites are also known as web based services that provide a chance to individuals to create their own personal profile with the choice of their own list of users and thereby connect with them in an altogether public forum that provides them with features such as gossiping, blogging, video conference calling, mobile network communication and video/image sharing. Nowadays kids spend more than usual hours on social networking sites to download pictures, browse, seek and gain knowledge and to keep themselves connected to one another in an updated version. This paper will be therefore able to review the available literature to study and present the positive impacts of education through online networking which is the highest in demand segment of our society.

Education worldwide

The opportunities for 21st century education is immense. In South Korea, schools are switching to digital textbooks so students can study anytime and anywhere with online hours recognized as school attendance. In Denmark, students are allowed to use internet while taking exams. They can even access any sites like Facebook but as long as they don't message

each other or use mail. In the USA, ultra-personalized learning approaches allows students to create their own individual schedules (timetable of a day). Teachers time is freed up to mentor and supervise students. Learning can happen anywhere and everywhere. Some Australian schools are pushing learning beyond school walls where internships with local organizations are a fundamental part of each student's learning plan. Also distance learning programs are connecting seriously disengaged students with online learning communities and personal mentors to help them rediscover their love for learning. These examples point the way to ensuring that tomorrow's workers, parents and citizens are more creative problem solvers, better communicators and lifelong learners.

Need for Revolution in Education

We all know how important education in schools help to strengthen our mind. However, knowledge cannot be achieved from simply attending schools. A certain amount of effort is required from the student but with a million different distractions. Although technology can help improve education it is not a silver bullet. Inequality in many education systems may continue until common standards are adopted across all schools. Scientific research shows if you don't make a prediction, what you learn from this will no more valid if you never saw practically. The real piece of learning that we have here is that disturbances take time to propagate. We say "we need to see it to believe it", but sometimes we need to believe it first. The words by Thomas Edison in 1922, "The motion picture is destined to revolutionize our educational system and that in a few years, it will supplant largely, if not entirely, the use of textbooks". Obviously we know he's wrong and we still use textbooks today. But it is not actual. Motion pictures are revolutionary; they changed entertainment. It's extraordinary the impact that they have had on our lives and yet they have not replaced textbooks. The revolution in education is not new but in fact in 1930's itself radios have replaced education and encouraged educating in schools through radio classrooms. The desire to revolutionize education is not new. The studies were undergone by researchers whether the result make significant difference when you mix up the technology (radio). The result is it doesn't. The technology makes virtually no difference in case of radios in 1930's. But the same case doesn't suit for computers in later 1980 as such they are interactive. This variation in education comes because radios aren't interactive as such computers do. Computers can really revolutionize education along with social media and

social networking. And to Government it is more useful and efficient for using new technologies for educating our new generation.

Role of Social Media in Education

The role of social media in education cannot be snubbed. This is because social media today plays a significant role in emerging the quality of education and increasing the enrolment across the world. First and foremost, social media act as a motivating tool which fosters student's active participation in education. For this reason, teachers should design their schemes of work and schedules in ways that include time for interaction of students through the social media. Social media also helps students to collaborate and contribute towards searching for solutions to global issues. The students should be taught the power and flaws of such educational tools and have the chance to use them at any time they feel like doing so. With social media, the students can also perform group discussions in the form of chats. Such tools are extremely relevant to the development of education. Social media are also contributory in developing the teaching techniques used by teachers. The below fig.1. shows the purpose of social media.

Figure.1.
Purpose of Social Network
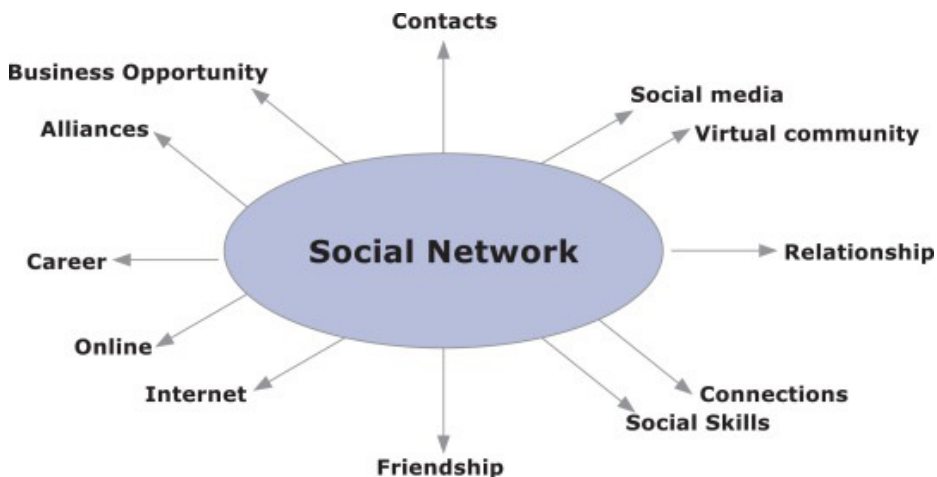
From the above fig.1. depicts that social media is also a part of Social Network along with Friendship Social skills, careers, Internet etc. It improves online technology which creates virtual community and business opportunity.

Role of Social Networking in Education

Like social media, social networking also an extremely powerful. A social network is a dedicated website or application that allows people to communicate with others using profiles, messages, comments, and images. Social networks usually include a list of friends, allowing information to be provided only to the people a user chooses. How often do you check Facebook or Twitter? More than you'd care to admit? You're not alone. In fact, it's probably worse than you think: people usually underestimate how much time they spend on social networking sites. Facebook is currently the most popular social network in the world, with over 1.57 billion users. On an average we check social media websites about 17 times every day. In spite of all these things, social network is a growing phenomenon, being increasingly important in both private and academic life. The use of social networks (SNs) complements and enhances the teaching in traditional classrooms. For example, YouTube, Facebook, wikis, and blogs provide a huge amount of material on a wide range of subjects. Also, with the technological advancement and the Internet, the world has become a vast storehouse of information (Tham& Werner, 2005).

The use of social media in education provides students with the ability to get more useful information, to connect with learning groups and other educational systems that make education convenient. Social network tools afford students and institutions with multiple opportunities to improve learning methods. Networking allows students to communicate with each other. Networking allows everyone to stay involved and organized. Social networking creates new ecology for education system.

Online learning communities are as much old as internet itself. ARPANET was the first global computer network which enabled scientists to share information more efficiently over the internet using hypertext documents. There are four Web 2.0 principles that are central to the development of a Web-based education infrastructure (O'Reilly, 2007) include:

1. The network as a key: There must be a swing of concentration from computer-based education to web-based education. The web is a key for knowledge publication and sharing, referencing learning materials, conducting assessment and communication and collaboration between teachers and students.

2. ConnectingMutual Intelligence:[15] Users are no longer inactive observers and have become collaborators and contributors to new content and sites. Hyperlinks connect to and from this new content as the Web grows organically through the collective activity of users. Both educators and students benefit from the new 'gift culture' of contributing as much as you take from your online experiences.

3. Knowledge User Experiences: The Web provides rich multimedia educational experiences for students. Lectures and other educational materials can be delivered in a variety of formats with the seamless integration of class-based and virtual learning content.

4. Data is the New fuel: As more people use the Web, more data is created and evolved. With more students and teachers involved in creating educational content, the quality, reliability and availability of information improves. Subsequently every browsing session now becomes a continuous learning experience for the user. Social networking is well established as a significant part of the world's communication structure.

[15] The Internet can now be seen as a research network, where knowledge is created through teamwork and shared experiences, and how this impacts the learning strategies of students shall be studied. Social software tools promote interactivity and create engaging learning environments, and two web technologies that show great promise in the educational domain are wikis and blogs.

GRAPHICAL ANALYSIS OF SOCIAL MEDIA AND SOCIAL NETWORKING AROUND WORLD

Moreover, everyone knows the usage and importance of social media and networking. We also know the purpose of creating network was for research and development during its origin. But nowadays the whole scenario is of reverse ecology. This situation arises because entertainment using social media is rapidly increasing in every seconds day by day. An average person uses social network once in 10 minutes. But the question is whether they are using for education purpose. The answer is absolutely No. The real purpose of reaching its goal even in technology is the purpose solving. Even though we have lot of technological and technical development in our universal network we are lagging in its original tenacity.One should also ensure that

our personal information should not be displayed publically .The below graph shows the usage of SNS's around world.

Figure.2.

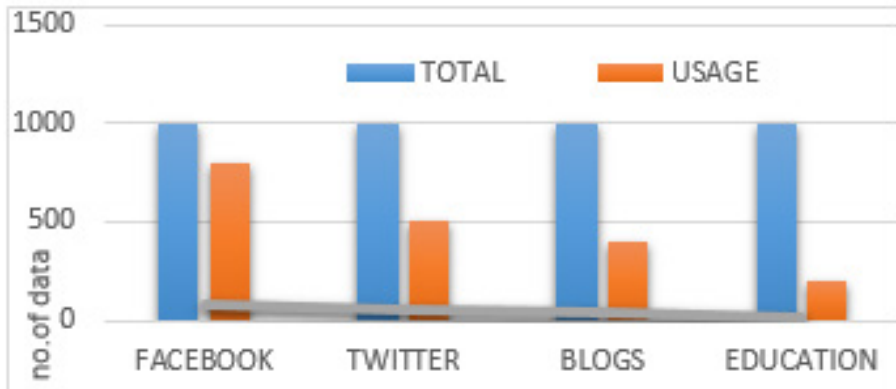Comparison of education level to other social websites

Fig .2. explains that the data surveyed for the purpose of using social media and networking as compared to other aspects and education. It shows that the percentage of using SNS's is very less as compared to usage of other medias.

Apart from the graph nearly 55.4% of the total population use social media for entertainment. In terms of gender division, male users are more as compared to female users to derive knowledge based information from these sites.

CONCLUSION AND FUTURE WORK

Internet is one of the best technology that has been gifted to mankind. As social media pave more way for creating opportunities, we have to utilize the revolution in technology. This should literate the upcoming generation in modest way. As social media makes sense into learning and teaching we have to add values to objects, assist collaboration on projects and to communicate ideas with other people all over the world. This technology should make learning interesting and engaging and to be creative. One can follow twitter related to content studying and to collaborate with their

classrooms in and around the world. We can also tweet scientists to find up-to date information on area's of study.Use Skype to bring excursions into the classrooms. In future we can adapt to conduct interactive lessons using twitter or Google Earth." If you can speak you can influence and if you can influence, you can change lives". By utilizing these technology by spending all time surfing we can also work well for our education system to make SNS's in a educationally balanced way.[11] Perhaps, like a coin with two sides, social networking sites also havein their own way adversely affected the youth. The target group prefersspending an abundant amount of time on these social networking siteson an average of more than 2 hours a day which keeps them away fromtheir own purpose of existence and interacting with their own naturalsurroundings.

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Social Classroom: Integrating Social Networks for Enhanced Teaching and Learning in Higher Education

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Abstract: Recently, social networks such as Facebook and Twitter, are widely used in higher education for effective teaching and learning among teachers and students. Social classroom is the way of integrating social networks into regular classrooms. Social networks, not only enable connection and communication among academic stakeholders, but also have become a perfect platform for teaching and learning. In this paper, we report our adoption of tools such as Piazza, YouTube, GitHub and Google Classroom for the delivery and assessment of courses in our institution. Also, our students use these social networks as a question answering platform for active discussion and sharing their knowledge with their peer groups. The conclusions reveal positive impacts of the tools in teaching and learning of courses in our institution. However, the rate of adoption of social networks and frequency of usage by teachers and students from many disciplines must be improved.

Key words: Learning Management System, Social Media, Blended Learning, Collaborative Learning.

INTRODUCTION

Within the last decade, Online Social Networks (OSN) and their applications have penetrated our daily life. The conventional education system seems to not respond effectively to the continuous decreasing interest of Generation-Z learners. In order to cater to the changing needs of the Generation Z learners, a paradigm shift in the methodology of teaching and learning Computer Science is highly required. One such innovative methodology is the use of Learning Management Systems (LMS), which

provide a blended learning experience to all students.

There are several open source learning management systems for learners in higher education systems such as Google Classroom which is part of Google Apps for Education, Piazza and Moodle. Malikowski et al. (2007) developed a model that dissects the quality of LMS tools into five categories: (1) transmitting course content, (2) evaluating students, (3) evaluating courses and instructors, (4) creating class discussions, and (5) creating computer-based instruction. Thus, an effective LMS must support active engagement, meaningful connections between segments of the course, easy communication, and formative feedback on work that is presented in class discussions or through other venues.

A. Learning Management Systems

The notion of a typical classroom has evolved over time and ever since the advent of online classrooms, the transformations have been so fast and rapid. The plethora of available tools, platforms and the features they support can be challenging at the same time rewarding for teachers and learners of higher education.

LMS is an infrastructure for delivering and managing the course content. It identifies and assesses individual and organizational learning or training goals, tracks the progress towards meeting those goals. It collects and presents data for supervising the learning process of an organization as a whole (Watson & Watson, 2007).

LMS enables the teacher to closely monitor and facilitate the learning progress of the students. In particular, LMS helps an instructor to keep track of the learners registered for his course, distribute course materials, create platforms for informal discussion of ideas, assign and evaluate tasks such as quizzes and assignments, provide effective feedback and grades to learners by way of tracking and reporting features.

LMS empowers students to learn the intended content at their own time and pace. Also, it enables students to learn collaboratively inside and outside classroom. They provide a platform for all stakeholders to interact and collaborate among fellow students (Watson & Watson, 2007; Wang, Woo, Quek, Yang and Liu, 2012).

