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PARMI (PRODUCTION, ATTENTION, RETENTION, MOTIVATION, AND INNOVATION): AN ALTERNATIVE TO IMPROVING SCIENTIFIC WRITING SKILLS

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ABSTRACT

This research aimed to describe the development of scientific writing model based on PARMI. The stages included: creating prototypes; and developing models through four stages, focus group discussions, experts' considerations, limited trials, and extensive trials. The research involved students and lecturers from STAIB (Islamic Bunga Bangsa Institute), STAIC (Islamic Institute of Cirebon), STAIMA (Islamic Institute of Ma'had Ali), and ISIF (Fahmina Institute of Islamic Studies) between July and December 2014. In these model included a philosophical foundation, either a concept or a principal; its application; and its effects. It finds that based on expert judgment, this model is feasible to be developed and piloted. The results of the limited trials provide some improvement, especially on the application of PARMI. Based on the results of extensive trials it can be concluded that PARMI can improve students' ability in scientific writing.

Keywords: *PARMI, scientific writing, writing skills*

INTRODUCTION

The success of scientific writing research involves several factors such as learners, teachers, learning models, and learning evaluations. Without learning models, it is hard to build, improve, and develop students' scientific writing skills. Therefore, a PARMI-based learning model (Production, Attention, Retention, Motivation, and Innovation) is expected to solve students' problem in scientific writing.

As an acronym, PARMI is expected to facilitate learning. As a combination of Bandura's social learning and its innovation, it emphasizes students' attention, motivation, production, and retention (Bandura, 1989). These four components have a big share in learning to write scientifically. Writing is a manifestation of innovation and creativity. The more a person is creative, the greater his or her innovative attitude will be in developing and improving scientific writing skills.

Bandura's research provides an overview of (1) modeling that serves to acquire new behaviors; (2) to prove the separation between learning and performance; (3) the importance of learners' perceptions of the learning environment; (4) the existence of an exemplary person or model; and (5) the learner has expectations of behavior change (Denler, Wolters, & Benzon, 2009). Bandura modeling principle is observational learning or modeling. Someone in learning always begins by observing the object or model observation.

In the observation, there are four components that are very important, namely attention, retention, production, and motivation (Salkind, 2009). Learners should have attention to the material or object to be learned. Retention refers to the process necessary to reduce and change what is observed in symbolic forms that can be stored for later use. The production process is required when the learner draws on the stored code and seeks to do what has been observed. Motivation is the key to understanding why learners are involved in previous sub processes.

One's success in writing (Lo & Hyland, 2007) and speaking (Alemi & Daftarifard, 2010) are closely connected to the motivation of students and lecturers. Motivation can come from within and from outside (Nilsen, 2009). One of the motivation to learn because the language is used in everyday life (Lucas et al., 2010). So, lecturers should be able to find, understand, and pay attention to student's learning motivation (Mahadi & Jafari, 2012).

To get success in writing, it can be done by the

redesign of learning (Hasegawa, 2013). There can be in the form of curriculum development in universities to maximize memory and students' skills (Kellogg, 2008). Learning should involve the learner actively. In addition, learners need to be motivated to practice the knowledge of writing that they already have (Giridharan & Robson, 2011).

Scientific writing is a way of expressing ideas necessary to think (Suyanto & Sutinah, 2011) because to write is a part of critical thinking skills (Bair & Mader, 2013). The characteristics of critical thinking, among other things, are to find the right and reliable information and sources (Munandar, 2011) that focus on various aspects (Sutrisno, 2012). The form of scientific papers can be papers, reviews, activity reports, and proposals (Kalidjernih, 2011). The scientific paper must contain universally accepted truths, in terms of country, language, and culture (Mart, 2012). During this time, learners tend only to pay attention to the content and ignore the aspects of writing in writing scientific papers (Muqowim, 2011).

