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Effects of Problem Based Learning Strategy and Achievement Motivation on the Student's Critical Thinking Abilities

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Abstract: ***This research aims to examine the differences of student's critical thinking viewed from different motivation for achievement between the two groups. The research used quasi experimental design, with experimental group given PBL treatment and control group given group discussion treatment. The research result data is analyzed by Multivariate Analysis of Variance. The research results showed that (1) there are differences of student's critical thinking, as well as (2) there are no interactions between learning strategy and motivation for achievement on the critical thinking ability. Students taught by PBL or have higher motivation for achievement obtain optimal value.***

Keywords: learning strategy, problem based learning, motivation for achievement, critical thinking ability

1. Introduction

Entrepreneurship learning is a teaching and learning activity stimulating students to be able to conduct a business. Therefore, it is necessary for a way or strategy so that the students can solve problem faced. Basically, the entrepreneurship learning objective is to support the creation of skills to face economic challenges and provide skills to support the creation of sustainable prosperity (Hanke et. al, 2005). The entrepreneurship learning purpose can be achieved by developing learning strategy that can directly touch to problems faced by students, one of which is problem based learning strategy.

Problem based learning is a learning strategy giving guarantee on the learning effectiveness of craft and entrepreneurship subjects. In problem-based approach, real problems are used to motivate students to identify and study any concepts and principles that they need to know what to do through the problems (Duch et.al, 2001). The focus applied in this strategy is student activeness. The students are no longer given any one-direction materials, such as conventional learning strategy. So, this strategy is expected to develop university student's knowledge independently.

Research about learning strategy implementation has been conducted by Hanke, et. al. (2005), which showed that PBL strategy can enhance entrepreneurship skills. Muhson (2005) also has been conducted research about the implementation of PBL on entrepreneurship learning, which showed that (1) PBL can enhance student's attention and active participation, (2) PBL can stimulate student's learning interest in the outside of class, (3) PBL can enhance student's learning independently, and (4) PBL can enhance student's knowledge and comprehension about learning material.

PBL learning strategy has different characters to group discussion strategy, however, it still has excellences and weaknesses. In the entrepreneurship learning, the PBL learning strategy is given more expectation, because problems to be solved are problems that they face in daily life. Meanwhile, in discussion strategy, the problems are given from any topics that have been structured. Characteristics of problem based learning according to Eggen and Kauchack (2012), that are (1) the learning focuses on problem solving, (2) the responsibility to solve problem rests on the students, and (3) teaches support the process when the students are working on the problems.

This research will compare PBL learning strategy to group discussion learning strategy. Group discussion is an instructional strategy or a strategy involving students to share their ideas about one common topic (Eggen and Kauchack, 2012). In group discussion learning strategy, teacher starts the learning activity with one issue, explore and then review it. Research about group discussion learning strategy which conducted by Botelho and Donnel (2001), showed that learning with group discussion can change the learning environment into student centered learning (SCL).

Related to motivation, learning strategy will be more effective if it considers motivation for achievement factor. Nurseto (2010) argued that one with high motivation will try to do the best, have confidence on the ability to work independently and optimistically, be not easily satisfy to the obtained results as well as have big responsibility of any actions conducted so that one with high motivation for achievement will be more success in his or her life compared to they with low motivation for achievement.

The research will test on the excellent of PBL learning strategy as well as motivation for achievement having significant effects on the learning outcomes of critical thinking abilities by the students in craft and entrepreneurship subjects.

2. Theoretical Review

1) *Problem Based Learning Strategy*

Problem Based Learning is a learning strategy which use problem as beginning step to collect and integrate new knowledge. This strategy also focuses on student's learning activity. Students were not given the learning material one way such as conventional learning. By implementing this strategy, students can develop their knowledge independently.

Characteristics of problem based learning according to Eggen and Kauchack (2012), that are (1) the learning focuses on problem solving, (2) the responsibility to solve problem rests on the students, and (3) teaches support the process when the students are working on the problems.

On PBL strategy implementation, students were given some problems. Then they will strive to solve the problems together with their group which consist of 5-8 students. It hopes that students actively search the necessary information from any resource to solve the problems. The necessary information can be gained from literature, informant, and others.

There were four phases to implement PBL strategy (Eggen & Kauchack, 2012). Table 1 explains the four phases of PBL strategy implementation.