Several commercial LMS tools such as Blackboard, Canvas and Banner

are available in the market. Most of these tools are expensive and hence all higher educational institutions cannot afford to buy them. Also, instructors lose access to the content he created once he moves out the university (Schoonenboom, 2014; Wang et al., 2012).

Recently, Piazza has been made an open source LMS and Question Answering system. Google Classroom is free and accessible from anywhere and allows collaboration between teachers and learners. It can also be used as an add-on for classroom teaching and thus allows for a blended learning (Tselios, 2011) approach.

B. Online Social Media Platforms

Social media platforms such as Facebook, Twitter, Google+, LinkedIn, YouTube and Instagram are used daily by millions of people worldwide, especially by young people. It is well argued that bringing social media and higher education together will benefit both institutions and students (Moghavvemi, S; Rahin, P & Sharabati, 2017). Several studies (Georgios, Z, 2018; Paul, T, 2013) have concluded that the use of social media positively impacts students performance and their way of learning the content. Social media also improve communication among students, grooms their personality and enhance the academic culture (Winner, D.C, 2017).

C. Piazza

Piazza allows students to ask questions and engage in online dialogue with the professor and with each other. One of the most interesting aspects of Piazza is that the students can be anonymous in their participation and conversation. The interface is less hierarchical and more interactive than the forum facilities of traditional LMS such as Moodle and Blackboard.

Piazza has a chat-room feel into it, while offering enough structure to be used effectively in a classroom environment. Students and teachers have pretty much the same access levels where most of the interactions are peer to peer. The non-hierarchical, interactive nature of the systems inspires a collaborative atmosphere where students are emboldened to ask questions. Since Piazza is in the online cloud infrastructure, setup and support for new environment is very easy.

D. Google Classroom

Google Classroom is an open source web service that has become an

effective LMS for blended learning in higher education.[13] Teachers can create and manage online classes, upload learning material, create and grade quizzes and assignments, and share feedback and grades to learners. Students can use this service to access and use learning material, interact with the teacher and other learners, submit their assignments to receive feedback and grades. Administrators can create multiple classes in their academic disciplines, assign teachers and students to these classes and keep track of the work of the classes they created (Iftakhar, 2016).

E. YouTube

One of the most important online social media in the world has been YouTube. Since 2005, videos pertaining to education, entertainment, marketing, and science are constantly uploaded in YouTube. Its usage in a classroom setting is a niche endeavour and this approach is receiving more and more attention in higher education (Alon & Herath, 2014).

Several universities have started their own YouTube Channels. YouTube channels enable teachers to upload the learning videos of their courses so as to complement traditional teaching approaches. They encourage students to watch and learn content and provide real-time feedbacks to instructors (Torres-Ramírez et al., 2014). Also, YouTube channels provide instructors to collect students' assignments, grade and archive them for many years as part of the assessment practice.

F. GitHub

GitHub is a web-based social code or computer program sharing service. It has become an essential tool in technology areas that require collaboration, such as software development and technical writing (Alexey, Z., 2015). It has also witnessed widespread adoption in higher education as well, transforming how people collaborate over a shared repository. In an effort to promote GitHub in higher education, GitHub launched GitHub Education Website in 2014. Importance of GitHub is recently noticed worldwide after tech giant Microsoft acquired it recently 2018 for $7.5 billion.

Malikowski et al. (2007) reveal in their study that the most prominent use of an LMS is to transmit information to students, whereas the categories of creating class discussions and evaluating students receive moderate and low-to-moderate use, respectively. This gap has been addressed effectively by GitHub in higher education.

GitHub offers several unique features to facilitate user collaboration. GitHub's most important features are *pull request*, *clone* and *fork* features. The pull request feature enables students to share their source code of their course assignments and projects such that other students can comment on the code and make updates which can be approved by the owner. The clone feature allows a student to get a copy of someone else's code and make updates and improvements over the same code, thereby enabling simultaneous updates by several students. The fork feature allows a student to get a separate copy of the code provided by a student and make changes independently without affecting the original copy. Comments can be provided to any updates and changes as a real time feedback.

In this paper, we will discuss how social networks and open source LMSs such as Piazza, Google Classroom, GitHub and YouTube can be used for effective learning by students. We will look at the different ways in which they are used by our Computer Science faculty members in our department and how they can be used as the blended learning technologies for teaching and learning Computer Science courses.

Rest of the paper is organized as follows. In the next section, we provide the background information for the implementation of Piazza, Google classroom, YouTube and GitHub in our department such as type and number of students in each class, demographic details and level of their expertise. Social media implementation section provides more details of the adoption of these technologies in the context of delivery, personalization, assessment, collaboration and communication among teachers and learners. Finally, conclusion section provides summary of the paper by outlining the future work.

BACKGROUND OF THE STUDY

This study was conducted at Department of Computer Science, Bishop Heber College over a period of two semesters, with a group of 75 BSc Computer Science, 43 MSc Computer Science and 17 MSc Data Science students. These students were from all across India and had varying levels of proficiency in Computer Science. The students had six contact hours per week with the teacher in the class, outside of which interaction happened over Piazza, Google Classroom, YouTube and GitHub. All the teaching and learning activities were stored in Piazza and Google Classroom and this served

as the primary data to understand how the platform was used for teaching and learning Computer Science courses. For June-2019 odd semester, we are using Google classroom for Mobile Application Development course, Piazza for the same Object Oriented Analysis and Design Course, Text and Web Mining course for MSc Computer Science and Problem Solving using Python and R for MSc Data Science students.
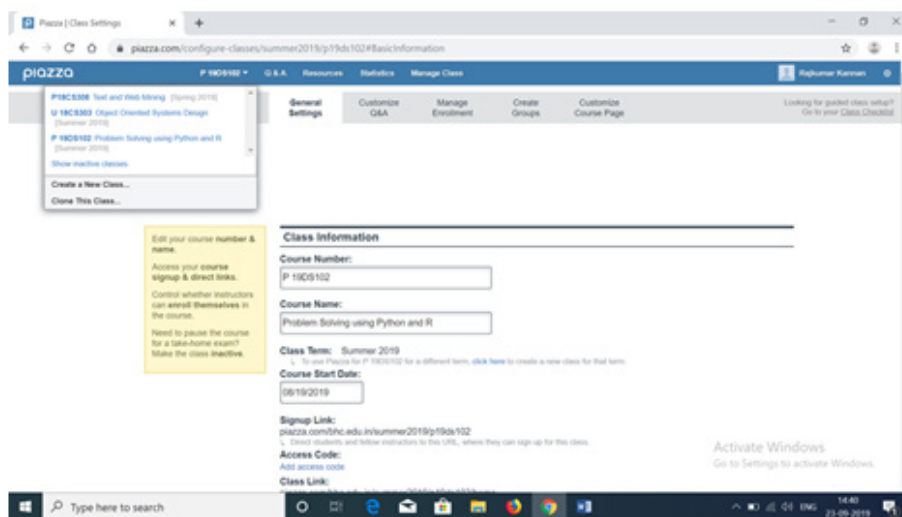

Figure 1. Course creation page in Piazza

SOCIAL CLASSROOM IMPLEMENTATION

In this section, we will introduce both LMS and social media technologies that are implemented in our institute. Earlier, we have started our blended learning implementation with Google classroom tool. Now this year, we have recently introduced Piazza as it has become open source system. However, Google classroom is continued to be used for another graduate course titled Mobile Application Development by other faculty member in our department. We will now provide detailed description about the various components of our blended learning approach utilizing class room learning and online learning using LMS and social media systems.

A. Course Creation in Piazza

Once instructors create an instructor account in Piazza, they can create

a new class and provide class information such as course number, title, syllabus, start date and end date. Figure 1 depicts the process of creating a new course and shows the titles of those courses.
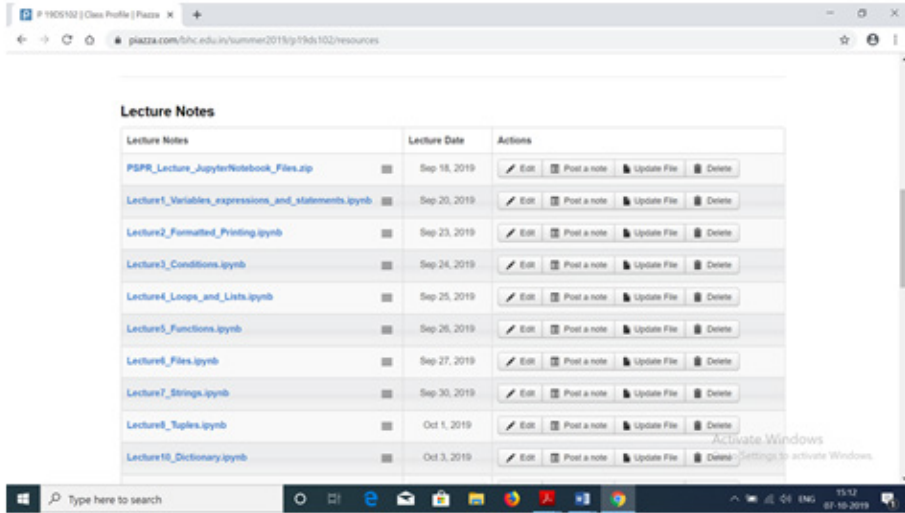

Figure 2. Piazza Document Repository

B. Piazza as Document Repository

Piazza can be used as the repository of documents by instructors so that the lecture materials can be shared to all enrolled students of a class. Piazza support various file formats (including compressed file formats) so that the lecture materials can be uploaded online and lectures can be scheduled on a particular date. Customized email note will be sent to all students so that students can download those lecture materials and get ready on time. Figure 2 outlines the sequence of lecture notes that are shared with students and the schedule of lectures for the course titled, Problem Solving using Python and R.

C. Instructor Communication and announcements

Instructors in Piazza platform can announce homeworks, set deadlines for submission, add resources that are required to complete the homework. Instructors can also share the solution for a homework once the deadline is passed. General announcements can also be posted to all enrolled students of a course.

Figure 3. Question and Answering Setting

D. Course Personalization in Piazza

Piazza offers several course personalization features for effective course delivery and learning by students. They include number of resources that can be displayed per page, visibility settings for lecture notes, homework and others. It also allows selected section in visibility settings to be publically available to non-logged in users.

E. Learners communication and Collaboration

Piazza has been initially a popular social media system for question and answering. Slowly it has gained its popularity as a effective LMS because of its document archival and collaborative communication features offered to the users. One notable collaboration feature is that students can post queries for which the instructor can comment and answer those questions, so that students will receive email real-time updates. Students can also comment on the posts of other students as well. Thereby it enables peer to peer communication and collaborative learning.

Figure 3 demonstrates various Q & A settings that Piazza supports for efficient learning. Students can anonymously post questions and anticipate answers and feedback from the instructor and other fellow students. Students can also send posts privately to the instructor. Instructors can also tag other

instructors in a post so that the other instructor will receive email updates. The instructor can set time delays so that he can delay his response enabling other students to comment on first.

F. Archiving Additional Resources in Piazza

Instructors can also share additional resources that are required for a course. Additional resources can be of any format including zip files and can be shared with all enrolled students of the course. In Computer Science courses, assignments and projects will often require data files in order to solve assignments and projects. These data files will have to be archived well before so that learners can download and use them for their home work, assignmens and projects.
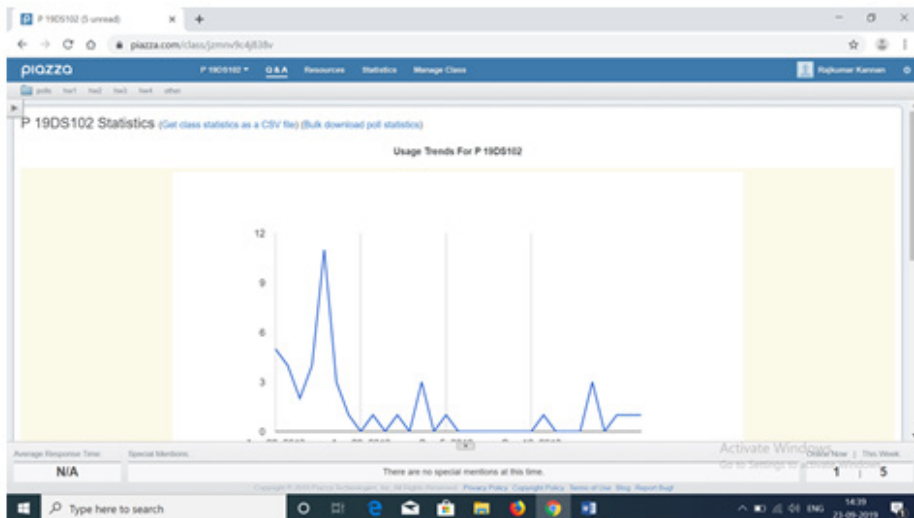
Figure 4. Trend Analysis in Piazza

G. Piazza Course Management

Instructors can enroll other instructors/TAs and students by providing email IDs or attaching a file containing all email IDs. Instructors can also unroll them too. Teachers can visualize all currently enrolled instructors and students. The location and office hours can also be incorporated for the specified course.
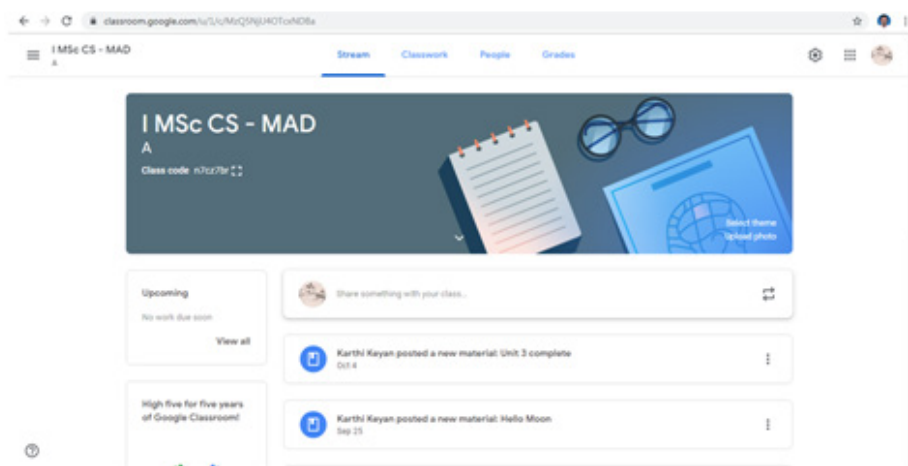
Figure 5. Google Classroom Page for MAD course.