PARMI is the development of Social Learning theory. Bandura theory mentions four components, namely attention, retention, production, and motivation. This research adds one component that is innovation (Sharples et al., 2013). Innovation is one manifestation of creativity. The more a person is creative, the greater his or her innovative attitude. In order to facilitate the mention of the five components are then synchronized to PARMI. Events previously experienced or observed by a child may affect behavior and attitudes. Strengthening the model shown by the social environment is very influential on the learner. People basically behave not just to adapt to others, but because of the motivation and reaction to their own actions associated with self-assessment (Bandura & Cervone, 1986).

This research aims at developing the conceptual framework of a PARMI-based learning model, as follows: (1) the philosophical foundation underlying a PARMI-based learning model, both conceptual and principal; (2) steps of a PARMI-based learning model; and (3) the impact of a PARMI-based learning model.

METHODS

The research activity is based on the Glanz's model theory and the Zuber Skeritt's model (Sada & Maldonado, 2007), encompassing a focused selection, data collection, analysis and interpretation of data, reflection, and modification. Here are the steps involved: (1) creating the prototype of PARMI based learning model; (2) piloting the PARMI-based learning model covering four stages such as FGD (Focus Group Discussion), experts' judgment, limited trial, and extensive testing; and (3) establishing the PARMI-based learning model.

Research subjects on a limited trial are conducted to 35 students at the Islamic High School of Bunga Bangsa (STAIB). Research subjects on a wide-ranging trial are students from the Department of Islamic Religious Education included 25 from STAIMA, 30 from STAIC, and 30 from ISIF. The validity of data triangulation, method, and peer-debriefing involve two experts, namely Prof. Andayani, M.Pd. and Dr. Hisyam Zaini, MA. Data validity is also conducted in a workshop attended by lecturers of Indonesian general course language, students in IAIN Syekh Nurjati Cirebon, Vice Dean for Academic Affairs, and Vice Rector for Academic Affairs. A limited trial is conducted six times from September to October 2014. A broad trial is conducted in each of the seven meetings from November 2014 - December 2014.

RESULTS AND DISCUSSIONS

A PARMI-based scientific writing model is developed through a juridical, conceptual, and empirical framework. The juridical foundation is mainly concerned with the letter of the Director General of Higher Education (Direktorat Jenderal Pendidikan Tinggi, 2012). The conceptual foundation is a variety of experts' opinions and relevant research synthesized to determine the success of learning, students' conditions and needs as applied in the Cirebon-based Islamic Institutes.

Here are the steps in developing PARMI. First, the researcher accommodates the needs of lecturers, students, and stakeholders related to Basic General Course (MKDU) Bahasa Indonesia learning model in accordance with the learning objectives. Second, gather ideas or ideas in the form of embryonic learning models to be designed. The third is compiling the framework of the learning model. The framework is organized so that the writing is focused on the idea that will be submitted and does not deviate to other issues that need not be discussed. Fourth is fixing the concept. Learning models should be written using a mature and precise concept. Fifth is asking for consideration of students, lecturers, and related parties and expert's judgment.

The PARMI learning model has five main components, namely production, attention, retention, motivation, and innovation. Model structure of PARMI-based learning model has seven stages of activities. These seven stages are (1) gathering as much information as possible about the learning problems to uphold aspects of motivation, attention, and production; (2) identifying information by focusing on aspects of retention and production; (3) choosing the most interesting information concerning the scholarship that depends on aspects of innovation, and production; (4) exploring information and facts to support data and deal with aspects of motivation, attention, retention, innovation, and production; (5) explaining the facts and data pertaining to selected problems that contain aspects of attention, retention, and production; (6) analyzing facts and data about both newly acquired and long-held knowledge that examines aspects of retention, innovation, and production; (7) summarizing the results of the analysis to support the production aspect.

Basically, each of these stages involves the ability of students in the Indonesian language, especially the scientific barrel. The student's knowledge of this scientific barrel is heavily dependent on his/her motivation, attention, and retention. The higher the motivation, attention, and retention they have, the better the writing is produced. The fact that sometimes students are less motivated and less heavyweight against this scientific barrel. The facts show that students are less motivated and do not apply this scientific variety and only use general language rules obtained in the previous education level. Therefore, the retention aspect is indispensable.

