HTML5 as Interactive Educational Media

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Abstract— Nowadays, IT development is moving into online media, the Internet. It happens because of this globalisation era's needs that urge every information to be able to be accessed by anyone, anywhere, and anytime. Inevitably, the internet development needs to keep running. HTML5 is one of the big leaps on the internet. HTML5 enables every media, such as game, and any other media that formerly could only be accessed by one PC, to be accessed by many gadgets easily. Recently, HTML5-based games have started to replace flash-based games. HTML5 based-games have started to pop out, of which can be accessed at html5games.com. The usage of game as online educational media is still dominated by flash-based games, whereas there are already many HTML5-based educational games in the Internet. For example, on www.mathplayground.com we can learn about logic and mathematics through the internet. By playing those games, we're lead to have fun while gradually improving our logic and mathematics skills. We're also able to access them using any OS, providing that it has a web browser. Because of that easiness, some developers have started to consider HTML5 as educational media. With more developers, more educational games will give their contribution to the society.

Keyword : e-learning, joy learning,html5, game

I. INTRODUCTION

Modern human life today are already familiar with the Internet. Even internet itself is a necessity. Not only as a tool to quickly access the latest information, to access social media, but also for entertainment. No wonder that information technology had began to shift to the internet, because of the so many provided convenience.

Internet development is inseparable from information technology development in this era, which requires mobility and speed. In this case, internet become one of important thing in this information and technology implementation, because internet can minimize the use of resource like the use of memory in HDD, and enable device to be made efficiently.

Internet is not only used as entertainment media, but also used as educational media. Elearning is a

learning method through electronic media, in either text or multimedia form.

One of media which has been used as leaning media is game. The use of game as learning media started in the end of 2000's. Game considered to have the privilege as an interactive media and fun. Especially for the children, they can easily study and keep entertained.

Edugame (sebutan untuk game sebagai Edugames (destignation for game as a medium of education) has widely developed, especially edugame for children. However, the use of it is still limited in offline game. But now we can play the game online using either flash or HTML5.

HTML5 is the latest version of HTML. It enables the use of interactive media and game programming. HTML5 is predicted as the substitute of flash, because HTML5 doesn't need any plugin addition and lighter to ran. And the use of HTML5 for the game programming has been moved besides the use Flash to mobile device(iOS and Android) stopped at the same time. So HTML5 can be used by any kind of devices.

II. INTERNET, HTML, AND HTML5

a. Internet

In the late 1950's the Advanced Research Projects Agency (ARPA) was founded in the United States with the primary focus of developing information technologies that could survive a nuclear attack. (Networking the Nerds)In 1967 ARPA university and private sector contractors met with representatives of the Department of Defense to discuss possible protocols for sharing information via computers. In 1969, two years before the calculator was introduced to consumers (History of the Internet and WWW) and the year after National Public Radio was established, the precursor of the Internet, ARPANET, was born. It connected four sites at the University of California at Los Angeles, the University of California at Santa Barbara, Stanford Research Institute, and the University of Utah. Throughout the 1970's researchers concentrated on developing protocols

for controlling networks, moving messages across a system of networks, and allowing for remote access to the networks. There were computers connected at about two dozen sites when the first email was sent in 1972, but the number of sites and messages soon mushroomed. By 1975 there were 63 sites. In 1980, 200 host computers were connecting 20,000 people at university, military, and government locations. Twelve years later the number of hosts had grown to more than a million internationally (PBS Timeline), and in January of 1999 there were more than 43 million. (Hobbes'
Internet Timeline v4.1)

If the 1970's were a time of research, the 1980's were a time of development. The TCP/IP protocol was introduced in 1983, and at the University of Wisconsin the name server was developed. The next year domain name server (DNS) was established. In 1986, the National Science Foundation developed a system to connect the growing number of hosts. Regional networks were connected to a backbone network, which became known as the NSFNET. As the "Internet" continued to grow and prosper, ARPANET came to an end in 1989 (PBS Timeline) just before HTML protocol was introduced in 1990. HTML allowed graphics to be sent along with text to create hypertext pages customized to the sender's preference. (Networking the Nerds) Everything was now in place for explosive growth.[1]

b. HTML

HTML (Hypertext markup language) is a markup language used to make web pages. HTML was invented by Tim Bernes-Lee, a member of CERN, in 1989.. HTML enables the online usage of multimedia which formerly couldn't be accessed online.