H. Postings Trend Analysis in Piazza

Instructors can get the total number posts shared, total numbers of contributions (such as responses, edits, follow ups, and comments to follow ups), number of responses by instructors and students and average response time. Figure 4 depicts the number of unique users accessed Piazza per day. Similarly, number of posts per day can also be visualized. Instructors can also view the report that presents the number of days each user was online, number of posts viewed and contributed.

I. Implementation of Google Classroom

Google classroom platform integrates Google forms feature with which instructors can create Multiple Choice Questions and invite studnets to submit responses. Then learners can submit their responses back to the teacher. This way grades for an assessment component can be shared with students and guardians of students. Figure 5 depicts the screenshot of the page for Mobile Application Development course.

J. Implementation of GitHub

Collaboration and sharing program codes among users are the important features of GitHub. Recently we have introduced Github to our students which enables sharing of source codes and provides features such as pull request, clone and fork. All of our students were asked to open their

github account and share the portfolio of source codes that were developed as part of their home work, assignments and projects. GitHub page of a faculty member of our department has been depicted in Figure 6. Here, all enrolled students are required to follow the instructor for any real time update for a course.
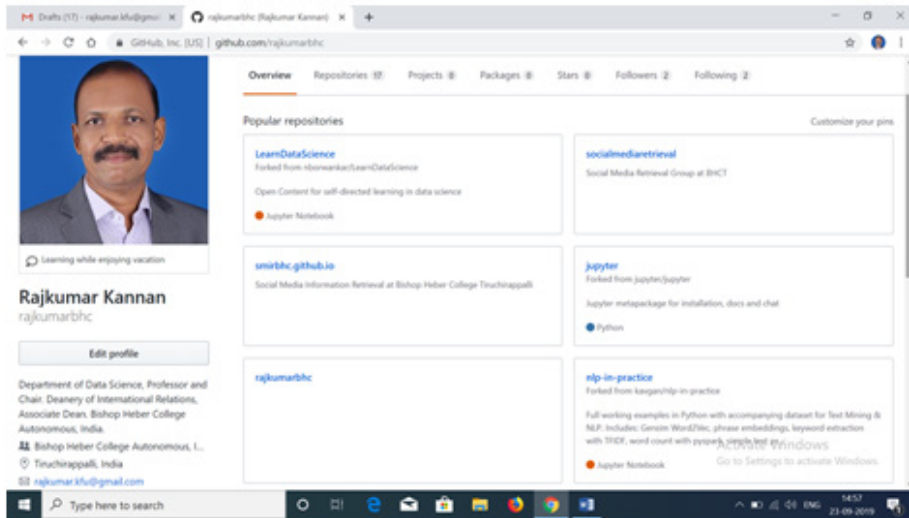

Figure 6. Project announcement in GitHub

CURRENT STATUS OF ADOPTION

Piazza has been successfully integrated in three courses of our department for interactive and effective learning by students this year. Also, Google classroom technology has been practised for a masters level course by another faculty member of our department. After completing this semester, we will be able to collect student feedbacks on various features of Piazza and Google classroom. Based on the collected responses, we will be able to apply analytics principles in order to get interesting insights.

CONCLUSION

In this paper, we have implemented the concept of social classrooms by leveraging social media systems and LMS and shared our experiences of adopting Google classroom, Piazza, YouTube and Github for collaborative learning among students of our institute. Students' informal feedback revealed that they really enjoy using these tools using their mobile phones and labtops with wifi connectivity for learning, collaboration, asking questions and receiving answers from peer students and teachers. A simple comparison reveals that wiki style support in Piazza and Google forms feature in Google classroom environment for online assessment and parent notification are both essential in higher education. Our future work will focus on analytics on the gathered data from students. It will include getting insights on faculty innovation, ensuring students focus on facts, assessing course impact, reporting such as finding out missing assignments, late submissions of assignments and projects and students participation in collaborative learning.

ACKNOWLEDGEMENT

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A Comparative Analysis of Cyberbullying Detection in Social Media Using Supervised ML & NLP Techniques

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Abstract: With the increasing use of social media platforms such as Facebook, Twitter and Instagram, more and more people are connecting with each other throughout the world. People use these social media platforms to express their individuality, thoughts, ideas, and opinions freely. However, a certain group of people abuse this freedom of speech to offend others and it is called cyberbullying. Some common examples of cyberbullying are posting derogatory or offensive comments, expressing hostility or aggression online, spreading false rumors, creating fake IDs etc. To create more safe spaces in social media platforms, especially for women and teenagers, our paper proposes the use of text pre-processing and conducts a comparative analysis on the accuracy of the three labeling methods to detect instances of cyberbullying in the dataset. Our objective is to determine the efficiency of different labeling methods for detecting cyberbullying from social media. We used supervised machine learning algorithm and NLP techniques to detect texts associated cyberbullying in dataset from an anonymous social media site: formspring.me and reduce the amount of hate speech and cybercrimes in the internet.

Key words: Cyberbullying, Labeling, Supervised Machine Learning, TF-IDF, NLP

INTRODUCTION

Social Media usage is a significant phenomenon that is becoming a large part of our daily lives. With the modern technological advances, most people own one or more smart devices and they connect to various social media platforms. Some of the commonly used platforms are Facebook,

Twitter, Instagram, WhatsApp, Viber etc. The users of such platforms share personal information, images, news, thoughts, ideas, and opinions via such platforms. It is a space they use according to their will and have the freedom of speech. Social media platform provides the users a space where they can connect with each other from around the world, learn about the unknown and grow from the newfound knowledge. It is a hub of information that becomes larger day by day.

However, a group of people threaten such healthy growth of mind and disrupt the safe space of social media by abusing their right to speak freely. They spread negativity on the social media by posting hateful or demeaning comments. Such activities are labeled as Cyberbullying and it is becoming an increasingly common problem for social media users.

Cyberbullying can consist of a variety of online offensive activities. For instance, posting derogatory or offensive comments, expressing hostility or aggression online, spreading false rumors, creating fake IDs etc. are some examples of cyberbullying. According to the "Cyberbullying Research Center", it is defined as "willful and repeated harm inflicted using computers, cell phones, and other electronic devices" ("What is Cyberbullying"). Male and female users both experiences bullying on online platforms to a significant extent. However, female users are seen being relentlessly bullied and harassed, especially on publicly accessible posts that are made. They face problems such as being stalked, harassed, receiving hateful comments, criticism, body shaming comments etc. For example, research shows that American women tend to experience certain types of "more severe" harassment in comparison to men, such as stalking and sexual harassment. "Among female internet users aged between 18-24, 26% say they have been stalked online and 25% have been sexually harassed" (Duggan, 2014). In addition, these victims do not know who the perpetrators are in a lot of cases. 38% of women say that strangers are responsible for their harassment (Duggan, 2014). However, cyberbullying affects all genders and races. Therefore, peoples' vulnerability in social media is a valid concern and creating a safe place for everyone requires special attention.

Due to the pressing circumstances, this paper will focus on using Machine Learning techniques to find an efficient labeling method for effectively predicting and detecting cyberbullying in social media sites. The aim of this paper is to do a comparative analysis among three different kinds of labeling techniques. Moreover, the analysis will be done using the supervised Machine Learning approach.

The main objectives of this paper are listed below:

- Automatically detecting cyberbullying on social media sites

- Finding an efficient labeling method for detecting cyberbullying through comparative analysis

Cyberbullying is a crime that is on the rise with the increasing use of social media platforms. Even though it is becoming a widespread problem for the users as well as a threat to their privacy and online safety, there are very few measures that are being taken to prevent it. Therefore, this thesis work aims to contribute to creating an efficient model of predictive analysis to identify the perpetrators of cyberbullying with optimal accuracy and help users seek necessary legal aid.

LITERATURE REVIEW

Since cybercrime is a significant social problem that is always on the rise, there has been some research on its prevention methods. Researchers extract data from different social media sites such as Facebook, Twitter, Instagram, and Myspace in order to conduct their research on the best ways to tackle this problem. Concepts such as Data mining, Natural language processing, Image processing, Machine learning techniques etc. are being incorporated to conduct these studies. Most of the times, two or more of these concepts are used together in order to get optimum results and reduce the amount of errors. The researchers also focus on different sides of cyberbullying. For instance, sexism, racism, sexual harassment, body shaming, hate speech are some of the topics that are gaining a lot of attention.

A. **Related Research Regarding Cybercrime Detection**

Researchers Samghabadi et al. have worked with natural language processing methods to identify different forms of profanities. Moreover, they have taken the help of machine learning algorithms to compare their results with other datasets and prove the accuracy of their model. They have conducted this research by collecting data from the social media platform called ASKfm ("Proceedings of the First Workshop on Abusive Language Online," 2017).

Similarly, researcher Love Engman has worked with ASKfm data to create a detection software prototype that would monitor profiles in real

time and display the offensive comments made by these profiles. He has combined the use of Natural language processing and Machine learning techniques in order to build this prototype. The main component of this prototype is a classifier that gives the best performance (2016).

Furthermore, researcher Zhong has worked on "developing early-warning mechanisms for the prediction of posted images vulnerable to attacks". He chose the photo sharing site Instagram to collect data for the study. He observed shared images, captions as well as the comments on the images and used concepts like Text mining to predict possible events of cyberbullying. He has also utilized various types of classifiers and feature sets (2016).

Researchers Sintaha et al., on the other hand, have taken a different route to detect Cyberbullying. They compared a variety of sentiment analysis methods for detecting Cyberbullying with the use of three Machine Learning algorithms. They also compared the result in order to find out which methods provide the optimum solution (2016).

In addition to all these studies, researchers Chatzakou et al. have also worked on detecting bullying and aggression on Twitter. They have proposed a "methodology for extracting text, user, and network-based attributes" so that they can distinguish the unique features of people who bully or display aggressive behavior online. They discovered that bullies tend to post less, and their popularity is not quite much. Also, they do not take part in many online communities. Aggressors on the other hand are more popular in comparison and their posts are usually negatively inclined. Their study was based on using ML classification algorithms and their model exhibits a significant level of accuracy in its results (2017).

Another instance of predictive analytics based on Twitter is the research work of Matthew S. Gerber. He has used Twitter-specific linguistic analysis and statistical topic modeling for detecting discussion topics across an important city in the USA. After that, he included this data into crime prediction models. He proved that adding the data from Twitter improves the performance of crime prediction models in comparison to the usual method of kernel density estimation. He believes that this research can impact the resource allocation for preventing criminal activities (2014).

Authors Agrawal and Awekar have also worked on the detection method of cyberbullying. After identifying some of the main bottlenecks

of the existing systems, they have proceeded to experiment of Formspring, Twitter and Wikipedia data. They have analyzed cyberbullying systematically across platforms based on deep learning models and transfer learning (2018).

Researchers Kontostathis et al. have focused on analyzing language for cyberbullying detection. They have used a two-step approach. The first stage of their experiments was designed to identify specific words and their contexts related to cyberbullying. They identified commonly used words and developed queries. Five of such queries provided high accuracy in terms of detecting examples of bullying. In the next stage of their experiments, they have used supervised machine learning algorithms in order to find out additional terms that are consistent with cyberbullying (2013).

Researchers Potha and Maragoudakis have taken the approach of sequential data modeling for cyberbullying detection. They have used a dataset of real-life conversations and manually annotated it in terms of severity using a numeric label. The motivation of their research was to detect cyberbullying as well as examine potential linguistic patterns of the perpetrators (2014).

Even though Machine Learning algorithms have been gaining popularity in recent years, there has been comparatively less research on the prevention of cybercrime using this technology. The offenders often tend to get away because there are no dependable methods of detecting cyberbullying activities. These are the reasons why our research aims to help create an efficient detection method that would provide satisfactory results and assist the national policymakers to accurately identify and penalize cyber bullies.

METHODOLOGY

We have followed a systematic method in order to collect, process, ategorize and label our raw dataset before implementing the supervised machine learning algorithm: Naïve Bayes according to our research goals. The data flow model of the entire workflow is given below:

Figure 1:
Data Flow Diagram
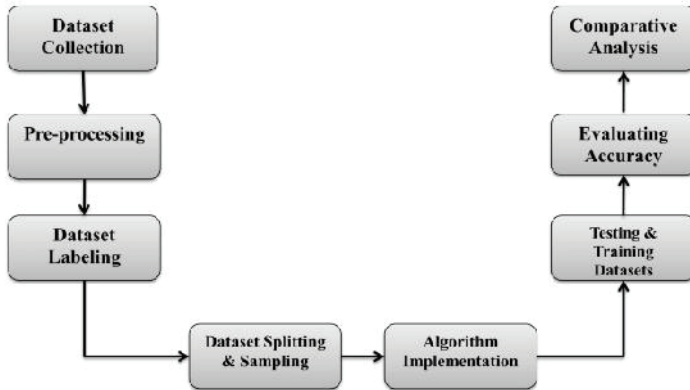
A brief overview of all the stages mentioned in the figure (from Dataset Collection to Finding out Accuracy) will be discussed in detail in this section and later in the Results section, the accuracy of the three labeling will be comparatively analyzed.

