TEST Engineering & Management

January - February 2020
ISSN: 0193 - 4120 Page No. 12332 - 12341

Analysis of The effects Between Paikem Implementation to The Competence, Quality, Efficiency and Effectiveness of Learning

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Article Info
Volume 82
Page Number: 12332 - 12341
Publication Issue:
January-February 2020

Article History
Article Received*: 18 May 2019*
Revised*: 14 July 2019*
Accepted*: 22 December 2019*
Publication*: 23 February 2020*

Abstract
Manufacturing practice learning is still not giving suitable results with the real world needs, which fulfill cognitive, psychomotor or affective aspects. Because of that, in the future learning, the researcher develops new method that is PAIKEM (active, innovative, creative, effective, and fun learning) based on Project Based Learning (PBL) and Cooperative Learning (CL), Student Centered Learning (SCL), Creative Learning (CrL), Effective Learning (EL), and Fun Learning (FL). The research aimed at developing and implementing the PAIKEM method with PBL, CL, SCL, EL, and FL so the learning in the accounting department is able to produce high qualified human resources to be able to compete in the global or international market. The research method was phenomenology-interpretive-qualitative and quantitative with phenomenological study. Data collection was conducted by using interview, questionnaire, documentation, and triangulation from class room action research. Method of analysis used Manova to know the influence of the PAIKEM method implementation toward competence, quality, efficiency, and effectiveness of learning. The results showed that SCL, CL, and FL influenced insignificantly toward learning competence, while PBL, CrL, and EL influenced significantly toward learning competence. Then SCL, CL, and FL influenced insignificantly toward learning quality, while PBL, CrL, and EL influenced significantly to the learning quality. Then SCL, and CrL influenced insignificantly toward the learning efficiency, while PBL, CL, and EL influenced significantly toward learning efficiency. Then SCL, CrL, and EL influenced insignificantly toward learning effectiveness, while PBL, CL, and FL influenced significantly toward learning effectiveness.

Keywords: *PAIKEM; Competence; Quality; Efficient; Effective.*

1. Introduction

Malang State Polytechnic is college with professional education background which gives emphasis the implementation ability (skill) or skill to prepare the students to become societies members that have professional abilities who are able to implement, develop and distribute knowledge and technology, and have sufficient skill. Accounting study program is one of departments in Malang State Polytechnic that has duty to produce alumni who are ready to work, skilled in accounting and able to compete in global market suitable with the vision and mission. In effort to improve learning quality in Malang State Polytechnic, the availability of high and sufficient human resources (HR) is the needed requirements to compete in national global or international market. It should be regulated to produce high performance. Valuation of

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education product quality firstly seen at the basic attitude development of such as critical attitude of scientific academic and readiness to find the truth (Yumarma, 2006). Because of that the education concept is not reduced at the test that only measure the knowledge only (*cognitive*), but to wider cover the skill formation (*psychomotor*) and basic attitude or affectiveness, such as criticality, creativity, and openness toward innovation and various findings. All of them are needed so the learner able to survive and answers the developing challenges. In this case, the educators are demanded not only as science transferors, but more than that also must have the role as enlightenment agent. Idealism of educators, borrowing the Socrates terms is eutika, the field that helps the learners to produce innovation and knowledge.

Helts (2003-2010) issued by Ditjen Dikti (General Directorate of Higher Education) on April 2003 gave mandates, one them is the implementation of SCL principle in the learning process. There are various learning methods in SCL such as *Case-Based Learning* (CBL), *CL and PBL***.** Learning process is practiced widely in the form of lecturing**.** During participation in a lecture or listening to a speech, students only understand while at same time take notes but sometimes are sleepy. A lecturer becomes the center in learning or (*teacher-centered learning*) and as if the lecturer is the only science source. Learning pattern of active lecturer with passive students has low effectiveness. Student learning effectiveness is, in general limited, occuring near the examination. Learning as determined is focused at the material understanding. From the implemented method, students do not have the picture of the material implementation in business world. Because of that, learning methods is unable to sharpen the analysis ability of students, sensitivity toward problem, problem solving and the ability to evaluate problem holistically.

