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THE IMPLEMENTATION OF MULTIPLE INTELLIGENCE LEARNING MODEL WHICH IS ORIENTED TO STUDENTS' PARTICIPATION IN ACADEMIC WRITING

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Abstract

This study aims to describe the student's and lecturer's needs related to the improvement of learning quality of academic writing; the level of acceptability of multiple intelligence learning model which is oriented to the students' participation (KMP) on the content substance,thestructure flexibility of modeldesign, and the effectiveness of learning model of multiple intelligenceswhich is oriented to student's participation on the improvement of theiracademic writing. To test the fit models or hypothetical model conceptually and theoretically,this study was supported by empirical data and instruments with students as respondents. The data was then analyzed using confirmatory factor analysis (CFA) by *Lisrel* program. Teachers as respondents instrument was analyzed through factor analysis using SPSS for windows. The development of the model used descriptive, evaluative, and experimental models, and also quantitative test using structural equation modeling (SEM) by *Lisrel* program. The output of the research result is a draft model of KMP validated by a team of experts with the average score of 3.70 (being able to be usedwith minor revision). KMP model is rated as a good model (4:02) viewed from its comprehensiveness, practicality, and economy. The analysis of appropriateness hypothetical test between models and data fields based on the implementation of data shows that a) all variables seem to have value (λ)> 0.3; b) Chi - Square = 0.61, df = 1, ρ - value = 0:43 (> 0.05); c) RMSEA is 0.00 (<0:08); and d) GFI = 0.99 (> 0.90). The result of analysis shows that there is compatibility between KMP model and the field data. The average of the ability of critical-creative thinking of experiment 3 for the control group is 68.31, while the experimental group is 74.88. It means that the treatment of KMP influences the learning process. The result of tcount = 15 066> t table = 1.98. The difference of the average score is sated significant and proved effective in improving the ability of academic writing.

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INTRODUCTION

There are at least four factors causing low literacy skills of learners in the learning process, namely students have lowparticipation, students ignore the function of language as a tool of thought, students'intelligence which only emphasizes the linguistic and mathematical aspects, as well as the lack of critical thinking skills because they have not integrated language learning with other subjects,

Based on the problems, positive response and objective need to be given to foster students' participation through contributive and initiatives work. The participation includes the courage to convey contributive reflection to the educators which are expressed either in the form of questions, opinions, suggestions, refutation, or answer. This also includes study participation and the task is structured in the classroom and home effectively. Participation initiative, namely the spontaneous initiative of students in independent and structured tasks, the initiative to ask for exams, the initiative to learn and work on learning materials that have not been and will be taught, and the initiative to make a brief note.

The contributive and initiative participations will be able to help students to be active and creative so that they are aware that knowledge can only be achieved through hard work. They can also realize the significance and the importance of learning. The effort will be successful if educators are able to put themselves as a facilitator to the interests of humanization and to devote all his attention to the activity of the students in his education inside and outside the classroom.

Students and learning are two different dimensions that need to be synchronized in a holistic and integrated procedure. The alignment between aspects of learning with the development of the students will encourage learning motivation and passion. According to Gardner (2003: 36-48), intelligence has nine aspects which is called multiple intelligences. The nine aspectsare verbal-linguistic, logical-mathematical, visual-space, bodily-kinesthetic, musical, interpersonal, intrapersonal, environmental, and extensional intelligences. Each learner has multiple intelligences, but there isalways the most dominant aspect within one person.

The learning process is not just a matter of how to learn, but rather concerns on the best way for a person to receive and understand information. In general, people learn by reading, but some particular people can understand the information better by listening or watching. There also are some people who like to discuss with others, view pictures or charts.

By understanding this, it means that there is no learner who is not gifted;certainly, all individuals have the talent, although the talent of each person is different. Gardner (2003: 57) states that learners find it easier to learn or understand the material taught by educators if the material is presented in accordance with a prominent intelligence they have possessed. For example, if a student stands out in terms of musical intelligence, learning to write must bedescribed in the form of music, rhythm, or singing. Meanwhile, if they stand out in terms of kinesthetic aspect, the presented materials must use the movement, dramatization, or role playing. It is clear that in this approach, the condition of students receives more attention than the condition of educators. It is based on the fact that student as a subject of study.

Multiple intelligences-based learning can create a condition for the students to become literati. Likewise, participation-oriented learning is expected to condition the students in critical thinking and creative activity. The integration of these two important concepts can encourage students' achievement of literati figure that has high quality of critical-creative thinking, especially in dealing with issues that require problem-solving. With the literacy skills, language skills development process is expected to be implemented by developing cognitive, analysis, synthesis, evaluation, and creation abilities through a direct study of the social conditions by using critical and creative thinking skills.