The social system of learning model of PARMI requires good cooperation between lecturers and students as well as between students. Lecturers assist students in fostering motivation and attention, strengthen retention, and produce creative writing. A PARMI-based learning model integrates knowledge into problem-solving and students'

innovation.

Role of the lecturer is the motivators and facilitators who monitor every progress of students' work. Lecturers are expected to assist students in facing difficulties when they implement the technique of writing and search for referral sources. The support system of this model can be used for product-oriented courses or outcomes that focus on capabilities.

A PARMI has instructional impacts and companions. A PARMI learning model shows (1) the growing interest in writing; (2) growing confidence in writing the ability; (3) creative; (4) producing papers and sending them to journals, both internal and external; (5) a scientific integration between the theories in the classroom and the real problems in society; and (6) a change of mindset between students and lecturers mainly connected to a lecturer's position, which is regarded as more and more frightening.

A Focus Group Discussion (FGD) is to get input and suggestions from the lecturers of Indonesian general course. The FGD is conducted on Monday, July 15, 2014, in the Tadris Bahasa Inggris Room, IAIN Syekh Nurjati Cirebon. The FGD is attended by representatives of Indonesian general course students and lecturers in Cirebon-based PTAIs.

The prototyped aspects of PARMI-based scientific writing model consist of seven aspects. First, it needs to be reviewed about individual student writing skills. PARMI does many activities in groups. The existing SAP lesson plan has not shown individual student activity. However, personal ability should also be noted as writing is a personal activity. Group work should only be a means and not a goal. Therefore, the students' personal ability should be maximized.

Second, students need to be given tasks that involve reading activities, both books, and news. Writing is closely related to reading habits. Students now tend to be less in reading, especially reading books. If the reading or knowledge is very minimal, it is very likely that students will have difficulty in writing. The more knowledge that the students have; the easier analyze and conclude. The analysis is an activity that links various knowledge and information with existing problems. Knowledge and information are expected to solve the problem. That is why it is called by the conclusion. Students must be able to think critically. The ability to think critically is obtained through much reading and much information.

Third, students are given a place to display or show the work. Basically, students want to make the work that is known and read by many people. One of these containers is a journal; local, national, and international. The existence of a journal greatly motivates students to write. Therefore, students need to create a journal for writing contents that have been made.

Fourth is held the activities related to scientific writing. The existence of activities or competitions related to scientific writing certainly can also motivate students. Especially if in the race, there are various rewards, either in the form of money, goods, certificates, and others. This, of course, will make students motivated.

Fifth is ensuring students' cognitive abilities related to the rules of writing scientific papers. The lecturer should ensure the student's ability to write scientifically. This is so that the selection of learning materials appropriate or as needed. MKDU Bahasa Indonesia (subject) is only once a week (100 minutes) with total learning in one semester only 14 times. This short learning time allocation will, of course, have an impact on the success of the learning objectives. The time is narrow and while there are so many materials that must be given that leads to ineffective learning. Therefore, an analysis of the students' knowledge of scientific writing is very important.

Sixth, the application of PARMI takes a long time. Based on SAP lesson plan, it can be seen that students' activities are too many. It takes a lot of time that is not enough if only given two credits. Therefore, PARMI needs to be considered or designed so that it can be done only one semester.

Seventh, it needs to be firmness of PARMI activity on learning. Some lecturers may have motivated students in every lesson. Some lecturers have also given tasks in the form of making papers to students. However, do the lecturer's activities include PARMI? Therefore, there needs to be clarity and firmness of the strategies that lecturers have done with the strategy on PARMI.

There are experts' consultations or assessments that aim to get feedback, suggestions, validation, and approval. Validation is obtained from the Indonesian language, and literature teaching experts, Prof. Dr. Andayani, M.Pd., and learning experts at PTAI, Dr. Hisham Zaini, M.A. The given input includes the associated with SAP needs to be reviewed. One component in SAP, Basic Competence (KD) is still written with the format of learning objectives. This is because there is a difference between KD and learning objectives. KD means the minimal or basic ability that the learner should have while the learning objectives are more of the things to be achieved. In addition, there are still some indicators that are not in accordance with the basic competency. That is, the indicator given has not been referenced or leads to KD.