The development of HTML is still running since the first time it was developed. Some versions of HTML that had been used are HTML, HTML 2.0, HTML 3.2, HTML 4.0, some versions of XHTML, and the latest one is HTML5.

c. HTML5

HTML5 itself was started to be developed in 2008. HTML5 was developed to strengthen the former version and made an impression as if HTML stands alone although its syntax is closely same as SGML.[2]

HTML5 gives anything that you want when you are online, some of its features are New Attributes, Full CSS3 Support, Video and Audio, 2D/3D Graphics, Local Storage, Local SQL Database, web Applications. You can get those features without any addition plugin. HTML5 is a cross platform too, so it can be used in any gadget[3]. So, the application of either application or game are easier to use because we don't need any additional plugin.

III. EDUGAME WITH HTML5

The use of HTML5 as game programming gives convenience for both programmer and user. Because HTML5 minimize the number of plugin, data usage and time. Moreover, the use of flash is soon substituted by HTML5. For the example Apple Inc. and Android had stopped the use of flash. Steve jobs, former CEO of Apple Inc., had stopped the use of flash for Apple product since 2010.

There are so many example for edugame in the internet. You can found the examples at www.html5games.com. We can find simple game to be played there. There are both single player and multiplayer game. . It can be seen here that people have started to develop HTML-based games as flash substitute
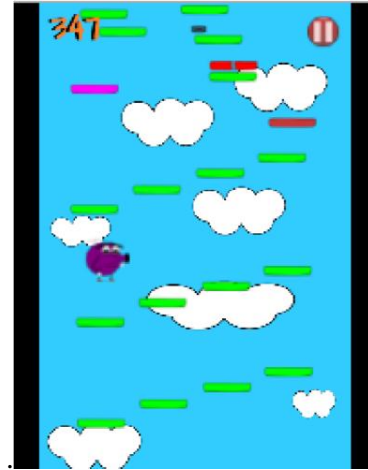

Fig. 1 The screenshoot of one of game in www.html5games.com

Fig. 2 The code of the game

For edugame itself we can find at www.mathplayground.com. There, we can find not only so many good and entertaining edugames, but also have educational value, especially math. Not only math problems, there are some logic games too. So, although it looks trifling, this site is good to visit. For the parents who have children and want their children to learn math happily, are really suggested to choose this site.

Fig. 3 The screenshot of one of the game in
www.mathplayground.com

For some example HTML5 basededugame which made by Educa studio. We can find their games at gamemarbel.com. for your info, Educa Studio is a winner of INAICTA, an Indonesian IT competition. They won the first place. There, children can study happily about some material. They have used HTML5 for their game. We think that games at gamemarbel.com have funny interface, easy to play, and good for children.

Fig. 4 The screenshot of one of the game in
gamemarbel.com

This kind of game development must continue. Considering its function, both educate and avoids the children from the danger of negative internet like pornography, violence, a and incorrect issues, because children need to grow happily without anything which can weaken their mind. Thus, they grow as what children are supposed to grow. But, the use of thet must be controlled, because everything that is too much to be done isn't good. Here, the role of parent to supervise and manage their children, not only when their children play the game, but also when they their other activity.

But there is a value we can be appoint better than the only academic. There are social value, cultural, history, and morality. So, the children can understand how to beheve and socialise. With the result of that, we hope there will be created humans who have morals and wisdom who will lead the world in the future. So, we can achieve a safe and peaceful world, with people who respect each other, respect the freedom of the other nation, then the world will be restored to the condition as it is supposed to be, the world that is good for human being.

V. CONCLUSIONS

HTML5 is one of the big leaps on the internet, so much thing we can do with HTML5. Insert multimedia files and making application with no plugin addition.