The language quality of someone reflects their quality of thinking. There is a close

relationship between the ability to speak with the ability of thinking/reasoning. Olson (1977) further states that the use of language (particularly writing) and thinking areinterdependent process to createa meaning. From the research ofSuherli (2002), it is informed that the development model of literacy can enhance the writing skills of learners, in particular, the ability to write scientific articles. Likewise, the finding fromGipayana (2002) on "Literacy Teaching and Portfolio Assessment in Learning Writing in SD", the model is able to develop insights, attitudes, and the ability of teachers, as well as the way students learn and the ability to write it.

The result of the research informs that writing skills of learners, especially in academic writing is still relatively low (Suriamiharja 1987dan Moeliono 1991). Generally, students are more difficult in expressing their ideas in written form than in spoken form. Mulyati (2010) through the survey suggests that the level of students' need on MKU Indonesian Language focusesmore on writing competence. Therefore, finding a writing training synergized with literacy learning by optimizing critical-creative thinking skills of students as adult learners is very essential. The emphasis of the multiple intelligences learning oriented to student participation is intended as a training and coaching toward students' high level thinking/reasoning ability, critical and creative thinking through reading and writing with the help of problems stimulus that needs to be resolved. High level of thinking is preceded by a high level of analytical thinking skill.

Several new learning models have been created in an effort to overcome learning difficulties in writing scientific papers, but they have not fully improved the performance and met the needs of students. By designing multiple intelligence learning that considers intelligence and learning styles as well as the participation-oriented, learning process is expected to be more interactive, fun and isableto motivate students to learn.

Furthermore, the concept of multiple intelligences learning model which is oriented on student participation (KMP) is developed by describing (1) learning model characteristics; (2) model acceptability of substantial content aspect and design structure flexibility; and (3) the effectiveness of the resulted model in fostering students' achievement in writing scientific papers.

The theoretical framework of this research includes three main points, namely the nature of scientific work, multiple intelligences and participatory learning, and participation-oriented multiple intelligences (KMP).

Basically,academic writing is writing which describe the ideas or solving problems systematically, honestly, and objectively by using the standard language, supported by facts, theories or empirical evidence (Wardani 2007: 16). The opinion emphasizes the crucial element in scientific work that is the idea, the truth, and the procedure on how to present it in a particular method.

In academic writing/scientific paper,the ideas or arguments are presented on the basis of scientific facts. The scientific ideas must be credible, so that the necessary criteria for correct presentation are needed. Ideas in a presented scientific paper should not make the other party or reader hesitate to accept it. Based on these studies, it can be revealed that some characteristics of scientific papers as disclosed Suherli (2002: 43) who also provides five characteristics of scientific work as follows.

Facts must be presented objectively, systematically, and thoroughly. The title, issue, or terminology in scientific work must have definitionswhich are conducted through descriptive, analytical, illustrative, comparison, eliminative, and etymological procedures. Decomposition of the problems in the scientific work must be carried out briefly, conceptually, and through reasoning. In scientific work, relevant theories to solve the problem in a factual and specific manner are used. Discussion and problem solving can provide answers to the problems that can be expressed either inductively or deductively.

Academic writing has its own characteristics. The specificity of academic

writing can be observed from the way a writer presenting his work, for example, the facts are presented in an objective, scientific attitude in writing especially when the author presents the notion and definition, and characteristics of scientific work itself is likea way to describe the problem using relevant theory to solve the problem.

In the theory of multiple intelligences, it is stated that intelligence includes nine intellectual abilities. The theory is based on the premise that intellectual abilities are measured by IQ tests is very limited because IQ tests only emphasizes the ability of logic (mathematics) and language (Gardner, 2003). In line with Gardner, Brown et al (1989: 32) through his research concludes

"The authors argue that knowledge is situated, being in part a product of the activity, context, and culturein which it is developed and used. They discuss how this view of knowledge affects our understanding of learning, and they mote that conventional schooling too often ignores the influence of school culture on what is learned in school. As an alternative to conventional practices, they propose cognitive apprenticeship, which honors the situated nature of knowledge ".

The knowledge which is formed in someone is a product of the context, activities, and culture which are developed and used. Intelligence is the ability of a person to see a problem, then solve the problem or make something that can be useful to others.