Table 1: PBL Strategy Implementation Phases

Phase	Description
Phase I: review and formulate problems Teacher review some necessary knowledge to solve the problems and give students some specific and concrete problems to be solved.	• Call student's attention and bring them into learning activity. • Evaluate the first knowledge informally. • Give concrete focus on learning.
Phase II: strategies arranging Students arrange strategies to solve the problems and teacher give a feedback.	• Ensure that students use some useful approach to solve the problem.
Phase III: strategies implementation Students implement their strategies when teacher monitor and give feedback their work.	• Give students experiences to solve the problem.
Phase IV: Result Discussion and Evaluation Teacher guide the discussion about student's work.	• Give students feedback about their work.

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Character of PBL strategy was different with group discussion learning strategy. Each leaning strategies have strength and weakness. According to the empirical studies above, PBL Strategy was more desirable, because problems that will be solved are problems which they faced every day in daily activities. While the problems in group discussion learning strategy was coming from structured topic.

2) Group Discussion Learning Strategy

Group discussion is a learning strategy which engages students to share some ideas about general topic (Eggen & Kauchack, 2012). In this strategy, teacher begins the learning activity by giving one issue, explore and then review it. The following table will explains three phases to implement group discussion learning strategy.

Table 2: Group Discussion Implementation Phases

Phase	**Description**
Phase 1 : Introduction Teacher gives one issue as opening discussion.	• Calling for attention • Give a focus topic on discussion • Activating background knowledge
Phase II : Exploration Students exploring topic, clarifying their idea, and take one position.	• Motivate student's participation • Support student's deep comprehension about the topic • Develop critical thinking and social progress
Phase III: Conclusion The main points of discussion were reviewed.	• Clearing agreement points

Research about group discussion learning strategy has been conducted by Botelho and Donnel (2001), which explains that learning with group discussion can change the learning environment into student centered learning (SCL). Implementation of group discussion learning strategy can expand student's comprehension about learning material. It can be seen from research result which can be conducted by Sabatini and Knox (1999) that group discussion learning strategy effectively can expand student's comprehension about leadership concepts. Besides that, a research about group discussion learning strategy also has been conducted by Narjes et. al. (2015), that group discussion learning strategy can enhance student's social skills.

3) Motivation for Achievement

On daily activities, we often observe students who very

active and full energy on learning activities in schools or organization. On the other hand, there were students who lazy, often absent, and passive in school or organization. What is the difference about two characters of that students?. It was being a prod question to explain the factors which form the level of motivation for achievement (high or low) on each person. According to Nurseto (2010), the forming process of motivation for achievement was complex, as complex as human personality development. Motive was cannot be separated from that personality development, and never develop on vacuum condition. We know that how great family role on individual personality development. The relationship between students and their parent as little as possible showed personality patterns and then develop with all their characteristics, include attitudes, habits, thinking style, motives, and others.

The indicator of motivation for achievement, according to Nurseto (2010), can be identified as follows: (1) doing tasks with maximal result, (2) doing something with measurable calculation, (3) think and future oriented, (4) more emphasize achievement than received pay, (5) not consumptive, but productive, (6) preference to inner orientation, (7) energetic, hard work, and fully vitality, (8) was not yield easily and feel awry when cannot do as well, (9) not forget quickly when receive a precise for his/her achievement, (10) can accept critics about his/her work conveniently, (11) more comfortable when working on difficult and challenging task, (12) feel happy naturally when winning a competition, (13) always being her/his work on the pass as feedback for next step, (14) more comfortable working on competitive atmosphere, (15) feel regret if his/her work was bad, (16) have a principal, that pay which he/she receive should suited with his/her work quality and achievement, and (17) calculating the average risk with predictable result.

Research about motivation for achievement has been conducted by Awan et. al. (2011), who discovers that motivation for achievement and self-concept have a significant relationship on academic achievement. Then, Sari and Taman (2013) in their research concluded that there was significant effect of motivation for achievement on learning achievement.

4) Critical Thinking Ability

Critical thinking ability is a cognitive ability which correlates with mind (Cotrell, 2005). Facione (2011) also explains that cognitive ability as critical thinking ability core, includes interpretation, analysis, evaluation, inference, explanation and self-regulation. Critical thinking ability was essential tools for all people on their live process (Achmad, 2007). Crirical thinking ability has concrete benefit on enhancing student's learning outcomes. Critical thinking ability can be developed with learning pattern which give a problem as beginning step on learning activity, such as problem based learning (PBL) strategy (Fathurrohman, 2008). Schublova (2008) explains his research result that there was difference of critical thinking ability between students who learn using direct learning and computer simulation.

