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Empowerment of Small Medium Enterprises through Student Participatory Action Research in Implementation of Accounting Information System Alexandra Widjaja 1 ,* and Shandy Matitaputty 2 1 Accounting Department, Faculty of Economics and Business , Soegijapranata Catholic University, Jl. Pawiyatan Luhur IV , No. 1, Bendan Dhuwur, Tinjomoyo, Banyumanik,, Semarang 50235 , Indonesia 2Taxation Department, Faculty of Economics and Business , Soegijapranata Catholic University, Semarang 50235, Indonesia

Abstract . Small Medium Enterprises (SMEs) as a vast growing industry are inhibited by its lack of resources, such as capital funding, skill, and technology. It leads to the lack of business information, which is important to be used in decision making process. Accounting Information System (AIS) will enhance their business informations availability and reliability. SMEs need to be supported on designing their AIS. This article aims to propose a learning model in AIS course that could affect both students and community through a project based learning . Project based learning model will enhance, not only students cognitive ability, but also give them the opportunity to empower their community. This study is expected to help the student becomes both cognitive and affective excellence under-graduate. This study was conducted using a

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participatory action research which is a collaborative research that equitably involves all partners. The subject of this research is students of Accounting Information System course, Faculty Economic s and Business, Soegijapranata Catholic University, Semarang , and the targeted community, which is small medium enterprise s in Semarang. This research is conducted through four phases, i.e (i) observation ; (ii) Analyzation and Design Planning ; (iii) Actuating; and (iv) Evaluation and Monitoring. Key words: Accounting information system , community empowerment , participatory action research, small medium enterprise 1 Introduction and b ackground Small Medium Enterprises (SMEs) are a fast -growing industry, in terms of number. It constitutes large part of private sector in developing countries. SMEs become important for several reasons. It has wide dispersion across rural economies. It also able to employ labor force as it provides an opportunity for e ntrepreneurial skill to grow [1]. SMEs based on home industry, so usually they have some limited resources. Thus, it has several growth * Corresponding author: alexandra.adriani.w@gmail.com SHS Web of Conferences 59, 01002 (2018) https://doi.org/10.1051/shsconf/20185901002 APRCSL 2017 ?

2 SHS Web of Conferences 59, 01002 (2018) https://doi.org/10.1051/shsconf/20185901002 APRCSL 2017 constraints, including (i) lack of capital, business information, technology and skilled worker;

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(ii) difficult ies in processing raw materials; (iii) marketing and distribution challenges ; and (iv) govern ment policies and regulation [1]. SMEs seldom has financial statement, many of them even does not have an accounting record. SMEs tends not to separate their business capital with o wner s fund. It is common to find SMEs which record their sales, but not their procurements. SMEs also tends not including labor cost into their cost -of -good -sold calculation, not to mention the overhead cost. Their nescience toward accounting recording pr ocess lead them to a lack-information condition. This condition inhibits their growth, even threaten their business. The absence of accounting information, such as cost of goods sold, gross profit, net profit, etc actually make SMEs unaware of their busine ss s recent condition. It may lead to a false decision making. It also inhibits them to embrace wide opportunity in funding choices, such as government funds or bank loan, because those funding usually eligible for SMEs which could show a reliable financia l statement. Despite of its constraints, there are still opportunity, widely open, for SMEs. Linkage with subcontract or wholesaler could stimulate its technology development [2]. SMEs are also found to be able to respond more quickly and flexible to sudde n shock [3]. It is because they are less dependent to formal market or credit. One way to support SMEs is to enhance their accounting skill so they can have accounting information system and generate their own accounting information and financial statement . Nowadays, it s difficult to differ accounting information system with a series of computer software. But, if we look back on its definition, system is defined as a set of two or more interrelated