The use of HTML5 for the edugame is good to be developed, because HTML5 is a cross platform language, so we can use any gadget as long as there is web browser, the games enable to be played. Besides educating the player, edugame has function to protect the player from the negative effect of internet, especially for the kids.

With the implementation of the good value and the conveniences are given, HTML5 based-game can be a good big leap for the delivery of educational message which can easily accepted by the society. So, it can press the number of internet misapplication and internet can still be a useful media for the society.

Base on academic excelent, she recieves scholarship from Ministry of National Education of Republic Indonesia (Beasiswa Unggulan Kemendiknas RI).

Irse Surya Bagaskara is Game Technology student, Soegijapranata Chatolic University Technology. Base on academic excelent, she recieves scholarship from Ministry of National Education of Republic Indonesia (Beasiswa Unggulan Kemendiknas RI).

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[3]Anonim, HTML5 Introduction, http://www.w3schools.com/html/html5_intr o.asp, accessed at Sunday 30 November 2013.

Tenth International Conference on eLearning for Knowledge-Based Society
December 12-13, 2013 at Srisakdi Charmonman Institute of eLearning, Siam Technology College
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Ref: eLearn2013/0057

November 6, 2013

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Dear Widyarto Erdhi,

On behalf of the Organizing Committee for the Tenth International Conference on eLearning for Knowledge-Based Society 2013 with the topic of "Theory and Practice in eLearning, mLearning and Social Webs", we would like to inform you that your paper has been accepted for presentation at the Conference.

The Conference will be held on 12-13 December 2013 at Siam Technology College.   We would like to express our sincere appreciation for your contribution and support to eLearning 2013 Conference, and look forward to meeting you at the conference this year.

Sincerely Yours,

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42 Papers from 12 Countries

(Arab Emirates, China, Hong Kong, India, Indonesia, Iran, Korea, Malaysia, Norway, Philippines, Singapore, and Thailand)

Thursday 12 December 2013	
Auditorium	
08:00-09:00	Registration
09:00-09:05	**Report to the Chairman** By Prof. Dr. Srisakdi Charmonman President of Asia Pacific eLearning Association
09:05-09:25	**Opening Address** By H.E. Air Chief Marshal Kamthon Sindhvananda, Privy Councilor
09:25-09:30	**Welcoming Remarks** By Mr. Pornphisud Mongkhonvanit President of Siam Technology College
09:30-10:00	*Coffee Break*
10:00-12:00	*Session 1 – 4, Auditorium*
10:00-10:40	**Session 1:** Session Chair: Assoc. Prof. Dr. Churairat Duangduen Keynote Address: A Proposed New eLearning Law in Thailand. By Prof. Dr. Srisakdi Charmonman and Mr. Pornphisud Mongkhonvanit, Thailand.
10:40-11:20	**Session 2:** Session Chair: Assoc. Prof. Dr. Churairat Duangduen Keynote Address: A New Paradigm of Research and Practice of Online Technology-Assisted Education in Knowledge-Based Society. By Prof. Hoisoo Kim, Korea.
11:20-12:00	**Session 3:** Session Chair: Assoc. Prof. Dr. Churairat Duangduen Keynote Address: Learning and Social Technologies. By Aurilla A. Bechina, Norway.
12:00-13:00	*Lunch*