A. Dataset Collection

We have acquired our raw dataset from Kaggle.com, which is a platform for predictive modeling and analytics. This site contains different datasets from different fields such as government, health, science, popular games and dating trends etc. Amongst the available datasets, we have acquired a dataset which is specific for the use of Cyberbullying Detection. The data in this dataset came from Formspring.me. Formspring is an anonymous social media site which is based on questions and answers. There is a total of 12,774 data points in this dataset and these data were crawled from 50 IDs in the summer of 2010. The dataset has been labeled by three human annotators working in an online marketplace called Amazon Mechanical Turk ("Using Machine Learning to Detect Cyberbullying," 2011). These annotators identified instances of Cyberbullying, the exact word or phrase and the severity of the incident in their own opinions. This dataset initially had the following parameters: userid, post, ques (question), ans (answer), asker, ans1, severity 1, bully 1, ans2, severity 2, bully 2, ans3, severity 3, and bully 3. The "bully #" fields contain the word or phrase that the annotators thought to be examples of bullying. Consequently, the "ans #" field contains "yes/no" based on the existence of cyberbullying. On the other

hand, the "severity #" fields consist of a number between therange 0 to 10 where 0 means "no Cyberbullying" and 10 is "sever Cyberbullying" ("Formspring data for Cyberbullying Detection Kaggle," 2017). Below are the tabular representations of a portion of the dataset:

Figure 2:
Formspring Dataset

Figure 3:
Formspring Dataset (second part)

We have used this large dataset and proceeded to the next of processing the data to make it machine readable and efficient.

B. Pre-processing

Processing the data to make it more refined is a crucial step fortesting any algorithm on the modified version of the dataset. We have pre-processed two columns of the dataset which would contribute to our results: the "question" column and the "answer" column. These are the parameters which would contain possible instances of cyberbullying. The preprocessing steps are as illustrated in the following workflow:

Figure 4:
Data Preprocessing Flow Diagram
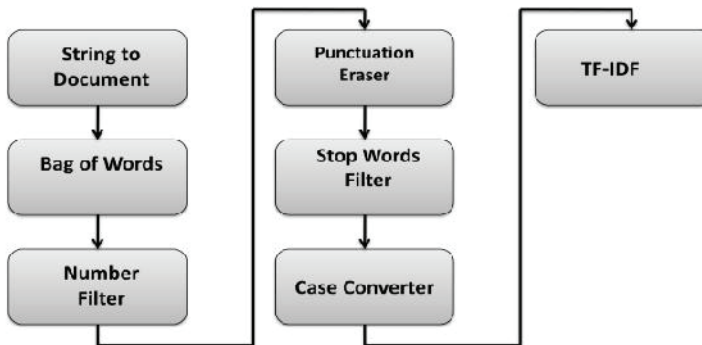
In order to accomplish these steps, we have utilized the KNIME Analytics Platform and applied the operations. Further descriptions of all the operations are as follows:

1. **Conversion from string to document**: Firstly, we loaded the csv data file in KNIME Analytics and converted all the strings to documents to make the data adaptable for processing.

2. **Bag of Words:** Bag of words is a standard representation of text mining for solving classification problems. This text representation is popularly believed to contain a significant amount of information which aids linear classifiers to make predictions with higher accuracy rates (Heap, et al., 2017, p.3). It has been used to count the frequency of all the words in the corpus of documents.

3. **Number Filter:** The Number Filter node was used for removing unnecessary and irrelevant numbers in the dataset.

4. **Punctuation Eraser:** We have also used a Punctuation Eraser node to remove all the punctuation

5. **Stop Word Filter:** The Stop Word filter helps to remove commonly used words such as "a", "an", "the", "for, "you" etc. As these words are

less significant in the dataset and have less impact on the results, we have chosen to remove them.

6. Case Convertor: The Case Convertor node converted all the words in the dataset into lowercase words.

7. TF-IDF: In addition to these steps, we have also performed TF-IDF calculations on the dataset. TF-IDF is an important as well as useful concept in case of text processing and classification. TF-IDF stands for Term Frequency Inverse Document Frequency and it helps to determine the importance of words in a corpus of documents. In this process, the value for each word in a document is calculated "through an inverse proportion of the frequency of the word in a particular document to the percentage of documents the word appears in" (Ramos, p.2). The importance of a word is proportional to the increase in the number of times a word appears in a document. However, this importance is offset by the frequency of the word in a corpus of documents ("Tf-idf :: A Single-Page Tutorial - Information Retrieval and Text Mining").The TF-IDF value of a word t for a document d in a corpus D is calculated by multiplying the term frequency and inverse document frequency. The mathematical formula is as follows:

$$w_d(t) = f_d(t) * \log (|D| / |\{d \in D : t \in d\}|) \dots\dots (1)$$

In this equation $f_d(t)$ denotes the term frequency and the second partof the product is the inverse document frequency (Alupoaie, 2013, p.12). In short, if aword is comparatively rare in a document, it is upweighted. On the other hand, the more common a word is the lower TF-IDF weight ithas.

Figure 5:
Data Preprocessing in KNIME Analytics
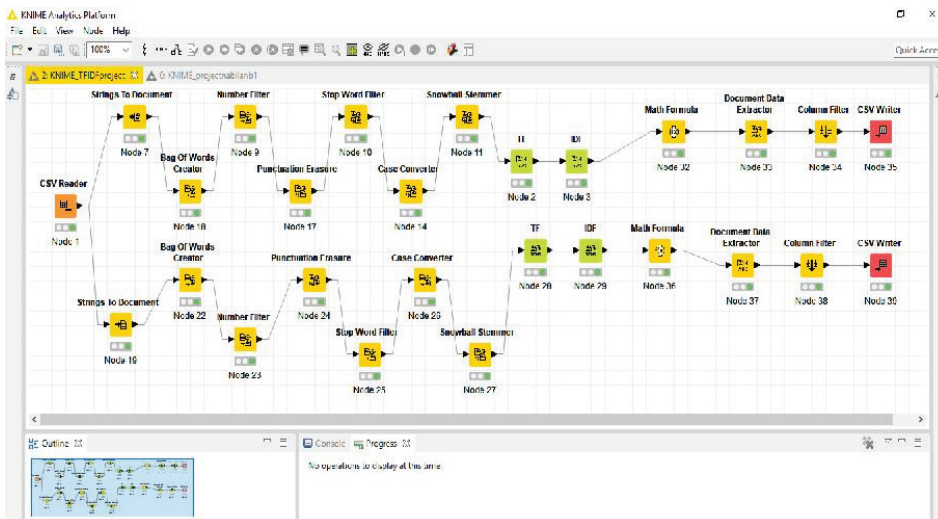
Finally, two separate datasets named "Preprocessed Question" and "Preprocessed Answer" have been acquired as the outcome of all these actions.

C. Dataset Labeling

Three kinds of methods have been followed in order to label the preprocessed dataset in three different ways. These methods are described below:

1.   Type 1 Labeling (Annotators' Opinion-Based): For the first type of labeling, we have combined the opinions of the annotators and created a binary class label for the dataset. We have considered that if at least two of the three annotators agree that an instance is Cyberbullying, then it would be labeled as "Yes". On the contrary event, the instance would be labeled as "No". Furthermore, we have transformed the class labels from strings to numerical values. The instances of "Yes" have been labeled as "1" and the instances of "No" have been labeled as "0". A tabular representation of this labeling technique is illustrated below:

Figure 6:
Annotators' Opinion-Based Labeling

Annotator ans1	Annotator ans2	Annotator ans3	Class Label
Yes	Yes	Yes	1
Yes	Yes	No	1
Yes	No	No	0
No	No	No	0

As their labels were separately illustrated in the dataset, we have combined all three "ans" categories to create binary class labels for one of our analysis approaches. The modified dataset with the "class" column is illustrated below:

Figures 7:
Formspring Dataset with Annotators' Opinion-Based Class Label

The last column which is denoted with "class" will be analyzed later with Naïve Bayes Algorithm by splitting it into training and testing datasets. We will be observing the accuracy of prediction for this dataset, which is labeled based on the opinion of the annotators. For this purpose, we have taken a set of 10,000 sample data.

2. Type 2 Labeling (TF-IDF Based): The second dataset has two parts,and these are derived from "Preprocessed Question" and "Preprocessed Answer" datasets. For each of them, we have found TF-IDF values. For creating class labels, we have taken the average of the highest and the lowest TF-IDF values in the corpus and considered it as a threshold value. If a specific TF-IDF value is below then this, it has been classified as "0". On the contrary, if the TF-IDF value is higher, it has been labeled as "1". For example, the average TF-IDF value of the "Preprocessed Question" dataset is 2.354155. Therefore, the terms having a higher weight than this have been labeled as "1". An example of the labeling technique and a sample of the "Preprocessed Question" dataset is given below:

Figures 8:
TF-IDF Labeling for "Preprocessed Question" Dataset

TF-IDF Range	Class Label
TF-IDF> 2.354155	1
TF- IDF<2.354155	0

Figure 9:
Preprocessed Question Dataset with TF-IDF based Class Label

	A	B
1	tf idf	class
2	0.474108	0
3	0.404214	0
4	0.339882	0
5	0.320986	0
6	0.255196	0
7	0.426398	0
8	0	0
9	0.389603	0
10	0.348594	0
11	0.426398	0
12	0	0
13	4.263975	1
14	2.060039	1
15	1.347381	0
16	0	0
17	2.131988	0
18	0	0
19	3.741152	1

We have chosen 10,000 data from both Question and Answer datasets. We will apply Naïve Bayes Algorithm on these datasets as well. Since the important parameter of these datasets is the "tfidf" column, the results achieved for these would vary from the Type 1 labeling. Based on the assumption that the TF-IDF operation may have been mostly able to upweight the abusive words, the accuracy levels of the algorithm may be high and vice versa. We would be comparing the results with the Type 1 label to see the differences between the accuracy of the opinion-based and machine labeled data.

3. Type 3 Labeling (Specific Abusive Keyword-Based):This labeling is acquired by working on the "Preprocessed Question" and "Preprocessed Answer" datasets. For this method, we have labeled both the datasets in a different way than the previous two methods. In order to observe whether keyword-based labeling work efficiently, we have created binary class labels based on the presence of certain female-centric abusive words. It can also help to understand the implications of Cyberbullying women usually face. For the sake of comparatively small scale and efficient calculations, we chose five sample abusive words that are generally geared towards women: **bitch, whore, sexy, but, ass**. The value of the class column is "1" whenever any of these words are present. Otherwise, the value of the class column becomes "0". Here is an illustration of this type of labeling:

Figure 10:
Preprocessed Question Dataset with Keywords-based Class Label

	A	B
1	tf idf	class
2	0.237769	0
3	0.725845	0
4	0.327717	0
5	0.3478	0
6	0.326138	0
7	0.350432	0
8	0.521115	0
9	0.53436	0
10	0.681488	0
11	0.574008	0
12	0.761056	0
13	1.200466	0
14	0.957635	0
15	0	0
16	0.550965	0
17	0.494734	0
18	0.579666	0

Similarly, to the type 2 labeling, we have chosen 10,000 data samples from both preprocessed datasets. Finally, we would apply Naïve Bayes algorithm on these datasets so that we can observe some examples and extent of how women face Cyberbullying in anonymous social media platforms. We will compare the results again with the results from the previous labeling techniques.

D. Dataset Splitting & Sampling

After the completion of pre-processing, we finally had two datasets. We have labeled them as "Preprocessed Question" and "Preprocessed Answer" datasets. Next, we have worked on creating different class labels for them in order to add more dimensions to our dataset, ask new questions and find hidden implications from it. We have created three different types of labels with binary class values (0 and 1). The class label for the first one is the initial labeling based on the opinion of the annotators (Figure 7). The second labeling is based on the TF-IDF (Figure 9) values and the third one is based on the presence of five specific female-centric abusive words (Figure 10). Moreover, due to applying the Bag of Words operation and finding Term Frequency for each word in the documents, the original dataset has expanded in size. The "Preprocessed Question" now contains 51,087 data and the "Preprocessed Answer" has 55,090 data. In order to work efficiently, we have chosen five sets of 10,000 samples from each of our two base datasets.