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components interacting to achieve a goal [4]. It is clear that in term of definition, system is not identic with a computer software. So, it is very possible to apply an accounting information system in small medium enterprise. Accounting information system could be formed in a series of simple procedures. System development could be formed in a simple document design nor a function separation between its employees. This article is proposing a combination of learning model, which is a contextual teaching model and project -based learning model. Contextual teaching model is needed to nurture studen t s knowledge of related topic. Giving them an up to date case study will enhance their theoretical knowledge based on professional world practice. Learning from the best could be a good foundation form them to, later, imp lement their knowledge through a project -based learning model. Project -based learning model is an innovative learning model, driven by students themselves and facilitated by teacher [5]. Instead of focusing on the teacher, this model is focusing on the lea rner, encourage them to do in- depth analysis toward a certain area [6]. This is also one way to fill the gap between theoretical ability and knowledge -implementation ability. **15** One way to give them a real -word practice is giving them an opportunity to be an apprentice in a company with a good Enterprise Resource Planning (ERP) implementation. With this internship, the students could see the actualization of ERP implementation with a high -quality standard, but it does not give them a chance to practice designi ng an accounting information system. The other way is bringing the other side of the spectrum, which is small medium enterprises, which are not only needed

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help to develop their accounting information system, but also lack of resources. Dealing with small medium enterprise means the student will deal with a smaller scope of system design. This learning model combination could affect both cognitive and affective ability of undergraduate students. Education should generate holistic graduates, meaning educati on not only focused on cognitive ability but also enhance their affective towards community. Cognitive -excellent graduates could be successful, but whether they are fruitful could be debatable. Education not only make people smarter, but along with its lea rning process, education must also enhance humanity. The objective of education is supposedly to give 3 SHS Web of Conferences 59, 01002 (2018) https://doi.org/10.1051 /shsconf/20185901002 APRCSL 2017 proposing project-based learning model to bring their learning process to the next level. Project- based learning is a comprehensive approach to learning. It includes reading, writing, research, and even communication skill. Learning responsibility, independence, and discipline are three outcomes of project -based learning [5]. Students are driven to apply steps they learned in the class to bring out a solution. The solution has to be applicable, it m eans that they have to consider every possibility and its consequences. 3 Methodology This article use s a participatory action research, which is a collaborative research that equitably involve all partners, i.e student, teacher, and elected small medium enterprise. Participatory action research uses result of research to participate in society s life. Participant do an action through an engagement with experience. Figure 1 showing that part icipatory action research build s the society by implementing resea rch result in the form of

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actual action. Fig 1. Participatory Action Research [15]. Participatory action research is a qualitative research method. Thus, its purpose is to describe and to understand , rather than to predict and control, a research issue [16]. It is considering people involved as social beings. Consequently, participants recognize as contributors, not just subject, of the research [1 6, 1 7]. The process of participatory action research itself basically is a systematic learning process that involves making critical analyses [17]. This concurrent process establishes self -critical communities, starts with the collaborator of the research itself. There are various methods used in participatory action research. Collaborators could utilize observa tion technique, interview, and focus group discussion. This research method is a cyclical process consist of planning, acting, observes, and reflecting [16, 18 20]. These steps are continuously repeate d until an issue is solved, just like pictured in Figure 2. PAR generally has the same pattern as Action Research (AR), both approaches have sequences of planning, action, reflection, and evaluation. In particular, PAR shows participatory and democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes [20]. The PAR method for education in this article has the same implementation pattern as the PAR method in general. The first phase is 4 SHS Web of Conferences 59, 01002 (2018) https://doi.org/10.1051/shsconf/20185901002 APRCSL 2017 proposing project-based learning model to bring their learning process to the next level. Project- based learning is a comprehensive approach to learning. It includes reading, writing, research, and even communication skill. Learning