Table 1. Students abilities Percentage in Manufacturing accounting practice of 2017.

Number of Students: 400

Final score	% Score of Manufacturing accounting practice
A	25%
A-	20%
B+	15%
B	10%
C+	15%
C	10%
D	5%

Table 1 showed that traditional learning method in manufacturing accounting practices showed score A of 25% students, score A- of 20% students, score B+ of 15% students, score B of 10% students, score C+ of 15% students, score C of 10% students, and score D of 5% students. Because of that, in learning of 2018, it is expected the score increases at least B and maximum A by using method innovation according to Helts, that is the implementation of the SCL by implementing PAIKEM.

2. Literature Study

Suparlan et al (2008:70) stated that PAIKEM is:

1. **Active** means that in learning process the teacher /lectures should create milieu so the learners are active to propose questions, state ideas, and solve problems.
2. **Innovative** that is teachers/ lecturer should create learning condition and learning activity that suitable with demand and development of

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education such as the use of PBL, CL, and CBL.

3. **Creative** that is teachers create various learning activities so fulfill various level of student abilities or student creativities in solving problems.
4. **Effective** that is producing what thing should be mastered by students after learning process, that is reaching goals/competence determined (KKNI).
5. **Fun** that is teachers/lecturers should able to create fun learning milieu so not bothering and the students have good focus and learning become fast with visual aid or learning materials (handout) in learning, and the use of multimedia and website.

Tarmizi (2009) stated that PAIKEM is the abbreviation of active, innovative, creative, effective and fun learning. Active means that in learning process the teachers/lecturers should "create" milieu so the students are active, make question, propose idea, and solve problems. Innovative learning is able to adapt fun learning model such as project based, cooperative, case, task and use of multimedia as visual aid. PAIKEM method is one of the ideal learning models. PAIKEM method helps students get their own idea in learning that runs the environment approach. Positive impact for the implementation of PAIKEM model is the students are encouraged to the curiosity about something in their environment. If we contemplate four education pillars namely, ***learning to how***, ***learning to be***, ***learning to do*** and ***learning to live together.***

2.1.Student-Centered Learning

Differences between learning method of *TCL* and *SCL* given in Table 1.

Table 2. Comparison of Learning method of Student and teacher centered

	Teacher Centered	***Student Centered***
A	Knowledge are transferred from lecturers to students	Students actively develop knowledge and skill they learn
B	Students accept knowledge passively	Students actively involved in managing knowledge
C	Give more emphasis to material mastery	Not only give emphasis to the material mastery but also develop the students character.
D	Use single media	Use multimedia
E	Lecturers function as the main information giver and evaluator	Lecturers function as facilitator and evaluation done together with students.
F	Learning process and evaluation separately	Learning process and valuation done integrally
G	Give emphasis to correct answer only	Emphasis at the knowledge development process. Mistake is valued become one of learning sources.

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H	Suitable to develop science in one discipline only	Suitable to develop science with interdisciplinary approach
I	Learning climate more individualistic and competitive	Climate is more collaborative, supportive and cooperative
J	Only students that are considered as doing learning process	Students and lecturers learn together in developing knowledge, concept and skill
K	Lecturing is the biggest part in in learning process	Students able to learn not only from lecturing only but also able to use various ways and activities.
L	Emphasis at the learning material completeness	Emphasis at the competence achievement of learners not the material completeness
M	Emphasis at the way how the lecturers do learning	Emphasis at the way how students able to learn by using learning materials, interdisciplinary method, emphasis at *problem based learning* and *skill competency*.

Source: General Directorate of Higher Education of National Education Department, 2004.