5) Entrepreneurship Learning

The entrepreneurship learning objective is to support the creation of skills to face economic challenges and provide skills to support the creation of sustainable prosperity (Hanke et. al, 2005). That entrepreneurship learning objective can be reached by developing learning strategy which can touch directly with students faced problems. Because of it, teacher role was very important to facilitate how students will learn. Entrepreneurship learning has a characteristic which can make someone be able to create an activity independently. That education can be did by some methods: (a) building faith, soul, and spirit, (b) building and developing mental attitudes and entrepreneurship character, (c) developing thinking power and entrepreneurship way, (d) advancing and developing self-motivation, (e) understanding and commanding risk taking techniques, competitiveness, and cooperation process, (f) understanding and commanding idea selling ability, (g) having management and leadership ability, and (h) having some skill such as international language for communication (Suherman, 2010).

3. Method

The research design used is quasi experimental. This research model is used because there are obstacles in full randomization on the selection of research subjects. The experimental group in this research is given PBL learning strategy treatment, meanwhile, the control group is given group discussion learning strategy treatment. This research experimental design is Pretest-Posttest non-equivalent control group design (Setyosari, 2010).

These research subjects are students of Class X State Vocational High School 1 Situbondo taking subjects of craft and entrepreneurship. The number of students involved as the samples are 59 students and divided into 2 groups of treatment.

The instruments used in this research consist of (1) instrument to measure motivation for achievement, and (2) instrument to measure the learning achievement of critical thinking ability. The instruments used by the researchers are non-test instrument, namely to measure motivation for achievement. The assessment system conducted is giving score between 1 until 4 for each question items. For critical thinking ability instrument, the form of questions is essay. The measurement indicator is the ability to formulate problems, give and analyze argument, deduction, induction, and decision-making.

The collected data in this research is process in statistic inferential by using Multivariate Analysis of Variance (MANOVA). After all of the assumptions are met, so it is continued by anava factorial 2x2 analysis to test the research hypotheses. All of statistical analyzes conducted using computer software of statistical package for Social Science (SPSS) version 20,0 for Windows.

4. Result and Discussion

1) Expert Validation Results

Before the data collection was conducted, the researchers first examined the validity of the data collection instruments,

particularly on the test of critical thinking ability. The test of critical thinking ability has been prepared using critical thinking abilities indicators which adapted from Ennis (1991). The validity test of critical thinking abilities test instruments is done through expert validation. The experts who examine the validity of critical thinking ability test instruments were learning expert and economic/entrepreneurial learning expert consisting of two persons, namely Wardhono and Mahjudin. The aspects of expert validity of critical thinking ability test instrument were:

a) Suitability description of the test with instructional materials
b) Suitability description of the test materials to the learning objectives
c) Clarity about the description of the tests in critical thinking abilities
d) The coverage of indicators in the critical thinking abilities test instrument
e) Grammatical utilization

The results of validity test of critical thinking abilities test instruments based on the first expert assessment, showed that (1) the test instrument was “appropriate” for instructional materials, (2) the description of the test materials were also “appropriate” for the learning objectives, (3) the description of critical thinking abilities test was "good and clear", (4) the coverage of critical thinking abilities indicator in the test instrument was "good", and (5) grammatical utilization in the critical thinking abilities test instrument was also "good".

While the second expert give an assessment to the critical thinking abilities test instrument, namely (1) the test instrument was “adequate” for instructional materials, (2) the description of the test materials were “appropriate” for the learning objectives, (3) the description of critical thinking abilities test was "very good and very clear", (4) the coverage of critical thinking abilities indicator in the test instrument was "very good", and (5) grammatical utilization in the critical thinking abilities test instrument was "good".

Based on the validity test results of the critical thinking abilities test instrument by the experts above, it can be concluded that the critical thinking abilities test instrument rated good to use, on the basis of clarity and conformance test instrument with learning materials, learning objectives, critical thinking abilities indicators, as well as good in grammatical utilization. Thus, it can be said that the critical thinking abilities test instrument was declared valid.

2) Learning Outcomes Differences of Critical Thinking

This research used test of between-subject effect to examine the difference of student’s critical thinking ability between students who learn using PBL and group discussion learning strategies. Table 3 illustrates the results.