Figure 11: Sample Datasets
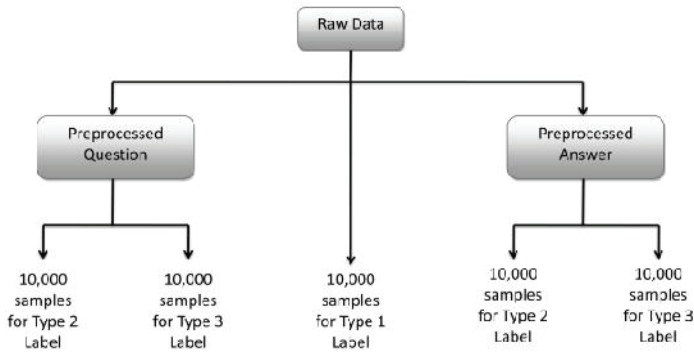
E. Naïve Bayes Algorithm Implementation, Testing & Training Datasets

Naïve Bayes is a supervised learning algorithm or classifier. It utilizes the Bayes' theorem along with an assumption that every pair of features is independent. Suppose, a class variable is y and a dependent feature vector is x_1 through x_n. Then, we get the following relationship:

$$P(y \mid x_1,\ldots,x_n) = P(y)P(x_1,\ldots,x_n \mid y) / P(x_1,\ldots,x_n) \ \ldots\ldots (2)$$

Using the "naïve" assumption that:

$$P(x_i \mid y, x_1,\ldots, x_{i-1}, x_{i+1},\ldots, x_n) = P(x_i \mid y) \ \ldots\ldots (3)$$

Next, this relationship is simplified to the following form:

$$P(y \mid x_1,\ldots,x_n) \ \alpha P(y) \prod_{i=1}^{n} P(x_i \mid y) \ \ldots\ldots (4)$$
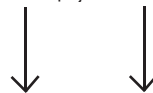
$$\hat{y} = \mathrm{argmax} P(y) \prod_{i=1}^{n} P(x_i \mid y) \ \ldots\ldots (5)$$

There are four different types of Naïve Bayes Algorithms:

      I. Gaussian Naïve Bayes

      II. Multinomial Naïve Bayes

      III. Bernoulli Naïve Bayes

      IV. Out-of-core Naïve Bayes model fitting

We have used the Gaussian Naïve Bayes approach for our data analysis. Even though apparently the assumptions are "naïve" and simplified, Naïve Bayes algorithm has proven to work notably well with real life problems. A limited amount of training data is usually enough to estimate the important parameters ("1.9. Naive Bayes — scikit-learn 0.19.1 documentation," 2018). It is a popular text classification algorithm that works well in a short time and with limited resources. Due to such efficient features, we have chosen this algorithm for implementation.

For our experiments, the codes in use work in several steps. Firstly, the dataset sample is loaded in the code in a comma separated values (csv) format. After that, the data is summarized to build a Naïve Bayes classifier. A few intermediary steps of calculations are involved in this process. The algorithm makes predictions on testing values based on this classifier. The next step by the algorithm is to make predictions on the testing dataset. The rate of accuracy of the predictions is determined through further calculations (Brownlee, 2014). A summary of the workflow of the Naïve Bayes algorithm is illustrated below:

Figure 12:
Workflow of Naïve Bayes Algorithm
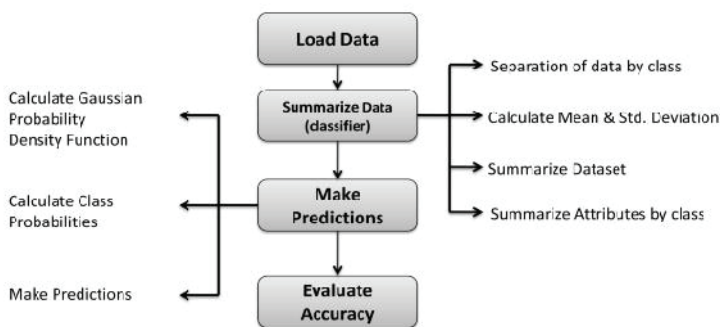
F. Evaluating Accuracy

The accuracy rates of the Naïve Bayes classifier on the different labeled datasets were significantly important to determine the cyberbullying associated terms posted by the users of formSpring,me site. Accuracy is found from the number of correct predictions made divided by the total number of predictions made, multiplied by 100 to turn it into a percentage. The accuracy rates of Naïve Bayes classifier of each of these labels have been

measured. NLTK's nltk classify accuracy was used for Naïve Bayes. Our focus was to find out the negative or abusive terms as our objective is to detect and predict cyberbullying terms. The accuracy of our model was estimated by the predictions that are made for each of the instances in the testing dataset. The predictions are compared to the class values in the testing dataset. Finally, the accuracy is calculated as an accuracy ratio between 0% and 100% (Brownlee, 2014).

G. System Implementation

1. Programming Languages & Software: A variety of data analysis software as well as programming environments have been utilized in this research inorder to prepare the dataset. The primary programming language on which the implementation of the used algorithm is based on is Python. We have used an open source distribution called Anaconda for running our python codes. We have run our Python files on a scientific Python development environment called Spyder in Anaconda.The main data analytics tool used in order to pre-process the dataset in this research is KNIME Analytics Platform. It is an open-source analytics tool that promotes data- driven innovation. We have used the version 3.5.2 which also includes KNIME big data extensions.

2. Experimental Setup:

Figure 13:
Experimental Setup Table

Dataset Size	10,000*5
Split Ratio	0.70
Training Data	70%
Testing Data	30%
Algorithm	Naïve Bayes
Run No.	10
Evaluation Parameter	Accuracy Rate

RESULTS AND DISCUSSIONS

A. Overview

After deploying the system and running the Naïve Bayes algorithm on the datasets, the next step is to analyze the results and their implications. In this section, a comparative analysis of all the results has been done in order to observe which type of labeling and analysis gives the best results among all the approaches.

B. **Results**

1. Results of Type 1 Labeling (Annotators' Opinion-Based):The first type of class labeling, which has been done based on the opinion of the annotators of the raw dataset, gives the following accuracy results:

Figure 14:
Accuracy of Annotators' Opinion-based Labeling
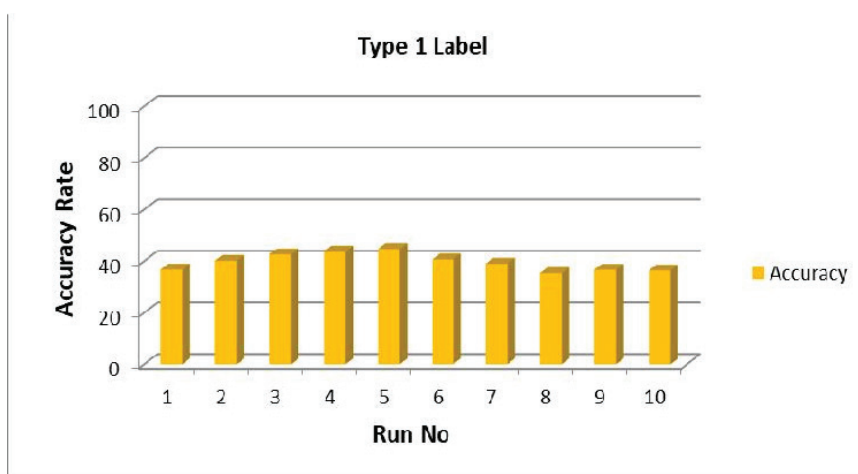
Observing from these results, this approach to labeling gives comparatively lower accuracy rates of prediction. A reason for this phenomenon might be the lack of enough instances. Since the labels have been derived from combining the opinion of the annotators who have manually explored the dataset, there are differences in their opinions. There are times when something was marked as an example of cyberbullying by one annotator in the dataset. However, the other two annotators felt that this is not so. Therefore, these events have not been labeled as "1". Due to such different views, many of the

instances may have not been properly labeled. In that case, the Naïve Bayes algorithm would not be able to perform at its best. A few of the examples of this class labeling in the dataset are illustrated below: According to our method of labeling, at least two out of the three annotators had to agree if an instance is a cyberbullying event or not. The labeling was essentially manual and static.

Figure 15: Sample Labels (Type 1)

Posted Question/Answer	Class Label
Ur a fuckin idiot	1
Why you such a bitch?	1
shit on your face	1
Later white trash skank. BITCH!	1
you fake ugly bitch	1

2. Results of Type 2 Labeling (TF-IDF based):After the analysis of theTF-IDF based labeling using the Naïve Bayes algorithm, the following accuracy results are found for the "Preprocessed Questions" dataset:

Figure 16:
Accuracy of TF-IDF Labeling (Questions)
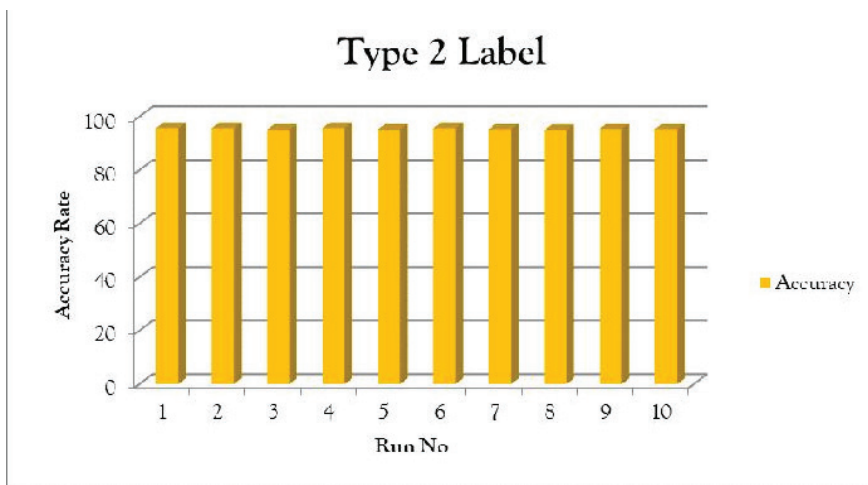
The results are acquired after running the algorithm ten times. As demonstrated in the graph above, the labeling system using threshold

TF-IDF value gives a significantly high range of accuracy in thedetection of the instances of cyberbullying. The underlying assumptionof this kind of class labeling is that the words with a higher TF-IDF weight are comparatively rare words in the dataset. So, among the 10,000 data instances, there are high chances that these uncommonwords are the words that are not used in regular conversations andpossible instances of cyberbullying. Some of the examples of thislabeling are as follows:

Figure 17:
Sample Labels (Type 2)

Posted Question	Preprocessed Term	Class Label
.. are you gay?	Gay	1
Calm down! Calm down don't get a big dick!	dick	1
I do too know you like that motherfucker.	Motherfuck	1
fffffuuuu	fffffuuuu	1
i'm sorry.r :cr r rihateyou.	Ihateyou	1

The preprocessed terms column have a higher TF-IDF value associated with them in the dataset. These are not words that are commonly used in formal conversations. As a result, in the preprocessing stage, these terms have been filtered as rare words. Moreover, such words have higher TF-IDF weights than common words such as "I", "You", "They" etc. Therefore, they have received the label "1" and have been marked as instances of cyberbullying. The Naïve Bayes algorithm can detect these labels with a high level of accuracy. In the similar way, the "Preprocessed Answer" dataset also gives high accuracy rates as shown below:

Figure 18:
Accuracy of TF-IDF Labeling (Answers)
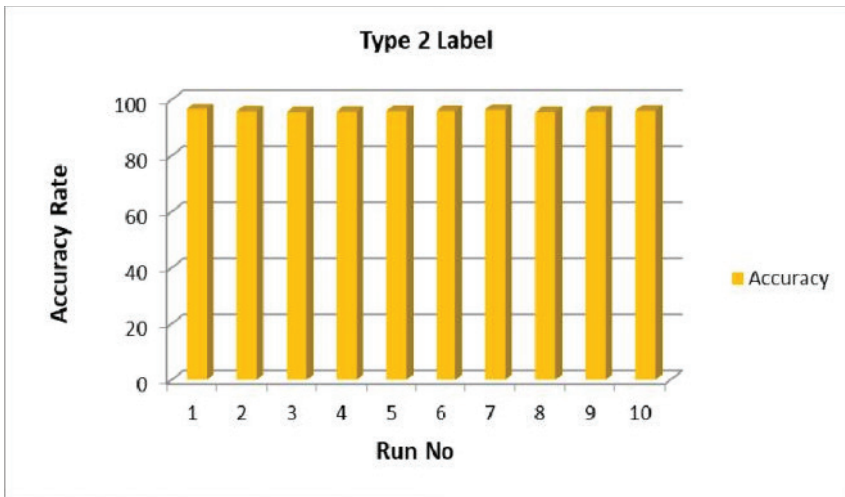
The dataset of "Preprocessed Answers" labeled based of TF-IDF values also show accuracy over 95 percent on average. Some of the examples of this labeling with the original examples are given below:

Figure 19: Sample Labels (Type 2)

Posted Answer	Preprocessed Term	Class Label
zombimummi	Zombie	1
Shuddup	Shuddup	1
Dick	Dick	1
foolish child	foolish child	1
Prostitute	Prostitute	1

The examples of the preprocessed terms in this dataset are usually words that are rare in use. So, they have also been labeled as "1". Furthermore, shorthand writing, and slang words have a better probability of having a higher TF-IDF weight. The Naïve Bayes algorithm detects these kinds of examples as instances of cyberbullying events. As a result, this labeling method becomes quite dynamic on its own. However, a potential problem of relying on the TF-IDF values is that it may not be able to differentiate among the

correct labels and "false positives". For example, if there are spelling mistakes or shorthand words that are not related to bullying, they might also get flagged as "1" due to having above average TF-IDF values. Since this method is focused on text classification without considering any contextual meaning, the false positive labels also need to be filtered out and corrected for improving the quality of predictions.