Formal object studied in participatory learning is learning activities that are in line with students' position in the process and development of attitudes and behavior that should and can participate in collective activities. Meanwhile, material objects of participatory learning is related to the nature of the learning process itself and interaction between the parties involved in learning, especially educational interaction between teachers and students. Educators emphasize its role to help students for their learning activities, and students are the main actors for learning activities. Related to the study, the principles of participatory learning, among others, is based on the needs of learning, goal-oriented learning activities, learner-centered, and departs from the learning experience (Sudjana 2000: 172-174).

Some components of multiple intelligence learning model are thestudent-centered learning, considering learning modality, association of material with life, emotion, and student participation. Knowledge transfer in learning process will be successful if the available time is focused on the condition of student activities, rather than on the conditions of educators teaching. For educators, the use of models KMP with presentations or teaching time is only 30%, while 70% is used for student activities. Learning modality is how information gets into the brain through the senses of human beings. The time of information is submitted (modalities) effects on brain speed in capturing and storing that information in memory. There are three kinds of modalities, namely visual, auditory, and kinesthetic.

Associating learning material to write scientific papers with daily life is conducted through the creation of a learning society through learning activities in groups in the form of small and large group discussions. Emotional engagement of students in learning to write scientific work is done through encouraging their critical thinking skills via stimulus-laden presentation of the material and packed in a learning problem that is integrative, communicative, and collaborative. Optimization ofstudents' schemata in identifying problems and offering alternative solutions to problems is conducted through discussions, presentations, reference hunting, and academic writingto train the form of critical thinking skills in a creative participatory learning.

RESEARCH METHODS

This study used research and development approach from thePlomp model which was combined with the model of Borg and Gall (2003: 775). The method used in this research included the development of descriptive, evaluative, and experimental methods (Sukmadinata 2008: 167). In detail, the type of

data was a conceptual description of the model characteristics, model development, models fitness, and the model effectiveness from the experiment. The instrument in a form of questionnaire was used to obtain the data of needs analysis. The theoretical framework of the model of learning was used as an instrument of model characteristics of theoretical data. And test and non-test instruments were used to obtain data of properness, assessment, as well as the data rate of the model effectiveness.

Data processing in this study used descriptive, quantitative, and comparative data analysis. The descriptive analysis was used for the development of learning models, whereas the quantitative analysis was used to determine the validity and partial matches the model to test structural equation modeling (SEM). Data of student respondents was analyzed by CFA (confirmatory factor analysis) using the assistance program *Lisrel*8.8, while the data of lecturer respondents was analyzed by factor analysis using SPSS 11.0 for windows. Acquisition of data on the effectiveness of the model KMP was analyzed by comparisons between the achievement results of control group and experimental group with Quasi Experimental design, Nonequivalent Control Group model. The significance of final test results was evaluated by student t-test and was analyzed using SPSS.

RESULTS AND DISCUSSION

Based on the needs analysis and theoretical framework on learning model, the descriptive finding of KMP models characteristics for learning to write scientific papers is obtained as follow.

Table 1. KMP Model Characteristics

No.	Elements	Description
1	Model Orientation	Combining learning models in group and independently, and to set the article text as a basic means of learning.
2	Syntagmatic	addressing the problem through articles stimulus; information; organizingstudents within teams; guiding the team and facilitating reference materials; giving students the opportunity to demonstrate the results of writing; and assessment
3	Social System	editing in order to have comprehensive experience of academic writing procedures intensivelyby involving a variety of students multiple intelligences
4	Reaction Principle	open learning, rational thinking, and critical-creative expression, and choosing analogies through reference sources that help to enrich the thinking
5	Supporting System	requiringacademic writing, reference books, and infrastructure to present a product of study
6	Instructional effect	the ability of creative critical thinking skillsbased on the read articles and the creative and independent process which encourage student self-generating product in the form of scientific papers
7	Side Effect	responsibility, adventurous thinking analogy to produce scientific work independently, and achieving the objectives of the curriculum

After being implemented in the learning process, KMP model components create a unique scientific papers procedure.