Table 3: Test of Between-Subjects Effects` Result

Variable	Df 1	Df 2	F value	F table	Significant
Critical Thinking Ability Pretest	1	57	5.020	4.010	0.029
Critical Thinking Ability Posttest	1	57	10.898	4.010	0.002

The analysis result of critical thinking ability pretest showed that F value 5.020 with significant value 0.029, whereas the value of F table for df 1: 1 and df 2: 57 on 95% significant level was 4.010. Because of F value > F table (5.020 > 4.010) and the significant value 0.029 < 0.05, it can be concluded that there was significant difference of critical thinking ability by pretest between students who learn using PBL and group discussion learning strategies on craft and entrepreneur learning.

On the other hand, the analysis result of critical thinking posttest showed that F value 10.898 with significant value 0.002, whereas the value of F table for df 1: 1 and df 2: 57 on 95% significant level was 4.010. Because of F value > F table (10.898 > 4.010) and the significant value 0.002 < 0.05, it can be concluded that there was significant difference of critical thinking ability by pretest between students who learn using PBL and group discussion learning strategies on craft and entrepreneur learning.

These research results show that there is significant difference of pretest and posttest results between experimental class and control class. It can be seen that the lowest mean value is pretest value for group discussion, namely 29.221, meanwhile, the highest mean value is posttest value for groups using PBL learning strategy, namely 78.859.

These research results shows that PBL strategy is more effective compared to group discussion learning strategy. This is consistent with arguments by Duch et.al (2001) stating that PBL is the learning strategy giving guarantee on the effectiveness of entrepreneurship learning. The focus applied in this strategy is student activeness. The students are no longer given one-direction material such as in the conventional learning strategy. So, this strategy is expected to be able to develop student’s knowledge independently. These research results are also consistent with the research results by Schublova (2008) expressing that there are differences of critical thinking as learning outcomes conducted by direct learning and computer simulation.

3) Learning Outcome Difference of Student’s Critical Thinking Ability with Low Motivation and High Motivation for Achievement

This research also used test of between-subject effect to examine the difference of student’s critical thinking ability between students who learn using PBL and group discussion learning strategies with high and low motivation for achievement on craft and entrepreneurship learning. Table 4 illustrates the results.

Table 4: Test of Between-Subjects Effects Result

Variable	Df 1	Df 2	F value	F table	Significant
Critical thinking ability pretest between Student's who have high and low motivation for achievement on craft and entrepreneurship learning	1	57	0.301	4.010	0.586
Critical thinking ability posttest between Student's who have high and low motivation for achievement on craft and entrepreneurship learning	1	57	83.210	4.010	0.000

The analysis result of critical thinking ability pretest between students who have high and low motivation for achievement showed that F value 0.301 with significant value 0.586, whereas the value of F table for df 1: 1 and df 2: 57 with 95% significant level was 4.010. Because of F value < F table (0.301 < 4,010) and the significant value 0.586 > 0.05, it can be concluded that there was no significant difference of critical thinking ability pretest between students who learn using PBL and group discussion learning strategies with high and low motivation for achievement on craft and entrepreneurship learning.

On the other hand, the analysis result of critical thinking ability posttest between students who have high and low motivation for achievement showed that F value 83.210 with significant value 0.000, whereas the value of F table for df 1: 1 and df 2: 57 with 95% significant level was 4.010. Because of F value > F table (83.210 > 4.010) and the significant value 0.000 < 0.05, it can be concluded that there was significant difference of critical thinking ability posttest between students who learn using PBL and group discussion learning strategies with high and low motivation for achievement on craft and entrepreneurship learning.

The results of the second hypothesis testing in this research show that there is learning outcome difference of critical thinking between students using PBL learning strategy and group discussion learning strategies with high and low motivation for achievement on Craft and Entrepreneurship subjects.

The research results show that the motivation for achievement serves an important role in the improvement of student's critical thinking ability. The higher motivation for achievement leads to the better critical thinking ability. And the other way around, the lower motivation for achievement leads to the worse critical thinking ability.

The critical thinking ability is not the only factor affecting on the learning outcome of critical thinking ability, selection of appropriate learning strategy can also affect on the learning outcome of critical thinking ability. As tested in this research, PBL strategy is more effective to be applied in the improvement of student's critical thinking ability compared to group discussion learning strategy.