3. Results of Type 3 Labeling (Specific Abusive Keyword-Based):The results extracted by running the Naïve Bayes algorithm on the datasets which have been labeled based on the presence of five specific female-centric abusive words also give a relatively lower range of accuracy than the second type of labeling. The results after running the algorithm ten times dataset are as follows: on the "Preprocessed Questions"

Figure 20:
Accuracy of Female-Centric Words Labeling (Questions)
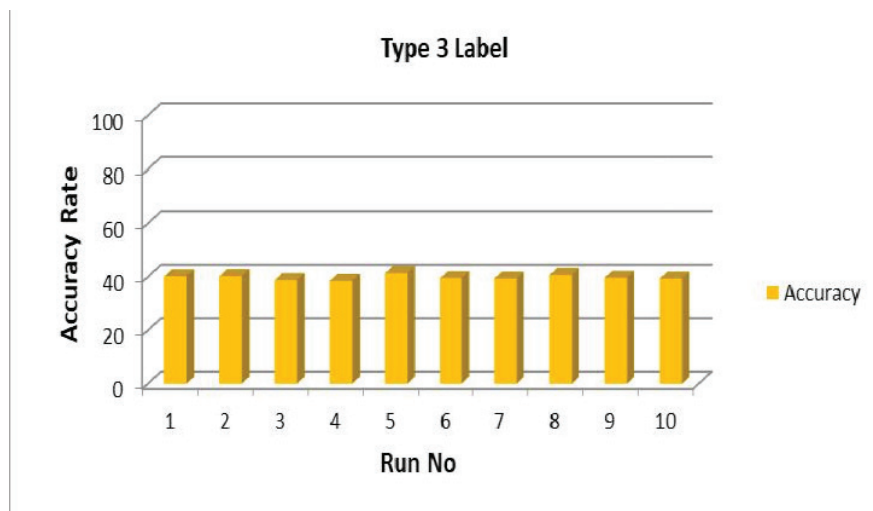
The results show that the rate of accuracy is significantly lower than the previous approach. While the previous type of labeling showed over 90 percent accuracy, the accuracy range of this new approach is between 38 to 41 percent. One reason behind this drop-in accuracy levels again might be due to having fewer instances in the dataset. If the dataset does not have enough instances of cyberbullying related to the five words that have been specified, it reduces the algorithm's

ability to make predictions on the testing data accurately. The algorithm needs a minimum number of examples in the training

dataset to learn and apply the knowledge on the testing dataset. Some of the examples of the comments related to these abusive words are given below:

Figure 21: Sample Labels (Type 3)

Posted Question	Preprocessed Term	Class Label
bitch thee bomb tick	Bitch	1
faggot edc god damn bitch thad near zach	Bitch	1
asset hahapretti butt daddi	Butt	1
ass mouth	Ass	1
am dirti fuck whore	Whore	1

The results of this analysis also disprove our initial assumption. We had assumed that the five commonly used abusive words which we used for the labeling, would be prevalent in the datasets. On the contrary, there seems to be less use of these words. In case of the "Preprocessed Answers" dataset, similar results have been acquired. These results are illustrated below:

Figure 22:
Accuracy of Female-Centric Words Labeling (Answers)
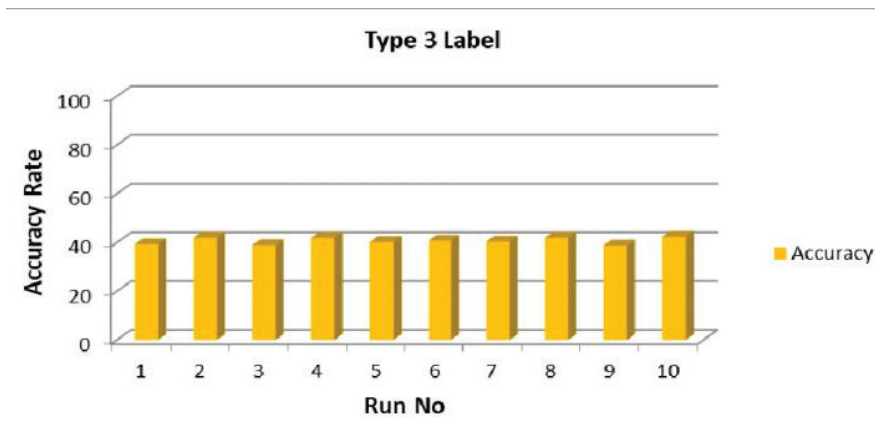
Figure 23:
Sample Labels (Type 3)

Posted Answer	Preprocessed Term	Class Label
hahaha bitch bring lmao kinda lmao hve black yes haha	bitch	1
hoe-ish lol um prob stupid bitch sin sinopppzz	bitch	1
muthafuckahawtpiec ass	ass	1
fuckin love ass	ass	1
Hey whore	whore	1

Even for the "Preprocessed Answers" dataset, the accuracy level is around 40 percent on average. Overall, this method of labeling does not give optimum results for Naïve Bayes algorithm and our dataset. The efficiency of this method can be further explored by increasing the number of keywords for labeling. However, the shorthand spellings and possible spelling mistakes of all such keywords also need to be taken into consideration for making effective predictions.

4. Results of Overall Comparative Analysis: Finally, we move to comparing the average accuracy rates of all the datasets. This process lets us observe which type of labeling provides the best results for our sample datasets. A graph illustrating all the average accuracy rates is given below:

Figure 24:
Accuracy of Comparative Analysis
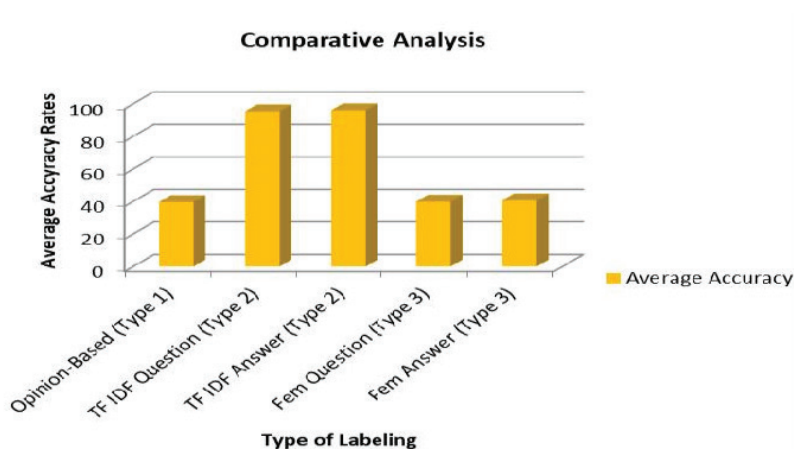
The side-by-side comparison shows that the second type of labeling, which has been done based on the value of TF-IDF weights, gives the highest accuracy rates. Therefore, labeling based on TF-IDF values prove to be the best way for getting high level of accuracy of cyberbullying detection for our datasets.

C. **Conclusion**

In summary, the type 2 labeling, which has been done based on the TF-IDFweights of all the words in the datasets, show the highest levels of accuracy inpredictions for the sample datasets we have chosen. However, we cannotcompletely disregard the other methods as ineffective ones. They can befurther explored by looking at more parameters and increasing the number ofsamples. In addition, they need to be tested on other datasets related tocyberbullying as well as tested with other algorithms to come to a definitedecision

CONCLUSIO

Cyberbullying is a crime that is on the rise with the increasing use of social media platforms. Even though it is becoming a widespread problem for the users as well as a threat to their privacy and online safety, there are very few measures that are being taken to prevent it. Therefore, this thesis work aims to contribute to creating an efficient model of predictive analysis to identify the perpetrators of cyberbullying with optimal accuracy and help users seek necessary legal aid.

ACKNOWLEDGEMENTS

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Enhancing Classroom Interaction through Self-Disclosing Social Media Posts

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Abstract: Self-disclosure has been widely researched as a way to increase participation, enhance classroom interactions, and improve the overall learning experience. This project involves the use of popular social media platform of Instagram to facilitate self-disclosure among students. The goals are to encourage students to learn more about one another in a positive light, to share something about themselves that their peers or instructors would not have known otherwise, and to encourage them to reflect on their values as well as to share those values with their peers. This study aims to analyze the visual aspect of self-disclosing posts from 180 students in two universities in Bali Indonesia, under the Instagram hashtag of "#myworld", conducted at the beginning of a semester term. Utilizing content analysis method employing two coders with substantial inter-rater reliability (Cohen Kappa > 0.61), the study finds that the typology of self-disclosure falls into three categories: descriptive, evaluative, and topical, with descriptive self-disclosure as the clear majority (82.8%). The themes emerging from the self-disclosing posts include (from the highest prevalence): family, friends, religion, hobby, self, significant other, things/possession, and work/study. Further qualitative inquiry reveals that self-disclosure through social media is perceived to have lower risk than direct, face-to-face disclosure. It has the potential to be used to get better acquainted to one another with lower perceived risk.

Key words: self-disclosure, education, classroom interaction, social media, Instagram

INTRODUCTION

Self-disclosure is a deliberate and voluntary act of revealing certain information about oneself to a specified audience in order to enchance the communication process, form a connection, and encourage mutually open interaction. While it is intrinsically rewarding through the fulfilment of fundamental needs for social connectedness (Tamir & Mitchell, 2012), self-disclosure can also be challenging for individuals as it involves risk and vulnerability as one gives up some degree of privacy and personal control by disclosing certain information to others (Altman in Bazarova & Choi, 2014). Various studies have discussed the scope and extent of self disclosure, and and find both benefits and challenges in using self-disclosure as a form of social exchange (Jourard, 1971; Cozby, 1973; Yu, Hu, & Cheng, 2015; Jacob & Karibeeran, 2017; Abramova et.al, 2017). Self-disclosure itself can take the form of descriptive, evaluative, or topical intimacy; it may involve the sharing of thoughts, feelings, aspirations, goals, failures, activities, experiences, successes, fears, dreams, and preferences (Yu, Hu, & Cheng, 2015; Jacob & Karibeeran, 2017).

In education, self-disclosure as an act of sharing in the classroom dan has been found beneficial to to improve student participation, to facilitate interaction, and to achieve the learning objectives (Harper & Harper, 2006). However, there is always the perceived risk of making onelself vulnerable by disclosing an information that may become a boomerang and undermining a student's image among her peers. Nevertheless, educators should encourage self-disclosure among their students, and consider different ways and channels to do so.

Self-disclosure is not only achieved through direct interaction, but also through various media—indlucing online social media. Millennials, Gen-Z and Gen-Alpha students are already using social media platforms strategically to reveal select information about themselves they think are worth disclosing in the digital world. There is a great potential to applying the principles of self-diclosure in social networking plaforms, that is intended for general audiences, into the realm of self-disclosure in education with specific audiences and specific topics designed by the educators. Social media platform can be strategically utilized to reduce perceived information risk, while still meeting the desired goals of improved interaction and participation (Bazarova & Choi, 2014). Teachers and instructors can encourage students to post self-selected information online with certain

topics or "hashtags", typically in the form of visuals including photos and videos, and subsequently these postings can be discussed in the classroom. The potential for indirectness can be comforting for some students.

This paper discusses the use of Instagram as the platform to encourage initial self-dislocure among Universitsy students, particularly in the beginning of the semester, as a way to encourage in-class self-disclosure. It aims to demonstrate how open social media platform such as Instagram can be used to initiate in-class interactions among the students. As many as 180 students from two universities in Bali, Indonesia were asked to post a photo, a series of photos, or a video on Instagram using the hashtag of "#myworld", conducted at the beginning of a semester term. All 180 posts were then analysed to discern whether certain typology and/or themes emergen from the self-disclosure used by the students, and to seek an understanding on why certain typologies were used more than others in the self-disclosing posts using Instagram as the medium. Then, students were asked to reflect and share, in Focus Group Discussion sessions, on their experiences of using Instagram as the medium of class assignment for self-diclosure and whether they perceive this type of assignment can enchance classroom interaction.

LITERATURE REVIEW

A. Social Networking Sites as the Platform of Self-Dislcosure

Social Networking Sites (SNS) and other online-based social media platform encourages their users to share personal information. Self-disclosure through SNS has been found to have several beneficial attributes including relationship-building (Krasnova et al. 2010; Park et.al., 2011; Cheung et al. 2015; Abramova et.al, 2017), relationship maintenance (Park et al. 2011; Bazarova and Choi 2014; Ng 2014; Chennamaneni and Taneja, 2015; Abramova et.al, 2017), social capital enchancement (Aharony, 2016; Tzortzaki et al., 2016; Abramova et.al, 2017), and reciprocity (Chen and Sharma 2013; Abramova et.al, 2017).

Several studies have cited the benefits of online-based social networking platforms for self-disclosure. One study suggests that online self-disclosure through blogging has the potential to become "zone of reflection" for students that is lacking in face-to-face classroom interaction (Harper & Harper, 2006). Another study finds that social media platform such as

Instagram decrease the risks related to self-disclosure, as users perceive the security and privacy features provided as a safeguard for the images and videos they post—thus allowing them to enjoy the benefits of gaining "likes" and "comments" while maintaining the sense of control over their shared contents (Kusyanti & Safitri, 2016).

B. Instagram as a Platform for Self-Disclosure

One of the most popular social networking platforms among Millennial and Gen-Z students is Instagram, which differentiates itself from other Social Networking Sites (SNS) such as Facebook or Twitter by exclusively requiring its users to use visual media in the form of photos and videos of its sharing mechanism (Williamson, et al., 2017; Sagiyanto & Ardiyanti, 2018). Indonesia has one of the largest number of users on Instagram, at over 60 million, of which 89% are in the 18 to 34 age range and are accessing the platform at least once a week (Mailanto, 2016). As with other social media platform, Instagram has allowed self-disclosure to become habitual, and thus lowering the perceived risk. Platforms such as Instagram focus on users' up-to-date online presence and blur the lines between the real and virtual worlds (Sagiyanto & Ardiyanti, 2018). One study cites that Instagram specifically allows individuals who are otherwise introverts in real life to be able to better express themselves, particularly though self-disclosing online gallery of quotes to reveal descriptive as well as evaluative information Sagiyanto & Ardiyanti, 2018).