To "create" EL situation, Combs (1976) stated that it needs three characteristics, those are:

1. Conductive atmosphere to explore the learning meaning. Learners must feel secure and accepted. They want to understand risk and benefit from obtaining knowledge and new understanding. Class must be conductive for involvement, interaction, for involvement, interaction, and socialization, with approach similar with in the business world.
2. Learners must always be given opportunities to find information and new experiences. Opportunities given in the form the student not only accept information, but students are encouraged to find information.
3. New understanding must be obtained by students through *personal discovery* process. Method used for that must be individual and suitable with *personality* and learning style of students concerned.

2.2. Project based learning

Several aspects which differentiate the cooperative based learning with traditional learning were described by Thomas, Mergendoller, and Michaelson (1999) as given in Table 3 below

Table 3 Differences between project and CBL and Traditional Learning (TL)

Education Aspects	Traditional Emphasis	Project and Cooperative

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		Based Emphasis
Curriculum focus	Content coverage	Understanding depth
	Knowledge about facts	Concept and principles mastery
	Skill learning of "building-block" in isolation	Practice development / complex problem solving skill
Coverage and series	Follow the curriculum series firmly	Follow the learners interest and not override national curriculum.
	Run from block to block or unit to unit	Big units formed from complex problem and issue
	Centered, discipline based focus	Widen, interdisciplinary focus
Teachers/lecturers role	Speech and learning director	Learning source provider and participant in learning activities
	Expert	Supervisor/ partner
Measurement focus	Product	Process and product
	Test score	Real achievement
	Compare with other	Standard performance and progress from time to time
	Information reproduction	Understanding Demonstration and find information development
Learning materials	Text, speech, and presentation	Direct original source: printed material, interview, document from real world (evaluation, improvement/update, development) etc.
	Activity and exercise sheet developed by teachers	Data and material developed by learners
Technolog	Support,	Main,

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y use	peripheral	integral
	Run by teachers	Directed by learners
	Use for teacher presentation expansion	Use to expand learner presentation or learner ability strengthening
Class context	Learners work alone	Learners work in group
	Learners compete each other	Learners collaborate each other
	Learners receive information from teachers	Learners construct, contribute, and make information synthesis
Learners role	Run teachers command	Do self directed learning activities
	Reminder and repeater of facts	Investigator, integrator, and idea presenter
	Learners receive and solve short report task	Learners determine their own task independently in sufficient
		time
Short term task	Knowledge about fact, term, and content	Understanding and application of complex idea and process
Long term goals	Knowledge width	Knowledge depth
	Graduates that have success knowledge in standard test of learning achievement	Graduate with character and skilled in developing themselves, autonomous, learn throughout life

2.3. Benefit of Cooperative Based Learning

Moursund, Bielefeldt, and Underwood (1997) studied some articles about project in classroom that can be considered as testimonial materials toward teachers, especially how teachers use project and their perception to reach their success. Benefit attributes from project based learning are follow:

1. *Improve motivation*. Many written reports about project stated that students are diligent excessively, try hard to achieve project. Teachers also report the development in presence and the lack of late. Students report that learning in project more fun than other curriculum components.
2. *Improve problem solving abilities*. Research about development of cognitive skill of the students give emphasis to the importance for

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the students to be involved in problem solving tasks and the need to learn especially at how to find and solve problems. Many sources that describe the project based learning make the students become more active and success to solve complex problem.

3. *Improve collaborative proficiency*. The importance of group work in project demand the students to develop and practice communication skill (Johnson & Johnson, 1989). Work group, cooperative, evaluation students, online information exchange are collaborative aspects from a project. Cognitive new theories and constructivist stated that learning is social phenomenon, and that students will learn further in in collaborative environment (Vygotsky, 1978; Davydov, 1995).

4. *Improve skill to manage source*. To be independent student is responsible to solve complex task. Project based Learning implemented well give to students the learning and practice in organizing project, and make time allocation and other source such as equipment to solve tasks.

2.4. Cooperative Learning Model

CL model is a series learning activities done by students in a certain group to reach learning goal formulated.