4) Interaction between learning strategies and Motivation for Achievement on Critical Thinking Ability Learning Outcomes

Interaction between learning strategies and motivation for achievement on student's critical thinking ability learning outcomes in this research was analyzed by using multivariate test and test of between-subject effect. Table 5 illustrates the result.

Table 5: Multivariate Test Result

Data Analysis Test Type	F value	Significant	Explanation
Pilai's Trace	7,499.832	0.000	There was interaction between learning strategies and motivation for achievement on critical thinking ability learning outcomes.
Wilks'Lambda	7,499.832	0.000	There was interaction between learning strategies and motivation for achievement on critical thinking ability learning outcomes.
Hotteling's Trace	7,499.832	0.000	There was interaction between learning strategies and motivation for achievement on critical thinking ability learning outcomes.
Roy's Larges Root	7,499.832	0.000	There was interaction between learning strategies and motivation for achievement on critical thinking ability learning outcomes.

Based on table 3, the result of multivariate test which consist of Pilai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Larges Root test showed that F value 7,499.832 with significant value 0.000. It means that there was interaction between learning strategies and motivation for achievement on affecting critical thinking ability learning outcomes.

The third hypothesis of this research explain that there was interaction between PBL and group discussion learning strategies and also motivation for achievement on student's critical thinking ability learning outcomes for craft and entrepreneurship learning. To examine the third hypothesis, this research used test of between-subjects effect. Table 6 illustrates the results.

Table 6: Test of Between-Subjects Effects Result

Variable	Df 1	Df 2	F value	F table	Significant
Critical Thinking Ability Pretest	1	57	0.171	4.010	0.681
Critical Thinking Ability Posttest	1	57	3.424	4.010	0.070

The F value, to examine the interaction between PBL and group discussion learning strategies and also motivation for achievement on critical thinking ability learning outcomes by pretest for craft and entrepreneurship learning, was 0.171 with significant value 0.681, whereas the value of F table for df 1: 1 dan df 2: 57 on 95% significant degree was 4.010. Because of F value < F table (0.171 < 4.010) and significant value 0.681 < 0.05, it can be concluded that there was no interaction between PBL and group discussion learning

strategies, and also motivation for achievement on student's critical thinking ability learning outcomes by pretest for craft and entrepreneurship learning.

The F value, to examine the interaction between PBL and group discussion learning strategies and also motivation for achievement on critical thinking ability learning outcomes by posttest for craft and entrepreneurship learning, was 3.424 with significant value 0.070, whereas the value of F table for df 1: 1 dan df 2: 57 on 95% significant degree was 4.010. Because of F value > F table (3.424 < 4.010) and significant value 0.070 > 0.05, it can be concluded that there was no interaction between PBL and group discussion learning strategies, and also motivation for achievement on student's critical thinking ability learning outcomes by posttest for craft and entrepreneurship learning.

Results of the third hypothesis testing show that between learning strategy and motivation for achievement simultaneously cannot affect on the critical thinking learning outcomes. This means that the critical thinking learning outcomes can be achieved properly if the learning strategy is applied appropriately or the students have high motivation for achievement.

Results of this research are consistent with the results of research by Semerci (2006) which stated that the PBL learning strategy can affect on the critical thinking and problem solving abilities. The PBL learning strategy can improve learning, provide solutions to solve any problems, stimulate to learn together and increase motivation. The results of this study show that the PBL learning strategy is more effective than group discussion learning strategy. According to Uden and Beaumont, through the PBL learning strategy, students will be independent, motivated, and able to develop knowledge, skills, and effective strategies in lifelong learning and professionalism in their work.

5. Conclusion

These research results show that there are learning outcome differences of critical thinking ability between students using PBL and group discussion learning strategies on Craft and Entrepreneurship subjects, and there are learning outcomes differences of critical thinking ability between students who have high and low achievement motivation to the Craft and Entrepreneurship subjects. The students that are taught by PBL learning strategy or have high motivation for achievement obtain optimal value. Also, these research results show that there are no significant interactions between PBL and group discussion learning strategies, as well as motivation for achievement on affecting the critical thinking ability on Craft and Entrepreneurship subjects.

References

[1] Achmad, Arief. 2007. Memahami Berpikir Kritis. (Online). (*http://researchengines.com/1007arief3.html*). Accessed March 13th, 2014.