C. Typologies of Self-Disclosure

Self-disclosure can be classified into three typologies (Morton in Harper & Harper, 2006): descriptive, evaluative, and topical. Descriptive self-disclosures are marked by contents that depict factual information (thoughts, experiences, activities, etc.), while evaluative self-disclosures depict feelings and judgments (including likes/dislikes, preferences, etc.), and topical self-disclosure involves discussions and depictions of sensitive topics such as sexual orientation, political stance, etc. (Harper & Harper, 2006; Suo et.al., 2008; Chen, 2014). Descriptive self-disclosure has been found to increase intimacy and reciprocity among those participating in self-disclosure. It also has the lowest perceived risk because of its explanatory nature in revealing merely information about a subject—as it doesn't focus on opinion whether on general or specific subjects (Harper & Harper, 2006). Conversely, evaluative self-disclosure forms opinions. It involves a deeper

level of congition, and thus higher perceived risk, as it forms judgments (Harper & Harper, 2006). Lastly, topical self-disclosure revelas one's stance on sensitive topics such as political affiliation. In a way it can strengthen bonds between similar-minded invididuals, but for a general audience it poses a high degree of risk (Harper & Harper, 2006).

METHODOLOGY

A. Type of research

This research is qualitative in nature. It involves collecting, analyzing, and categorizing 180 self-disclosing Instagram posts from 180 university students in Bali, Indonesia to find emerging typologies and themes from their self-disclosure on Instagram. Subsequently, qualitative Focus Group Discussion sessions were conducted to get the feedback and reasoning of the students behind their chosen self-disclosure typologies and themes.

B. Research subjects

The study collected 180 self-disclosing Instagram posts from 180 students from two universities in Bali, Indonesia over a period of one month, purposefully in the beginning of the semester to allow the students and instructor to get better acquainted with one another through the use of online-based self-disclosure. There were 90 students from Management Department, Faculty of Economics and Humanities in Universitas Dhyana Pura (Badung, Bali, Indonesia) and 90 students from English Literature Deparment, Faculty of Foreign Languages, Universitas Mahasaraswati (Denpasar, Bali, Indonesia) as the subjects of the research. The students were enrolled in courses taught by the researcher at the time of research, in Consumer Behavior (for the Management students) and Entrepreneurship (for the English students).

C. Research procedure

The sampling used convenience-based method as the students are all enrolled in one of the author's courses in Consumer Behavior and Entrepreneurship. Three Instagram posting activities was presented to the students as supplements to face-to-face activities using different hashtags, i.e., "#thisisme", "#myworld", and "#mybrand". The instructor took careful steps to ensure that the students are unaware about the research related

to the postings. Students were awarded full participatory points for each posting regardless of content and quality. The instructor also ensured that the students have a complete sense of freedom in the content and form of their postings, as long as they adhere to Instagram's standards, not plagiarized, and follow a common sense of decency.

Of the three topics in the semester, this paper discusses the second topic (i.e., "#myworld") as this topic was seen to have a wide-range of interpretation, and the students are deemed to have caught on to the assignment as they had already done one in the prior week (i.e., "#thisisme"). To allow students to explore and disclose "their worlds" was seen as an opportunity to better engage with the students and to get a sense of what was important in their lives. After the cut-off date, all the postings were downloaded using a third-party application that allowed the authors to download all postings related to the given hashtag. In separate focus group discussions, one of the authors (the instructor in the courses) showed selected postings from the students and discussed the potential interpretations and intentions of those postings.

The author and a research assistant collected, coded and categorized the data using Microsoft Excel separately. Upon categorizing the 180 postings into three typologies (i.e., descriptive, evaluative, and topical), inter-rater reliability (IRR) was conducted between the two raters (the author and the research assistant) for each typology to arrive at Cohen's Kappa, The authors also applied Chi squared analysis to ensure low probability of randomness in the results. The author then analyzed the data based on the frequency of each typology (mutually exclusive of one another), and the general themes of the postings (including family, friends, religion, hobby, self, significant other, things/possession, work/study, which are not mutually exclusive. This means that one post can only be categorized into one of the three typologies, but can be contain more than one themes.

Subsequently, the students were asked to participate in focus group discussions for a qualitative inquiry on their perception and feedback regarding the assignment, the reasoning behind choosing one type of disclosure typology compared to others, as well as the reasoning behind posting a photo or video with a certain theme(s) compared to others.

RESULTS AND DISCUSSIONS

A. Results

The findings are divided into two parts. Firstly, in order to analyze the self-disclosing visual posts, the author together with the research assistant devised a mechanism to code the typography and the general themes of the students' Instagram posts. The 180 posts were categorized into three typologies that are mutually exclusive: descriptive, evaluative, and topical.

Then, the coded datasets were processed using inter-rater reliability (IRR) measure for each of the three typology. As indicated in Table 1, all three measurements yielded high IRR values (Cohen's Kappa > 0.61, p < 0.01) and high degrees of percent agreement between the raters—i.e., the frequency of agreement between the raters on each observation, either both indicate that the observation meet the category or both indicate otherwise. The descriptive typology of self-disclosure resulted in Kohen's Kappa value of 0.789 (p < 0.01). This denotes a high value of Inter-Rater Reliability. Similarly, the Kappa for evaluative typology was 0.726 and for topical typology was 0.822 (p < 0.01), all denoting a high degree of Inter-Rater Reliability. Percent agreement between the two raters were also high across all typologies (> 90%).

Table 1:
Inter-Rater Reliability Measure (n=180)

Typology	Inter-Rater Reliability		
	Cohen's Kappa	*Significance (p)*	*Percent Agreement*
Descriptive	0.789	<0.01	92.2%
Evaluative	0.726	<0.01	95.6%
Topical	0.822	<0.01	97.8%

Subsequently, Chi square analysis was conducted to ensure low probability of randomness. The analysis resulted in a high degree of confidence that the findings were not random, and that the typologies differ significantly from the expected frequency (x^2=329.624, *df*=1, *p*<0.01, n=180). The study found that most of the students' Instagram-based self-disclosure were *descriptive* in nature (152 posts, 84.4% of all posts). The remaining two typologies were rarely used in the self-disclosing posts. *Evaluative* disclosure was used in 16 posts (8.9%), while *topical* disclosure only in 12 posts (6.7%).

Visual analysis on the self-disclosing Instagram posts categorizes the students' self-disclosing posts into nine distinct themes. The theme most often interpreted and thus disclosed as related to the students' worlds is "family", seen in 52.2% of the 180 posts. Whereas one post can only belong to one typology, the themes of the posts are not mutually exclusive—i.e. each post can belong to more than one themes. After the theme of "family", the general theme of "self" featuring the students themselves (including self-portrait or *selfie*) is the second most frequent theme in the posts. This theme is seen in 42.2% of all 180 posts. Interestingly, posts revolving or "featuring significant other" (e.g. boyfriends, girlfriends, or fiancé(e)s are not listed as one of the top five themes related to the students' "#myworld" posts. The themes related to "friends", "hobby", and "religion" round up the top five themes most frequently used in this online self-disclosure assignment. The complete distribution of self-disclosure themes is shown in Table 2. Samples of the Instagram posts with various visual themes are shown in Figures 1–6.

Table 2:
Distribution of Themes in Students' Postings

Theme	Distribution in Instagram Posts	
	Frequency	*Percentage*
Family	94	52.2%
Self	76	42.2%
Friends	54	30.0%
Hobby	37	20.6%
Religion	29	16.1%
Things	28	15.6%
Significant other	20	11.1%
Work/study	16	8.9%
Abstraction	12	6.7%

Figure 1:
Sample of Instagram Post with the theme "Family"

Figure 2:
Sample of Instagram Post with the theme "Self"

Figure 3:
Sample of Instagram Post with the theme "Friends"

Figure 4:
Sample of Instagram Post with the theme "Hobby"

Figure 5:
Sample of Instagram Post with the theme **"Religion"**

Figure 6:
Sample of Instagram Post with the theme **"Significant Other"**
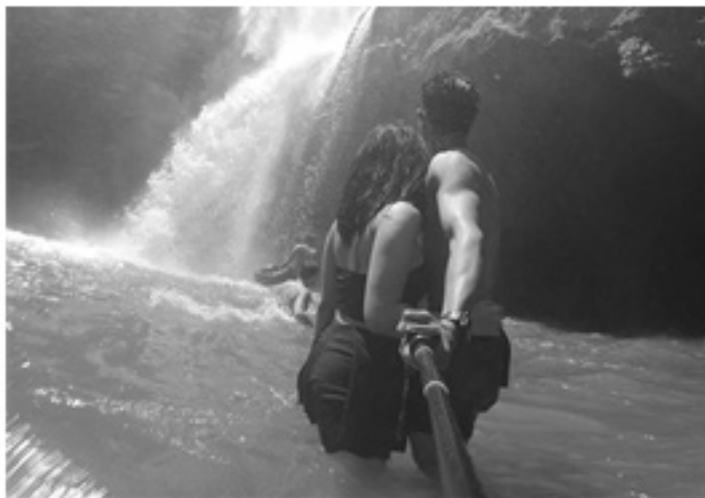
B. Discussion

The findings in this study confirms the findings by Harper & Harper (2006), which discusses student self-disclosure using the medium of blogs. In online-based self-disclosure, most students tend to present new or expanded information about themselves that would or could have not been shared in class due to some limitations. Compared to other studies that use online

blogs as the medium of indirect self-disclosure (Harper & Harper, 2006; Ko & Kuo, 2009; Okdie, 2011; Tang & Wang, 2012), the ability to mainly use visual elements in the current study, including photos and videos, in addition to texts in the form of captions is one key advantage of Instagram self-disclosure. Still, the patterns of disclosure favoring descriptive to evaluative and topical is consistent with the previous finding by Harper & Harper (2006). As participants noted in the focus group discussions, perceived risks are the primary driver for them to stick with the descriptive type of self-disclosure, favoring to disclose about activities and experiences rather than feelings and judgments about certain issues. As one student cited,

> "...this is due to the *"comment"* feature in Instagram. I don't want my friends to *bully* me if I post something too sensitive or opinionated."

One encouraging finding from the focus group discussions relates to the benefits of this activity. Participants note that this activity allows them to reflect on what is really important in their life and what they are willing to deliberately disclose about their lives. Many classmates only know one another in class, and this activity has allowed them to see the things that are important, and perhaps previously unknown, about their colleagues including families, talents and hobbies. Secondly, some participants note that the activity is significantly less risky than, as one noted,

> "...making a fool of myself by talking about myself, my family, and things about me that are important in front of the classroom. With Instagram, I can just post and forget about it."

The focus group discussions strongly support the categorization and reasoning for the themes that emerged. As the focus of this self-disclosing Instagram post is not just about oneself but "one's world", most students interpret that their worlds revolve not only around them but also something else beyond them. As such, over half of the students depicted their families as their worlds. The portraits and videos related to self comes second, even so not many are exclusively of self-portraits (*selfie*). Most also relate to one's relationship with nature or his/her surroundings, which again brings forth the idea of belonging to something larger than oneself. Additionally, themes of friendship and hobby are also often shared—in many cases the two are related. In fact, 7.2% percent of all posts are marked for both the themes of friendship and hobby. An interesting finding is the relatively low frequency of posts related to significant other. Though many students are already in

relationships, not many are willing to share about their significant others in this assignment. As one noted,

> "There's quite a bit of a risk related to sharing about your boyfriend/girlfriend. Since my classmates and my instructor will see my posts, along with others, I didn't want to appear boastful about my relationships. That doesn't mean significant other is not important for me; I'm just not comfortable sharing about them."

Additionally, this online self-disclosure activity allows for reflection and gives an opportunity for students to interact with one another across platforms, sharing information that would otherwise be unknown to one another. Students tend to gravitate towards certain topic that would garner more "views" and "likes", while avoiding negative "comments". Encouragingly, students generally report positive experiences from this activity. Online self-disclosure allows all students, including ones who are less sanguine, to have an avenue to express themselves and share something about them with new friends and a new lecturer. This could potentially improve the students' offline participation and classroom interaction.

CONCLUSION

Self-disclosure is an important avenue with which to improve student participation, to facilitate interaction, and to achieve the learning objectives—as previous studies have shown. The current study shows that student self-disclosure can be attained through social media interaction, one of which is through posting photos and videos on Instagram on certain topics that encourage self-disclosure. The findings from 180 self-disclosing Instagram posts from university students at the beginning of a new semester indicate that the majority of the students tend to disclose descriptive typology of visual posts, due to their lower perceived risk compared to evaluative and topical posts. Students are more willing to disclose their experiences and activities, compared to evaluative and topical typologies that are seen as having more perceived risked when shared with fellow students and the lecturer.

From the students' visual posts related to the theme "#myworld", several themes emerged in the Instagram images and videos, namely family,

self, friends, hobbies, and religion as the top five recurring themes. These themes are also seen as having less perceived risk, compared to for instance sharing about activities with or affection towards a significant other. Students generally perceive this activity positively, as a way to interact with classmates and get to know one another better—using online social media as the platform with which to achieve out-of-class interaction. Using the Instagram posting as an activity in the beginning of the semester, subsequent classroom interaction can be enhanced due to the availability of the posts online and the opportunity to use cross-platform self-disclosure for the students.