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Research (AR), both approaches have sequences of planning, action, reflection, and evaluation. In particular, PAR shows participatory and democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes [20]. The PAR method for education in this article has the same implementation pattern as the PAR method in general. The first phase is planning a chan ge; the problems of SMEs and Accounting Information System (AIS) are studied, and then formulated to the preparation of planning through syllabus and lesson plan. The second stage is action, at this stage students observe and understand the business operation cycle, as well as facilitate the choice between available options and guiding the implementation; the last stage is Evaluation and monitoring, demanded all the partners to evaluate the result. This method could be done co ntinuously and also expanded. Fig 2. Steps in Participatory Action Research [2]. This cyclical process benefited the collaborators through various ways. In education, PAR can be used to improve the quality of education through improving the quality of l earning methods and improving the quality of teachers. PAR creates more specific learning, enriches educational discourse, and serves to improve teacher professionalism [18] . Students enhancing their critical thinking ability during their systematic learni ng process. Communities also introduced to self -critical process that could encourage growth and improvement. Teachers also improve teaching practice by dealing with complicated society, challenging their performance and professional role [20] . Despite of its advantages, participatory action research has its own challenges. The collaborative process demanding commitment from

all collaborator, including community member involved in it. Driven by a different purpose with the other collaborator, students and lecturers, sometimes community members are easily losing their persistence. This method also challenges either students or teacher to manage divergence of perspectives, values and abilities [16]. It also has no set end date , so sometimes it s difficult to determine when an issue is resolved [19]. Students participated in this project are students of Accounting Information System course. This course offered for, at le ast, second year student. This three credits course usually taken by, approximately, 200 stu dents. They were divided into 25 groups. Each group will visit their partner six times minimum, with lecturer s accompanied in two of it. Students are choosing possible SMEs to be their partner. Partner are selected through criteria. First, it has to be cat egorized as a small-medium enterprise as per Standar Akuntansi Keuangan Entitas Mikro, Kecil dan Menengah (Accounting Standard for S mall M edium Enterprise s (SMEs)). Second, it has an organization structure consist of owner and employees. Many of the small -medium enterprises are prac tically runs by its owner only. There is no function differentiation between owner and employees. In those business, there is few possibilities of conflict interest. Internal control urgently needed in an environment where more t han one interest emerged. So, it is not ideal for learning an internal control design in a simple organization where the owner is responsible for every practical decision. Two -layer organization structure ensure that student could have a practical experien ce in 5 SHS Web of Conferences 59, 01002 (2018) https://doi.org/10.1051/shsconf/20185901002

APRCSL 2017 6 SHS Web of Conferences 59, 01002 (2018) https://doi.org/10.1051/shsconf/20185901002 APRCSL 2017 designing internal control. Partner with two-layer organization usually also has a wider scope of business process and already need more complex information system. Third, partner voluntarily involved and agree to fully participate in this project. Information system implementation is a circular process. It does not end in one cycle only. Evaluation and monitoring are needed after the implementation and any suggestion or development could emerge from the last phase. To maintain this project s benefit, along with its sustainability, partner must agree to fully participate for a long -term and continuous project. Students also have to consider that they are dealing with a real business, so their solution should not delay partner s business process. It is important to make sure that partner could utilize the information system. Learning outcomes are seen from various aspects, such as the development of students understanding, the liveliness an d enthusiasm of students and SMEs who are accompanied. This mean s that the success of learning through the PAR method is not only measured by the drastic changes of the accompanying SMEs, but rather the learning process as well as the changing mindset and enthusiasm of all parties involved. The criterion of success is not whether participants have followed the steps faithfully but rather whether they have a strong and authentic sense of development and evolution in their practices, their understandings of their practices, and the situa tions in which they practice [18]. This learning model will b e evaluated by certain criteria. First, student s ability to implement their theoretical knowledge in the