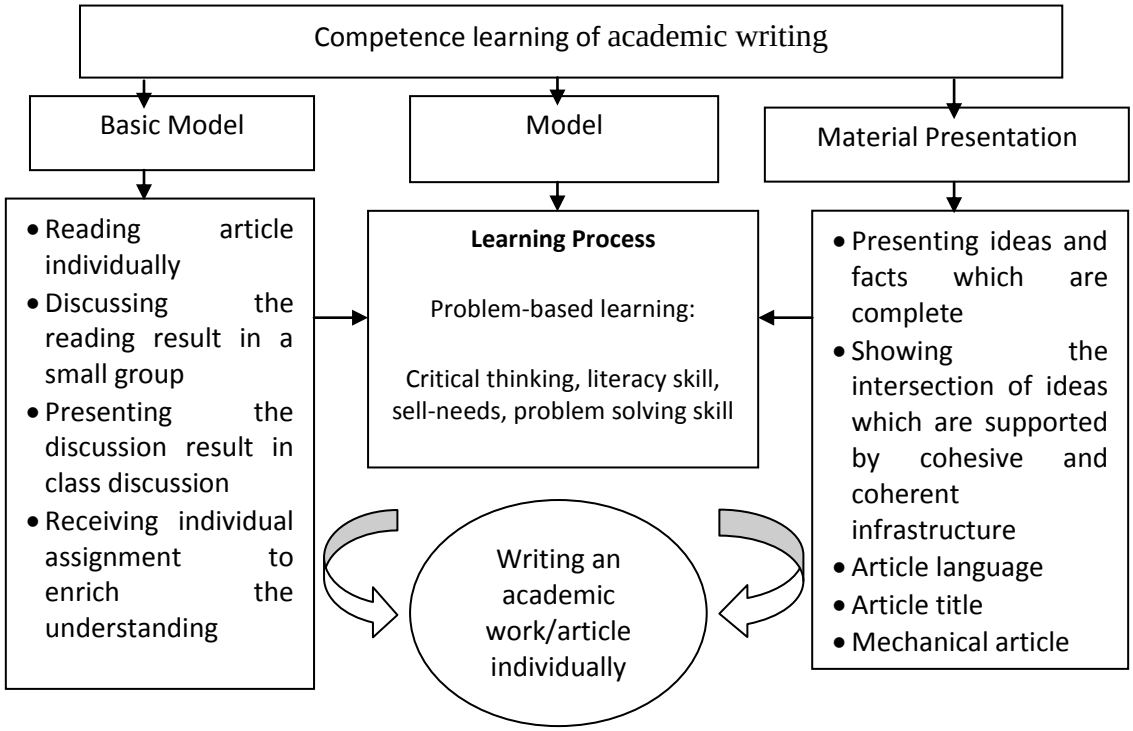

Figure 1. KMP Model Characteristics

The Implementation of Learner Model

Based on the trial data, the threeclarity test instruments of learning model produce different scores. Although the total number of mean score is fluctuating, they all remain at the same classification which is the classification of a "good" instrument. The KMP model is assessed based on its learning comprehensiveness or scope, practicality, and economics of the model use. The result is a mean score of 4.02 (good).

Based on the three results of the KMP model, it is seen there is consistency of results. Although the mean score changes, but it does not alter the classificationstatus ofassessment results; the model KMP is rated as a good model viewed from the aspect of comprehensiveness, practicality, and economics of the use of model.

Hypothetically, the evaluation of KMP model is based on the assumption that learning has an influence on learning outcomes. Evaluation of the learning program is not only based on the data of learning outcomes but also data from the learning interaction model which includes an assessment of the use of time, learning modality, materials linkage with the application of life, emotional engagement, and assessment of student participation. The assessment of the results of learning to write scientific papers can be divided into three, namely personal skill, social skill, and academic skill. Based on the test if KMP model implementation in a number of classes that is analyzed using *Lisrel*, it is obtained the following results.

The variables appear to have a value of loadingfactor (λ) varies; there are some variables that can meet a minimum limit of the instrument validity (> 0.3), but there are also some which have (λ) less than 0.3. However, based on the results of the t-test, the model component is declared valid. Free degree (df) = 1; Chi-square = 0.61; P-value = 0433 (> 0.5); RMSEA = 0.00 (<0.08); and GFI = 0.998 (> 0.90).

The analysis results show that the KMP model empirically has acceptability, both for measurement model and the clarity of learning model. A model is good if the hypothetical model is conceptually and theoretically supported by empirical data (Solimun 2002: 80). In other words, the model is in accordance with

the data, so it can be used to program learning to write scientific papers in college.

The Effectiveness of KMP Model through Test Experiment

Based on the results of field trials, the authors can find three aspects of the KMPmodel effectiveness. These three aspects, namely learning experience, assessment, and sources and media used in learning.

Viewed from the learning experience aspect, KMP model with the application of problem-based learning which involve learning experience of students is quite effective. On learning scenarios, student activities from beginning to end are described. The field results of trials show that there are three aspects of assessment in academic writing(personal, social, and academic skills) which can measure the success of the process of learning to write a good academic work. Viewed from the source and media used in learning, teaching materials, material model of learning academic writingcontains multiple sources of learning to write. Learning resources taken from several books, magazines, and newspapers.