There are three ways how students interact with each other, including competitive, individualistic and cooperative. Students are able to compete, look who is the best, they can work individually to reach their goal without giving attention to the other students, or they are able to cooperate and give each other attention.

Smith and MacGregor (1992) defined *cooperative learning* as *"the most carefully structured end of the collaborative learning continuum"* (Ravenscroft, 1995). Johnon, Johnson and Holubec (1994) defined *CL* as *"the instructional use of small groups so that students work together to maximize their own and each other's learning"* (Phipps et al., 2001).

Various research about *CL* showed consistent results that *CL* will improve achievement, more positive interpersonal relationship and better *self-esteem* compared to competitive or individualistic effort (Phipps et al., 2001).

CL is expected to become more productive as compared to competitive or individualistic effort, if the cooperative effort is in a certain condition. The condition then is the basic element of CL that includes the positive independence, face to face interaction, individual *accountability*, the use of *collaborative skills* and the presence of *group processing*.

While the four (4) important elements in cooperative learning are:

1. The presence of participant in group.
2. The presence of group regulation
3. The presence of learning effort in each group
4. The presence of goals must be reached in group learning.

The learning based on grouping system of small team, between 2 to 4 persons, may have different academic capability background, sex, race, or ethic (heterogeneous), valuation system done toward group. Each group will obtain reward, if the group showed the required achievement. The group formation aimed at giving opportunities to all students to be involved actively in thinking process and learning activities.

Objectives of learning from CL such as to develop various capabilities are as follow:

1. Communication Skill of the people.
2. Initiative and creativity.
3. Synergy or cooperation.

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2.5. Creative Learning.

Creative learning (Suparlan, 2008) is a part of learning methods of PAIKEM where the students are given opportunities for creatively self-reading all the lecturing materials that will be taught in class, self finding literatures materials or exercise and implementing the taught theories in class, creative in finding, and creating something new for their own provision of life in the future.

2.6. Effective learning.

Effective learning (Suparlan, 2008) is a part of learning methods of PAIKEM where the lecturers give material or lecturing in class suitable with Indonesian national qualification curriculum (KKNI) that previously explained in RPS, syllabus, GBPP or SAP, lecturing contract before lectures begin. So the learning becomes more effective suitable with the learning goal that is creating excellent, competent, qualified, effective, efficient students in line with KKNI.

2.7. Fun learning.

Fun learning (Suparlan, 2008) is a part of learning methods of PAIKEM in giving learning materials by using several equipment or fun media learning so students will be bored, sleepy in participating in the lecturing such as the making of power point multimedia, LCD, visual aids, color board markers, and room with AC.

2.8. Competence learning stated in the form of competence test for PKA Manufacture subject unit is done by all students who have passed PKA Manufacture subjected to 400 students. Then they will do the competence test to further comprehend the subject. **Competence** includes knowledge, skill attitude obtained by the student who follows the lecturing.

2.9. Learning quality stated in the form of GPA obtained by students who follows the PKA Manufacture subject. **Learning quality** is the education quality improvement through lecture based management implementation. Learning quality can be seen from **input-process-output**-education from the learners processed by college. **Input** includes: Lecturers qualification, facilitator availability, equipment, learning material, new students. **Process** includes: Interaction between lecturers and students, effective hours for students to implement task, peer influence, facility use, equipment, and material. **Output** is the test score obtained by students at graduation level. **Outcome** is economic and social success after graduating from college.

2.10. Learning efficiency stated in the form of the availability and the use of the learning material made and prepared by lecturers. **Efficiency** is the difference between cost and benefit obtained during the lecture, cost efficiency for learning book buying, utility of lecturing cost. **Efficiency is** minimum standard use with optimum results achievement.

2.11. Effectiveness is optimization of each supporting component for effective learning, goal that can be achieved, ability to do something correctly, ability to solve well (Yones Muanley). **Success level** is education model that can be measured by output, including learning materials, learning media, learning methods, and learning model.