real -world practice. It will be evaluated by (i) q uestionnaire to measure if partner could implement the k nowledge shared by student, i.e : current system design, alignment of proposed system design according to partner s need and condition, understandability and easiness if system design implementation. Questionnaire will be filled by partner and lecturer; (ii) a ssessment form filled by partner and lecturer . Second , student s empathy and concern towards community . It will be evaluated by a q uestionnaire filled by partner to measure (i) s tudent s ability for listening partner s obstacles or complaint ; (ii) student s ability to speak politely and show humility in front of the partner ; and (iii) student sincere help toward partner s need to have a good accounting system . Last, student s response toward the implementation of service learning model . Questionnaire will be filled by students to collect their feedback about service learning model. Evaluation for partner is clearly shown by the progress of this project itself. The preliminary observation generates a preliminary report explaining recent condition of SMEs AIS. The final report of this project clearly shown the difference before and after SMEs joining this participatory action research project. 4 Practical implementations In Accounting Information System course , students will be taught about business process cycl e along with its internal control. At the earlier stage of this course, the students are introduced to accounting information system. They overview transaction processing and enterprise resource planning system. They equipped with the ability to document s eries of procedures using a data flow diagram and flowchart. The course continued with a knowledge of internal control framework . The first

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framework introduce to student is internal control framework established by the Committee of Sponsoring Organ ization (COSO). Internal control -Integrated Framework and Enterprise Risk Management Framework issued by COSO is widely accepted and usually incorporated into policies, rules, and regulations used to control business activities. According to COSO - Enterprise Risk Management (COSO -ERM) , internal control is a risk -based approach. Begin with objective identification, COSO -ERM identify all risks possible to occur. A risk assessment conducted for each risk to determine its risk response. 7 SHS Web of Conferences 59, 01002 (2018) https://doi.org/10.1051/shsconf /20185901002 APRCSL 2017 8 SHS Web of Conferences 59, 01002 (2018) https://doi.org/10.1051/shsconf/20185901002 APRCSL 2017 expensive and do not ad d costs as much as possible. Students are encouraged to utilize and optimize partner s resources to avoid capital addition. Students, then, have to explain the new design to the partner. Partner is encouraged to give feedback regarding the proposed design. 4 .3 Actuating Once the proposed design is agreed, p artners begin to implement the syste m design. They are suggested to implement the new design by module . Students act as a facilitator during the implementation process. In this phase, students also have to acknowledge any obstacles or difficulties in the implementation process. Students are encouraged to do an immediately action to response those obstacles. It is very important to remind that this phase is emphasizing student ability to really engage with clients, go side by side with them, during the implementation. SMEs entrepreneur usually comes with a very diverse background. Many of them do not have knowledge

nor experience regarding accounting process. Thus, it is very common to find reluctance to change. Some clients may find that accounting is very difficult to understand either or to implement. Student will learn to overcome these obstacles by training and educating clients, oversee each step of implementation. It will lead them to an immediate response to any reluctance and obstacles during this phase. Teacher has to supervise this p hase to guide the student through e real -life system implementation experience. Not only to supervise students, but to relate with partner, ensure their cooperation and satisfaction. 4 .4 Evaluation and m onitoring This phase started after all modules are implemented. Partners evaluate the new system implemented. Students are also monitor the system implementation followed by submitting their final report to teacher. It is common to, still, report some limitations. However, students are limited by duration of the program. It is also common that there is no single perfect system fit on the first time of implementation. Again, it is, indeed, a cyclical process. To enhance the sustainability of partnership, if there are any further development possibilities, it will be followed -up by the next round group. Therefore, students are suggested to report obstacles, difficulties and further development possibilities. These reports will be used as a preliminary report for the next group of students. And, therefore, also , important for teacher to maintain a good relationship with the partner. However, teacher is the linkage between student and partner. Due to the nature of the cycle itself, this last phase is not an end to the partnership. But, it is the last phase for th e current group of students. The partnership itself has a