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Linguistics and social Media - A study with special reference to Malayalam

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With the emergence of web 2.0, the potentiality of internet has changed from a mere information network into a popularized interpersonal resource. Computer mediated communication especially Social Media has revolutionized all branches of knowledge with new requirements even at the theoretical level. It has created ambiguities in the traditionalists because of the irrelevance of their theories regarding the lack of capacity to accommodate contemporary necessities including the solution of problems. Among the branches of knowledge, social Media's impact is highly manifested in the field of language as it is the common platform of all Faculties. '' *How Language works* is not about music, or cookery, or sex. But it is about how we talk about music ,cookery and sex-or indeed, anything at all''(David Crystal2007:2)

My paper focuses on the relevance of social media in the study of linguistics and how it can be utilized for this purpose in the special context of Malayalam Language. Not a single day is passed today without posting or sharing comments in social network. Even though it is a challenge to the standardization process of language, the various conversations and debates in social media is a valuable device for the study of linguistics. From the analysis of the network language we can enrich the following branches of linguistics

a)   Sociolinguistics
b)   Eco linguistics
c)   Computational linguistics
d)   Forensic linguistics

Dialectology is one of the major areas of sociolinguistics. The traditional way of studying dialect had limitations because survey participants were the only resource. As Labov observes, the informants may take double standards at the time of the interview. Due to linguistic insecurity informants may articulate artificially. For example' Bhasha' may be articulated as 'Bhaksha'. While preparing the dialect dictionary in Malayalam I also faced a similar difficulty. Some informants shifted their unique usages to standard language recognizing the survey process. Even tribal's preferred to use Sanskrit words instead of their own usages. But the unstructured posts and comments in social media contribute many regional words and phrases automatically. Some bloggers in Malayalam have taken special interest in dialect survey through interactive method. For example a post by trissur.blogspot.com contained 56 words of Trissur Malayalam. Gadi(suhruth Meaning Friend), Pranchi(Francis), Moru(Mukham Meaning Face) etc are a few among them. Forty seven blog commentators contributed more than 100 words in addition to this. Other bloggers of other districts also commented on this post. One comment from Malappuram district points out the slight difference of Trissur Malayalam from Malappuram dialect.(ex.Dav in Trissur,Davu in Malappuram). However bloggers are not linguists. Linguists should filter these collections with comparative analysis with other dialects and after the reduction of common factors we would get to a unique dialect of a region.

Nowadays dedialectalisation is discouraged by the influence of cinema and social media. In modern period, the media has not only supported the standardization process of language, but it also has been widely believed that media involvement would marginalize the local regional dialects. But contrary to this prediction regional dialects have got more room especially in the second phase of the post modern period. The acceptability of dialects in various spaces in arts and society may be the result of 'Glocalization'. Anyway social media is one of the major communicative fields for dialects. For reference see appendix -1 . Here we have a notice on Onam celebrations in Kasargod district in Kerala which was shared through whatsapp. Its language represents northern Malabar dialect of Malayalam and Mappila malayalam simultaneously. In the word's beginning /va/(വ) becomes /ba/(ബ) usually in northern Malayalam. Look at a few examples from the given notice. / belikkalə/ (ബലെിക്കല്)/ barakkalə/ (ബരയ്ക്കല്) /berɑːn/ (ബരൊന്) etc. 'Zha'(ഴ) to /ja/ (യ) conversion is the another peculiarity of northern Malayalam. In the notice' /keɪnjitə/ (കയ്ഞ്ഞിറ്റ്) Is used instead of /kazhinjittə/ (കഴിഞ്ഞിട്ട്) Manner of articulation is also

a factor to be considered in the above notice. Formal usage/ kavʊŋɪnmelə/ (കവുങ്ങിന്മലേ) is used as /kavʊŋʊmma/(കെ ഉങ്ങുമ്മ).This type of acceptability of regional dialects in phonemic dimension was not a practice or not even imaginable about a decade back. The negation of super posed variety of language is the main characteristic of social media communication. These phenomena points out the need to restructure our evaluation system in connection with language study.

Feminine and masculine variety of language also may be studied using the analysis of social media posts and comments. Earlier studies have already identified the major difference between language of men and women. Robin Lakoff's 'Language and Women's Place' is one of the notable works in this regard. According to Lakoff women are use empty adjectives and tag questions compared to Men. It is relevant even today to some extent but the awareness of gender equality has changed the language of educated women in Kerala. They have recognized the involvement of language in the discrimination process on the basis of gender. However along with assertiveness, their language also reveals their female subjectivity. For example analyzed below is a face book post (Riya Joy's post 4th April). The post is a response to a scene in a movie.

''In a movie that received a grand applause from the audience in Cinemas,the heroine with the utmost possible rage for a woman, grabs the villain by his collar and asked him ' so you will touch my daughter Will you?... 'you will touch my daughter Will you?...' . After a short pause the villain in slow-motion repeats gently in style with clarity '' I will ''. Once more he repeats the same word softly. ''I will '' I felt like plugging my ear when I heard the applause that the villain received for the scene. When the villain is branded visually as hot and stylish this negativity is also applauded by the audience (not everyone) Yes, film is a visual art -Whatever whoever is visually appealing will get applauded. Villains are no longer like the keerikkadan Joses of past. Glamour villains are as good as(if not better) than the heroes! The poisoned magic that makes loud of us applaud the bastardies uttered by him in sophisticated language ...This is nobody's fault. Still in the context of the news heard recently this cheer like thunder gun shots''(Translated from Malayalm)

In the above post the dialogue by the female character represents the unique feature of female language such as question tag, lack of commanding power etc. The narrator, even though she is expressing her ideas in a feminist

perspective she also underestimates the strength of women. Using the phrase' bastardize' the narrator involuntarily approves patriarchal hegemony. However the critique of the post by a female with its overall impact remains powerful. Her mission to release the women from the socially constructed framework of 'others', is reflected in the post.

When we make a general analysis of posts in social media we can identify various social variables in connection with language. The nature of the group will influence the language of comments. In Malayalam college campus, vehicles, cultivation and fitness are some of determining factors creating varieties in language. This type of multiple growths is the result of social media's communicative space.

The study of Eco linguistics also may be vitalized with the analysis of social media posts. In Facebook we can see a number of posts criticizing huge mansions and praising the small houses occupied by noted persons in the society. In his thesis ''New ways of Meaning The Challenge to Applied Linguistics''   Haliday argues that the use of binary oppositions in language like 'big' and 'small' will results in the destruction of natural sources . For a long period our society did not recognize the invisible dangers behind the innocent usages and expressions in language. But now within the communication territory of social media, a special kind of awareness as Haliday's concern has emerged.

Reflection of ecological sensitivity in language is the major peculiarity of social media comments. For example the posts regarding floods and land slide in Kerala represent the mindset of common people. Their descriptions and shared articles must undergo an eco- critical discourse analysis. In the earlier periods common people had no awareness about the ecological problems and protective measures. But now the accelerated use of social media has created newly constructed meanings with regards to environment.

The Western Ghats is a region in India which covers six states including the high ranges in Kerala. Inspite of people being involved in agriculture, there are still a number of endangered plants and animals. For the protection of Western Ghats the government of India appointed a committee to make a study on this area named after its chairman Madhav Gadgil and the committee submitted its report with remarks on Western Ghats as Ecologicaly sensitive area. The Gadgil committee recommended several restrictions but it was not acceptable to various sections in society

because of its lack of practicability. At that time protesters of Gadgil reports and environmentalists battled in the battle ground of social media. But after the natural calamity which took hundreds of lives, social media was flooded with environmental posts. During the period the most used Malayalam compound word in social media was 'Paristhithilolapradesam' (Ecologically sensitive area). The repeated use of this word has become a part of ecological literacy in Malayalam .Many academic usages related to the environment have become commonplace with the popularity of Facebook and Whatsapp .'Jaivavividhyam'(Bio diversity) is one of the examples from Malayalam. How ecological perspective changes language is to be observed by the analysis of social media posts. We can also compare the semantic environment and syntactic patterns of different categories such as academicians, activists and common man with regard to the subject 'environment'.

Computational linguistics is an inevitable branch of linguistics today. Scrutiny and observation of computer based communication language is essential for the enrichment of this branch. Interpersonal meaning of words is to be considered as a new semantic category in language. Besides denotative, connotative and collocative meaning , the interactive space in social media creates a unique semantic environments. In Malayalam the phrase 'Thechu ottikkuka'(paste and stick)is used frequently in social media. Its denotative meaning is not relevant. We can't find any equivalent for this usage in Malayalam. The term is meant to be understood by those who engage in social media. The communicative value of that expression is the sum of mocking, criticizing and exposing. Contemporariness of real time expressions also should be considered as a decisive factor in connection with the formation of unique meaning. So when analyzing the language in social media, the posting date should also be taken into account.

In agreement with Bakhthin's concept of heteroglosia many informal expressions in Malayalam are gaining social acceptance with the influence of social media. In trolls and highlighted posts in facebook for the past two years the most referenced expressions were 'kandam vazhi odikkuka', polikkuka, katta,kidu' etc. '' ....Many slang terms that were originally used as insults via web 1.0 (when anonymity was still a possibility)have softened interpersonally over time and come to be used for light humour in social media''(Michele Zappavingne 2012:61)

The restructured syllabi of universities in Kerala been included cyber literature. Blog literature, copied texts from print media, shares through

facebook and whatsapp and facebook poems demanding new linguistic measures apart from traditional language tools. Identifying the interactive potentiality of language helps in the narration and reading process.

Internet Malayalam is becoming widespread today, disregarding traditional grammatical concepts. There is no method in Malayalam to add Malayalam affixes to English words. But today there is a lot of such stem-affix combination on social media. For example Liky (Like+ Past tense mark 'E' which means Liked) , Posty(post + past tense mark 'E' which means posted) The interchangeability of smilies and other symbols apply to every language today.

Social media can also be useful for the study of Forensic Linguistics. "Forensic linguistics is the analysis of language that relates to the law, either as evidence or as legal discourse. Language in evidence includes the attribution of authorship and the interpretation of meaning. Language as legal discourse includes the language of statutes, judicial deliberations, the discourse of the court room and the discourse of exchanges between lawyers and others outside the court room. ''(John Olsson and June Luchjenbroers 2017:1)

Computer based communication can be analyzed to investigate crimes from small criminal cases to large terrorism cases. It is well known that AL Qaeda has recruited persons with computer science background. By reviewing linguistics features Fake ID Posts can be identified to some extent. Frequent words and syntactic patterns in Text are tools for identity detection. There are people who commit suicide after posting it on Face book.   Posts that indirectly mention suicide may be identified through linguistic review and can be counseled. 'Madakkam(Return)'samayamayi'(it's time) 'njan pokunnu' (I am going) 'theeramaduthu'(Near the shore) are some Malayalam expressions that indirectly refer to death.

Although it is difficult to determine guilt through the analysis of the language used, such studies need to be done. The study can be done through an interdisciplinary approach that combines the field of Criminology, Psychology and Linguistics. It can use infinite data on social media. Informal trials of many crimes in society are taking place in the social media. Social media comments about illegal rock mining, river encroachment and murders are often reminiscent of court litigation.

Audio analysis of video posted on YouTube will help the study of forensic phonetics. Low stress truths, low stress lies, high stress truths, high

stress lies are to be categorized for this purpose. Stands in the comment box and the tone variation of the speaker can be cross checked. Relatively high number of comments is posted in Malayalam for crime related video posts. Let us take the representation of the Koodathai murder case in social media. This is a case in which a woman killed 6 of her relatives over a 14 years. Social media is now flooded with narrations from the media, from the investigating officer, from the relatives and even from the defendant lawyer. Most of the posts are against the accused but there are also posts from the defenders side. In the youtube video (https://youtu.be/abqw-qAN_58) media person Shajan Skariah popularly known as 'marunadan ' argues that it is incredible that a woman is responsible for all the deaths in a family. He also suspects that these are fabrications created by media for channel ratings. It is a narrative that tries to make a sympathetic wave to the defendant without reference to the severity of the crime or the likelihood of the crime being committed. 90% of the comments were against the anchor because the people recognized this sort of filtered language.

In the video (https://youtu.be/DLlzX5wt8Z0) on Koodathai case, the panel discussion, which included a forensic expert, was seen. The forensic expert uses the term''accused''(kuttaropitha) instead of ''defendant''(Prati) .After a while, however ,the same expert calls the plantiff a ''clever criminal''. Here it is revealed that the language of law and that of justice are different. Legitimacy of language comes not only to punish the defendant but also to save.

Another video (https://youtu.be/gCPs6BThSUk) on the above mentioned case is an interview with the second husband of accused. Her first husband died while having food. It was thought that he committed suicide because the door of the bathroom, where he had gone to fresh up was locked from inside. 90% of people who commented have understood that the second husband was trying to evade the presenter's questions. When the presenter asked critical questions, he kept repeating, ''It is not right to respond'' It can be regarded as a sign of having received legal advice. The police are suspecting the death of his first wife and youngest child to be murder by the accused. But those who commented observed that in his language there was no natural emotions of a man who has lost his wife and child. While this is not considered as solid evidence, such observations are important in the course of the case.

In interview with the defendant's lawyer has also been circulating

on social media. The defendant lawyer argues that justice is the right of both plaintiff and defendant alike. The language related to crime trials is a unique variable in any language. The discourse analysis of texts received through litigation will undoubtedly open new way of inquiry. An officer who has conducted several investigations described the above incident as ''Penbudthi''(female intelligence)It is also a prejudicial statement considering facts like assassination without encounter, poisoning in food etc.

It is a linguistic ability to formulate queries and skillfully arrange them. Analyzing the questions and answers will give clues to the truth behind most cases. This is not to say that social media helps to prove cases directly always. On the contrary, many models of learning are available there.

In Short, Social media can be effectively used to study linguistics especially its branches socio-linguistics, Eco-Linguistics, Computational Linguistics and Forensic Linguistics. But the study should also be done considering the political nature of the media. If there is no understanding of social media marketing, the learner may come to the wrong conclusions.

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