	Session 4a – 8a, Seminar 1.	Session 4b – 8b, Seminar 2.	Session 4c – 8c, Seminar 3.
Thursday 12 December 2013			
13:00-17:00	**Session Chair: Dr. Varit Intrama**	**Session Chair: Dr. Suwat Saktrisul**	**Session Chair: Dr. Yudh Jayapravitra**
13:00-13:30	**Session 4a:** Keynote: The Kinematics of Lesson Design: Mobilising Technology with Gagne's Nine Events of Instruction. By Prof. Dr. Rozhan Mohammed Idrus, Malaysia	**Session 4b:** Keynote: Collaborative Blended Learning-Balancing the Content, Process, and Product. By Dr. Tsoi Mun Fie Raymaond, Singapore	**Session 4c:** Keynote: Success in the future of Social Media Education with UGC. By Mr. Pornphisud Mongkhonvanit, Thailand
13:30-14:00	**Session 5a:** Design and Development of a Mobile Game-Based Learning Application in Synonyms, Antonyms, and Homonyms. By Ellenita R. Red, Kenneth Edward D. Domingo, Kristian Martin F. Santos, and Joy T. Banaag, Philippines	**Session 5b:** The Development of Blended Synchronous and Asynchronous e-Learning for the Subject of Computer Game in Education. By Jutima Methaneethorn, Thailand	**Session 5c:** Comparison between Edmodo, Facebook, and Moodle to Maximize the E-Learning Benefits. By Viena Patrisiane, Stephanie Inggrit, and Ridwan Sanjaya, Indonesia
14:00-14:30	**Session 6a:** Opening the "Black Box" of Collective Intelligence. By Christian Wagner and Ayoung Suh, Hong Kong	**Session 6b:** Mobile Application Integration Framework for Educational Institutions. By Cecilia Mercado and Perry Agustin, Philippines	**Session 6c:** Application the Concept of Technology for the Production Multimedia and Computer Graphic Animation Course Content. By Azman Fadzil and Prof. Dr. Rozhan M. Idrus, Malaysia
14:30-15:00	**Coffee Break**		
15:00-16:00	**Session Chair: Dr. Ponklit Tantiyanukul**	**Session Chair: Dr. Niwes Wongsuwan**	**Session Chair: Assoc. Prof. Dr. Somkul Thawonkit**
15:00-15:30	**Session 7a:** Keynote: E-Learning for Science and Technology Courses in the SIM University. By Kin Chew Lim, Singapore	**Session 7b:** Keynote: Offering an Integrated High School Course Online - A Structural Equation Model of Causality and Determinants. By Masood Badri, Arab Emirates	**Session 7c:** Keynote: The Implication of Access to Knowledge Mobilization in Development Area. By Seyed Reza Eftekhari, Iran
15:30-16:00	**Session 8a:** The Factor Affecting the Benefit of E-Library Usage for Class Assignment Purpose of Kasetsart University Students. By Parida Kovitvanich, Dr. Kamapanat Pensupa, and Dr. Nirote Sinnarong, Thailand	**Session 8b:** Measuring the eLearning Readiness of Students, Faculty Members, and Administration at Malayan Colleges Laguna. By Ellenita R. Red, Hanna Grace S, Borlongan, Tesalonica T. Briagas, and Ma. Jonessa M. Mendoza, Philippines	**Session 8c:** Education Game and Child's Curiosity. By Fajar As'Ari, Septyana Yunanto, and Erdhi Nugroho, Indonesia

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12 - 13December 2013at Srisakdi Charmonman Institute, Siam Technology College,
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Philippines, Singapore, and Thailand)

Friday 13 December 2013			
08:00-09:00	Registration		
	Session 9a – 13a, Seminar 1.	Session 9b – 13b, Seminar 2.	Session 9c – 13c, Seminar 3.
09:00-12:00	Session Chair: Dr. Varit Intrama	Session Chair: Dr. Suwat Saktrisul	Session Chair: Dr. Yudh Jayapravitra
09:00-09:30	Session 9a: Keynote: Using Technology for Education in Thailand: Ramkhamhaeng University. By Assoc. Prof. Raviwan Srikramkran, Thailand	Session 9b: Keynote: Mobile Extracurricular Lesson. By Dhian AdiPutranto, Indonesia	Session 9c: Keynote: E Learning- An Effective Way of Learning for Young Children. By Tasina Halarnka and Deepak Kulkarni, India
09:30-10:00	Session 10a: eLearning, Online Assessment and Certification for Finishing Schools: A Global Utility Product. By Kulkarni D.G. and Prakash Kittur, India	Session 10b: Access to Knowledge Model in the Context of Organizational Innovation. By Seyed Reza Eftekhari, Amir Amonosharieh Najaf, and Seyed Masoud Jalilian, Iran	Session 10c: Designing "Science Breaker" Game for Children Science Learning. By Melinda Safitri, Nurvianto Nugroho Putro, and Bernardinus Harnadi, Indonesia
10:00-10:30	Session 11a: Improving Intelligence with Sandbox Game. By Edward Andipratama, Evan Wijaya, and T, Brenda Chandrawati, Indonesia	Session 11b: Using Serious Games to Support Learning in Healthcare. By Olaf Hallan Graven and Aurilla Aurelie Arntzen Bechina, Norway	Session 11c: Past, Present and Future: From Traditional Language Laboratories to be Digital Language Laboratories and Multimedia ICT Suites. By Dararat Khampusaen, Thailand