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tendency to become an endless improvement process. But, along with the process, the partner also improving, and there will be some conditions that it could be considered established in term of Accou nting Information System implementation. It is important for teacher to propose those criterions so an end date could be set. Then, the other SMEs has a chance to have the same partnership project. This participatory action research clearly affected the SM Es in their Accounting Information System (AIS). Major changes and development has been made in each module just as summarized in Table 1. Table 1. Result Summary . Module Before Participatory Action Research After Participatory Action Research Revenue and Cash Collection Seldom have sales orde r documents Seldom make organized sales records There are sales or der documents There are sales records per day Purchasing and Cas h Disbursement Not able to calculate cost of goods sold Does not collect c ash disb ursement document consistently Have knowledge about cost -of - goods-sold calculation Organized files of cash disbursement document Modul e Before Participatory Action Research After Participatory Action Research Production Does not include labor cost as par t as product cost Lack of accounting information as consideration of business decision making Ha ve knowledge how to calculate labor cost Have accounting information abou t cost of goods sold and profit/loss Human Resources Does not have sufficien t AIS knowledge and skill Does not have sufficient accounting knowledge an d skill Does not separate between business and personal financial Introduced to accounting procedures as part of AIS Practicing simple accounting recordi

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ng process Start to separate between bu siness financial and personal fund s General Ledger Does not have financial statement Does not have c ost information regarding fixed and variable cost. Could generate simple financial statement Have reliable fixed and variable cost information 5 Conclusi o n This participatory action research shows all parties benefited concurrently as targeted. Student has a real -life experience about observing, analyzing, designing and implementing an Accounting Information System (AIS) design. This is known through stude nt s feedback in the questionnaire during evaluation. Evaluation with partner and lecturer s field monitoring show that (i) Selecting SMEs as partner, ensure that this project does not overwhelm for the student, but at the same time challenge their cogniti ve, affective, and even their commu nication skill; (ii) Partner has benefited directly in the form of AIS design. It included forms, document, standard operating procedures, and even reporting, that could s upport their business operation. However, this me thod has its constraints. Commitment of the community could be a challenging factor that endanger this project sustainability. Therefore, it is important to maintain a good relationship with partner, and even better if this project could be institutionaliz ed. Other constraint is the difficulties to set an end date for a partner. Because AIS development is a cyclical process, this project has a tendency to become an endless cycle. Thus, at the beginning of partnership, it is important t o have certain benchmarks to indicate that the partner has met certain condition to be considered established, in the term of AIS implementation. Once a partner considered established, the project could

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learning addressing faculty questions about student centered learnin g [Online] from http://ccliconference.org/files/2010/03/Froyd_Stu -CenteredLearning. pdf (2010). [A ccessed on 5 April 2017]. 15. R.G. Berns , P.M. Erickson, The Highlight Zone: Research@work, 5:1 9(2001) . https://eric.ed.gov/?id=ED45237 6 16. **8 9 10 11** J.M. Chevalier & D.J. Buckles , Participatory Action Research: Theory and Methods for Engaged Inquiry . **8 9 10** London: Routledge (2013) . https://www.routledge.com/Participatory -Action -Research -Theory -and -Methods -for - Engaged -Inquiry/Chevalier -Buckles/p/book/9780415540322 17. C. McD onald, CJAR, 13,2:34 50 (2012) . https://journals.nipissingu.ca /index.php/cjar/article/view/37 18. R. McTaggart, 16 tenets of participatory action research , (1989). http://www.caledonia.org.uk/par.htm 19. S. Kemmis , R . McTaggart, Participatory action research . In : Strategies of Qualitative Inquiry. N.K . Denzin, Y. S. Lincoln (Eds.). Australia: Deakin University (2003). p. 336 396. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.473.4759&re p=rep1&type= pdf 20. M. Walter, Social Research Methods . **37 38** South Melbourne: Oxford University Press (2009) . https://catalogue.nla.gov.au /Record/4605474 21. M.P.E. Morales, IJRES, 2,1: 156 165 (2016). http: //dergipark.gov.tr/ijres/issue/ 25098/264865 22. ISACA. **39** Information System Audit and Control Association . [Online] from www. isaca. org (2017). [A ccessed on October 17 th, 2017]. 11 SHS Web of Conferences 59, 01002 (2018) https://doi.org/10.1051/shsconf/20185901002 APRCSL 2017

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