The concept of PARMI needs to be emphasized especially in learning. Although in practice, the implementation of PARMI is highly dependent on lecturers that would be better if given an example. Examples of it can be through multiple RPP (*Rencana Pelaksanaan Pembelajaran*/lesson plan). Therefore, in the RPP it should be clear of its PARMI steps.

It is necessary to review the evaluation to find out the students' scientific writing ability with final semester evaluation. Both of these evaluations are clearly different. While PARMI wants to know or aim at students' scientific writing ability. Therefore, it is necessary to evaluate which can specifically measure students' ability in writing scientific papers.

The instrument used to measure students' writing skills is by writing papers. It is necessary to review the selection of such instruments. The object of research that related is the first semester students. First semester students still do not have scientific competence according to the department. The courses taken in the first semester are still general. Therefore, the science that is associated with the department has not much and deep. This, of course, will greatly affect the contents of the paper written.

It can be said a good lesson if past, intermediate, and future lessons have relevance. The learning must be sustainable and not separate between one meeting with another meeting. Therefore, PARMI should also bring this up.

Limited trials are conducted at the Mathematics Teacher Education Department (PGMT), Islamic Institute of Bunga Bangsa (STAIB) in Cirebon for two months or eight meetings. These limited trials are (1) applies prototypes that have been adapted to the feasibility concept

of a PARMI-based learning model, learning objectives, lecturers' and students' needs analysis; (2) evaluates prototyped implementation results; (3) corrects deficiencies during the prototyped implementation; and (4) re-applies the improved prototype in the next meeting. Limited trials include implementation, evaluation, strategy improvement, and material improvements based on the previous lesson plan.

During the process of implementing a prototype of PARMI based scientific writing learning model, there are several advantages and disadvantages. The advantages of PARMI are (1) the lecture atmosphere is different from the usual; (2) the students are directly involved in learning; (3) inter-students synergize; (4) students can learn about interview techniques; and (5) the students can prepare an interview report.

There are also some shortcomings found during the implementation process of PARMI-based scientific writing learning model. First, the students have difficulty determining and finding the person to be interviewed. This happens probably because students do not know the skills and knowledge of others related to the problem. All this indicates that the student does not think positive to others. Students doubt the ability of others, although, in fact, everyone can argue. The truth of that opinion can be returned to the theory. The essence of this activity is positive thinking to others. This attitude is one manifestation of awareness and sensitivity to the environment.

Second, some members of the group do not work or do not perform the task maximally. This is because the number of group members is too many. Especially male students are more silent than female students. Male students rely on female students. This situation can be concluded that male students lack the motivation and responsibility in performing the task. This attitude can be because the division of labor in the group is less good and less equitable.

Third, the task is less clear. Students do not understand the task given by lecturers. This is partly due to differences in students' understanding of concepts, lack of knowledge of students about assigned themes, and students lack confidence in the work or the results of their writing. Students tend to dare not ask to clarify the task to be done.

Fourth, the time provided by lecturers is too narrow. The students feel the time given by the lecturers is minimal. Students have to deal with tasks, find people to interview, do the interview, and report. During this time students are not accustomed to working fast. After the implementation and evaluation of the prototype, the next step is to repair the prototype based on the shortcomings of the previous meeting.

The final part of the limited trial is the paper assignment. Some errors found on the job are General guide of Bahasa Indonesia (*Ejaan Yang Disempurnakan*/EYD), sentence, numbering, themes, source information, and references. In EYD, after a limited trial of seven meetings, there are still 25 or 15% of students who make mistakes on EYD. The error is mainly in the use of capital letters, foreign word writing, and the writing of '*di*' as a foreground.

The sentences used by 31 or 19% of students are long sentences. Even tend to be written in the oral variety. This results in the reader not understanding the meaning of the sentence. This long sentence has only one subject located at the beginning of the sentence. The rest is an expansion sentence that has no subject and is associated with a comma (,) or the words *'dan'*, *'lalu'*, and *'terus'*.