10:30-11:00	Coffee Break		
11:00-12:00	**Session Chair:** **Assoc. Prof. Dr. Sutham Lertpongprasert**	**Session Chair:** **Assoc. Prof. Dr. Sak Kongsuwan**	**Session Chair:** **Assoc. Prof. Dr. Somkul Thawonkit**
11:00-11:30	**Session 12a:** Keynote: A Postgraduate E Learning "Seat-in Class" for Far Away Architects, in Indonesia. By Rudyanto Soesilo, Indonesia	**Session 12b:** Keynote: Business Strategic Learning with Monopoly Game. By Yonathan Happy Setiawan, Yoel Nara Yudha Bahagia, and Erdhi Wiyarto N., Indonesia	**Session 12c:** Keynote: ASEAN Schools. By Andreas Becker and Jarinza Sonvisai, Thailand
11:30-12:00	**Session 13a:** Conceptual Framework for Mobile Online Testing (MOTS). By Ratapong Onjun, Kacha Chansilp, and Sompan Chansilp, Thailand	**Session 13b:** Moodle Preference Analysis in Computer Science Faculty Student in Soegijapranata Catholic University. By Stephanie Inggrit and Ridwan Sanjaya, Indonesia	**Session 13c:** Social Networking Game as a Way to Learn Nations Characteristics. By Yoshua Adenandya Krishanto, Lidya Oktorina Kusuma Sakti, and Erdhi Widyarto Nugroho, Indonesia

Friday 13 December 2013		
	Session 14a – 20a, Seminar 1.	Session 6b – 12b, Seminar 2.	Session 6c – 12c, Seminar 3.
13:00-14:30	Session Chair: Dr. Ponklit Tantiyanukul	Session Chair: Dr. Suwat Saktrisul	Session Chair: Dr. Niwes Wongsuwan
13:00-13:30	Session 14a: Keynote: PUBLEASHED.COM: A Website for Publishing Literary Works of Students at Malayan Colleges Laguna. By Ellenita Red, Luis Emmanuel, Efren Jr. Banaticla, and Jonald Basco, Philippines	Session 14b: Keynote: Collaborating E-Learning in Demonstration of Mechanical Practical for Engineering Students. By Akhil Deshpande, India	Session 14c: Keynote: When Online Learning Meets Social Multimedia: a Better Understanding of Learners and Learning Materials. By Jitao Sang and Philip Tsang, Hong Kong
13:30-14:00	Session 15a: A 4Ps Marketing Game. By Wanida Wadeecharoen and Athiwat Kanjanawanikul, Thailand	Session 15b: HTML5 as Interactive Educational Media. By Irse Surya Bagaskara, Adit Rama Putra, and Widyarto Erdhi, Indonesia	Session 15c: Development and Evaluation of Engineering Drawing 1 elearning Module of Malayan Colleges Laguna. By Generoso L. Loza and Apollo P. Portez, Philippines
14:00-14:30	Session 16a: Gaming and Leaning for a Better Health: Concepts, Challenges and Opportunities. By Aurilla Aurelie Bechina and Olaf Hallan Graven, Norway	Session 16b: Assembly Computer Learning with Game. By Veinta Sonrizky Mayo, Leocadia Desy Pranatalisa, and Widyarto Erdhi, Indonesia	Session 16c: Developing Model of Idea Generating Process for Graphic Design in Thailand. By Tawatchai Kansrirat and Paiboon Kiattikomol, Thailand