3. Research Method

Research design using Classroom Research Action.
Lewin Model which was interpreted by Kemmis and Carr (2005) the Classroom action Research which consists of four aspects including planning, action, observation and reflection.

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Figure 1 The Action Research Spiral by Kemmis & Taggart, 1988.

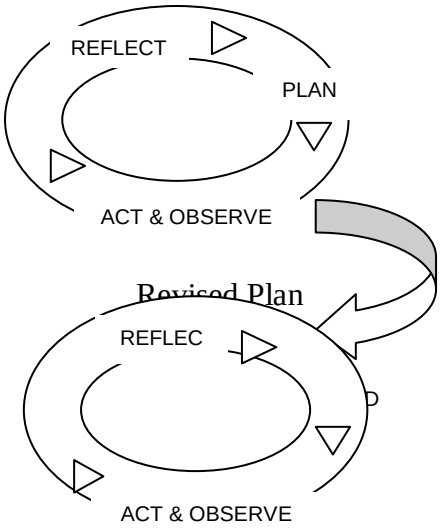

Figure 1 The Action Research Spiral

Moleong (2006) stated that Classroom action research is Problems identification, problems discussion between researchers and the research object, literature and problem review, problems redefinition, selecting the changing method and evaluation, and change implementation.

4. Results and Discussion

Subjects in the research of 400 students, at the fourth semester of 2017/2018 who are participating in the lecturing of Accounting Practice of Industrial Company in Accounting Department of Malang State Polytechnic. The research type is the post positivistic-qualitative and quantitative-phenomenology-interpretive using data collection method of interview, questionnaire, observation and discussion (*Focus Group Discussion*), triangulation and questionnaire supporting tools.

The testing results of PAIKEM Method influence (*Student Active* (X_1), *Project Based Learning* (X_2), *Cooperative Learning* (X_3)), *Creative Learning* (X_4), *Effective Learning* (X_5), *Fun Learning* (X_6) toward Competence (Y_1), Quality (Y_2), Efficiency (Y_3) and Effectiveness (Y_4) Accounting practice of manufacturing/industrial company learning with analysis tool of Manova. The research site is in the accounting department of Malang State Polytechnic with 13 classes.

Table 4. Results of students abilities in Manufacturing accounting practice after the PAIKEM implementation.

Number of Students: 400

Final score	% score Manufacturing accounting practice
A	30%
A-	30%
B+	15%
B	10%
C+	15%

Table 4 shows that PAIKEM learning method in Manufacturing accounting practice showed the score A is obtained by 30% of the total number of students, score A- by 30%, score B+ by 15%, score B by 10%, and score C+ by 15%.

The results shows that SCL, CL, and FL influenced insignificantly toward learning competence, while PBL, CrL, and EL influenced significantly toward learning competence. Then SCL, CL, and FL influenced insignificantly toward learning quality, while PBL, CrL, and EL influence significantly to the learning quality. Then CL and CrL influenced insignificantly toward the learning efficiency, while PBL, CL, and EL influenced significantly toward learning efficiency. Also SCL, CrL, and EL influenced insignificantly toward learning effectiveness, while PBL, CL, and FL influenced significantly toward learning effectiveness.

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5. Conclusion

Based on research results, then the conclusion obtained are:

1. The learning methods of PBL, SCL, CL, CrL, EL, and FL have been succeessfully implemented in the vocational education of Malang State Polytechnic.
2. The making of competence learning are based on curriculum (KKNI) through Learning Development Plan (RPP) and syllabus, GBPP and SAP.
3. The making of learning materials and exercise problems is in learning of Manufacturing PKA.
4. The making of new learning methods, namely PBL, CL, and SCL.
5. Survey results showed that the students are happier with learning methods of PBL, CL, CrL, EL and FL than the traditional method that requires only speech.
6. The students' scores become better than the previous ones.

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Acknowledgements

This paper is a part of the research report which is supported by the Ministry of Research, Technology, and Hicher Education – Republic of Indonesia.