In numbering, students still use symbols, such as; ● or ◄ for details. This is done by 18 or 11% of students. For the themes, student paper uses the theme of a general nature, i.e., 30 or 18%. The formulation of issues raise around; (a) how to learn math well? (b) what difficulties experienced when learning mathematics? (c) how to make children like to learn math? These issues are so general that the discussion is too broad or less focused.

Students find it difficult to find sources of information. This can be known from the existing bibliography, 29 students or 17% only contains four sources. The source does not come from books or journals, but from blogs on the internet. And the students are still wrong in writing the page in the bibliography. This error is done by 33 or 20% of students. Students only write pages in the bibliography containing information sources from the internet. Other identities, such as author name, publication year, and title of writing are not written down. Students also do not include time information when accessing the post.

The Department of Islamic Religious Education at Ma'had Ali Islamic Institute (STAIMA), Cirebon Islamic Institute (STAIC), and Institute for Islamic Studies of Fahmina (ISIF) carry out a wide-ranging trial of the PARMI-based scientific writing model. The results of extensive trials in STAIMA Cirebon show (1) limited time to discuss the materials; (2) students' lack of reading ability; (3) the lack of campus infrastructure especially Internet networking and information technology. The average value of pretest is worth up to 63,32 and posttest is worth up to 72,16.

The extensive trials in STAIC increase the mean values of pretest (64,57) and posttest (71,46). Thus, by using the PARMI-based scientific writing model, students' ability in scientific writing can be improved. Extensive trials in ISIF Cirebon show that the mean pretest score is 63,76, while the mean posttest rate is 74,43. In short, students' score in scientific writing is improved by 14,33%. Here are the t-test results using the SPSS 21 application.

CONCLUSIONS

The development of a PARMI-based scientific writing model has been declared feasible by experts, lecturers of Indonesian general course, and students who take the MKDU Bahasa Indonesia. Experts' judgment of the prototype is concerned with give input about (1) basic competence specification; (2) other related indicators; (3) strict loading of PARMI steps; (4) specific evaluation; (5) instruments; and (6) learning materials.

PARMI includes five steps, they are production, attention, retention, motivation, innovation. Production is students write problem-solving in the form of paper according to the rules that apply. Attention is students write scientific by observing the rules of the language of a scientific barrel, systematic writing, citation techniques, and rules of reference. Retention is students explore the knowledge of writing that is already owned and matched with the latest information. Motivation is lecturers provide motivation related to the benefits of scientific writing. Innovation is students explore the various themes and problems that occur around it and find a solution. PARMI includes five steps.

PARMI is a development of Social Learning Bandura. The stages of Bandura learning include Attention, Retention, Motivation, and Production (ARMP). Various researches have proven that Social Learning Bandura can improve learning outcomes. However, the various researches do not focus on aspects of innovation. Therefore, PARMI

adds Innovation at this stage of learning. Innovation focuses on the learner's ability to solve a problem. This is related to a problem can be solved in various ways. The ability to find alternative solutions is what called innovation. That is, scientific writings written by learners are not only in the form of copies of previous writings. The ability to innovate needs to be possessed by learners in order to be able to solve various problems faced.

As previously stated, PARMI focuses on scientific writing skills. The target is students. Students who are treated with PARMI are first semester students so that they are not maximal. First semester students have not received scientific courses according to the chosen study program. This makes written papers or scientific works do not have in-depth theoretical studies. However, PARMI can help students capture a problem and find alternative solutions. That is, these problems and solutions are not the result of imitating other people's ideas, but are the result of innovation.

PARMI is a new learning model as a result of Bandura's development. Therefore, no other research has used this learning model. As a new learning model, PARMI still has limitations. That is, research needs to be done using PARMI for a variety of learning. During this time, the new PARMI is used as limited to the learning of scientific writing at the state Islamic religious colleges. PARMI is expected not only to be used for scientific writing learning, but also for other learning. PARMI is also expected not only to be practiced in Islamic universities but at various levels of education, both religious and public.

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