The model effectiveness test in the experiment 1 is shown with a mean value of critical-creative thinking skills in writing articles in the control group at 66.56, while the experimental group at 72.44. Therefore, the treatment of the model affectslearning. Based on the calculation of t-test,the t-count is 14.420> t-table = 1.98. Thus, a significant difference is revealed and proven effective to improve the ability to write articles.

The result of the average value of critical-creative thinking skills in academic writingon the experiment 2 is 73.64 (experimental group) and 67.33 (control group). This means that the model affects the ability to write academic writing. The obtained t-test calculation is t = 16.026> t table = 1.98. It can be concluded that between scores of control group and experimental groups have significant differences and is declared effective to improve creative-critical thinking skills.

The average value of creative-critical thinking skill in experiment 3 for the control group is 68.31, while the experimental group is at 74.88. Therefore, the treatment using KMP models affects the learning process. The results of t-test = 15.066> t table = 1.98. The difference in the average value is significant and proven effective to improve the ability to write articles.

For more details, test results of the effectiveness of the model in the experimental group and the control group shown in Table 2 below.

Table 2. Data of KMP Learning Model Validation Result

Activities	N	mean	Standard Deviation	t-count	df	t-table
Experimental Group 1	108	72,44	3,184	14,420	214	1,98
Contol group 1	108	66,56	2,796			
Experimental Group 2	108	73,64	3,098	16,026	214	1,98
Contol group 2	108	67,33	2,669			
Experimental Group 3	108	74,88	3,425	15,066	214	1,98
Contol group 3	108	68,31	2,972			

Creative critical thinking skill of students which is reflected in the content of the article is generally classified as good (12.3). The improvement of ability to write academic articles on the content aspect is likely to be constant. The early ability in the first action shows "enough" category (12), movingto "good" category (12) in the second action, and

rising again, although still in good category (13) in action 3. This means that the KMP model has a positive influence on the ability of creative-critical thinking aspect of the article content. Therefore, in terms of article content, students have demonstrated ability in terms of (a) finding a problem that needs solving, (b) presenting the full facts and ideas, (c) having and showing a clear attitude towards the problem they propose and support by the evidence, reasons, as well as references, (d) offering a variety of possible solutions to issues that the propose. Meanwhile, in terms of article organization, students are in the category "good" (12) by being to demonstrate the ability of (a) presenting an idea that is supported by the ability to use means of cohesion and coherence, (b) presenting the opening, body, and closing, (c) presenting the sequence of communicative ideas, (d) presenting the appealing articles.

Creative-critical thinking skill of students which is reflected in the use of language is in a very good category (11). It generally exhibits the phenomenon of (a) the truth from the point of morphological, syntactic, and semantic, (b) the truth from the point of logic, (c) high level of understanding, (d) the beauty and charm, both in terms of sound, meaning, rhythm, language and creativity. Creative-critical thinking skills of students which is reflected in the title making is relatively in"good" category (6) shows the phenomenon (a) correspondence between the title of the content and tone of the article, (b) the originality of its creator, (c) the attractiveness of the contents, causing readers' curiosity, (d) the attractiveness in terms of language (rhyme, rhythm, meaning, solid).

Creative-critical thinking skill of students which is reflected in the article mechanic is relatively in "good"category (3) shows the phenomenon of (a) the grace in applying spelling rules, (b) the grace in applying the rules of punctuation, (c) the precision and grace in typing, (d) the grace in applying the rules of scientific writing (italics, bold, quotes, and others.).

CONCLUSION

The assessment of KMP model in terms of learning comprehensiveness or coverage, practicality, and economics of the use of models shows the mean score of 4.02. Based on the average of these scores, we can conclude that KMP learning model is in the category "good" and therefore it is able to be used for learning of academic writing. Based on test data implementation, all variables appear to have a value of load factor (λ)> 0.3; chi-square = 0.61, df = 1, ρ-value = 0.43 (> 0.05); RMSEA of 0.00 (<0.08); and GFI = 0.99 (> 0.90). The results showthat there is no difference between KMP model resultswith the field data. In other words, the model is compatible with the field data so it can be used for program learning of academic writingin college. The average value of creative-critical thinking skill in experiment 3 for the control group is 68.31, while in the experimental group is at 74.88. This means, the treatment with KMP model affects the learning process. The result oftcount = 15.066> t table = 1.98. The difference in the average value is states to be significant and proven effective to improve the ability to write articles.

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