[2] Awan, R., Noureen G., Naz A. 2011. A Study of Relationship between Achievement Motivation, Self Concept and Achievement in English and Mathematics at Secondary Level. *International Education Studies*, 4(3): 72-79.

[3] Botelho, M.G., O'Donnel D. 2001. Assessment of the Use of Problem-Oriented, Small-Group Discussion for Learning of a Fixed Prosthodontics. *Simulation Laboratory Course*. *British Dental Journal*, 191(11): 630-636.

[4] Cotrell, S. 2005. *Critical Thinking Skill: Developing Effective Analysis and Argument*. New York: Palcrave Macmillan.

[5] DIKTI. 2013. *Modul Pembelajaran Kewirausahaan*. Jakarta

[6] Duch, B.J., Groh, S.E., Allen, D.E. 2001. *The Power of Problem-Based Learning*. Sterling – Virginia: Stylus Publishing.

[7] Eggen, P., Kauchak, D. 2012. *Strategi dan Model Pembelajaran Mengajarkan Konten dan Keterampilan Berpikir Edisi Keenam*. Jakarta Barat: Indeks.

[8] Facione P.A. 2011. *Critical Thinking: What It Is and Why It Counts*. California: Measured Reason and the California Academic Press.

[9] Fathurrohman. 2008. Pendekatan Pembelajaran Berbasis Masalah Untuk Meningkatkan Kemampuan Berpikir Kritis Siswa SD Dalam Pembelajaran PKn. Majalah Ilmiah Pembelajaran. 4(1), 81-91.

[10] Hanke, R. 2005. A Scalable Problem-Based Learning System for Entrepreneurship Education: Academy of Management Best Conference Paper ENT: E1-E6.

[11] Hansen, J.D. 2006. Using Problem-Based Learning in Accounting. *Journal of Education for Business*. 81(4): 221.

[12] Muhson, A. 2009. Peningkatan Minat Belajar dan Pemahaman Mahasiswa Melalui Penerapan Problem-Based Learning. *Jurnal Kependidikan*, 39(2): 171-182.

[13] Muhson, A. 2005. Implementasi Problem-Based Learning dalam Pembelajaran Kewirausahaan. *Jurnal Ekonomi & Pendidikan*, 2(3): 48-64.

[14] Narjes, A., Ibrahim, Mirshahjafari. 2015. Comparison of Influence of Group Discussion Method with Lecture Method in Relationship with Peers. *Journal of Current Research in Science*. 3(1), 64-68.

[15] Nurseto, Tejo, 2010. Pembelajaran Motivasi Berprestasi dalam Mata Kuliah Kewirausahaan dengan Game Tournament. *Jurnal Ekonomi & Pendidikan*, 7(1); 82-93.

[16] Sabatini, D.A., Knox, R.C. 1999. Result of a Students Discussion Group on Leadership Concepts. *Journal of Engineering Education*. 88(2), 185-188.

[17] Sari, A.N.S., Taman, A. 2013. *Pengaruh Motivasi Berprestasi Dan Persepsi Siswa Tentang Metode Mengajar Guru Terhadap Prestasi Belajar Siswa SMK Negeri 1 Pengasih*. Jurnal Pendidikan Akuntansi Indonesia, 11(1): 112-128.

[18] Schublova, M. 2008. The Effect of Using Computer Simulation as Self-Directed Learning on Critical Thinking Levels in Entry-Level Athletic Training Students. *The College of Education of Ohio University*.

[19] Semerci, N. 2006. The Effect of Problem-Based Learning on The Critical Thinking of Students in The Intelectual and Ethical Development Unit. *Social*

Behavior and Personality, 34(9); *Proquest Sociology*; 1127-1135.

[20] Setyosari, P. 2010. *Metode Penelitian Pendidikan dan Pengembangan*. Jakarta: Kencana.

[21] Subana, M., Sudrajat. 2005. *Dasar-Dasar Penelitian Ilmiah*. Bandung: CV Pustaka Pelajar.

[22] Suherman, E. 2010. *Desain Pembelajaran Kewirausahaan*. Bandung: Alfabeta.

[23] Tuckman, B.W. 1999. *Conducting Educational Research*. New York: Have Court Barace College Publisher.

[24] Uden, L. Beaumont, C. Technology and Problem-Based Learning. (Online). (*http://www.ideagroup.com/books/details.asp?id=5402*). Accessed March 3rd, 2014.