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## **Developing The Participative and Collaborative Scientific Writing Materials to Develop The Students' Social and Emotional Intelligence**

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**Abstract.** The research was aimed at enhancing social, emotional intelligence of students by developing participative, collaborative scientific writing teaching materials based on need analysis. It has three focuses, i.e. introduction study, product design and development, and product effectivity test. The research data consists of field notes, feedback, comments and critics on the product from experts and practitioners. The data is analyzed by using domain analysis technique. The research results in developed product of participative, collaborative scientific writing teaching materials. It has specific characteristics that were different from conventional teaching materials, which have reflection of student participation in identifying purpose and selection of teaching materials that can be used as collaborative, democratic discussion topic for the students. The effectivity test results show that the developed product was better than conventional scientific writing teaching materials. Scientific writing teaching and learning process that utilizes the developed teaching material product significantly impacts on improved social, emotional intelligence, teaching and learning process quality, and scientific writing learning achievement of students. The research results show that all teaching materials used in teaching and learning process at higher education institutions, particularly at Study Program of Indonesian Language and Literature Education, should get through series of development process testing to produce excellent, high quality teaching materials.

**Keywords.** democratic, emotional intelligence, social intelligence, collaborative, students, scientific writing, participative

### **1. Introduction**

Scientific writing teaching and learning cannot be conducted individually but participatively and collaboratively for all students to produce high quality scientific writing. It is difficult for students to select and determine scientific writing themes and topics (Author, 2013). Creating comprehensive scientific writing requires collaboration and participation of all learning group members to select themes and topic and produce high quality scientific writing (Basuki, 2008).

Scientific writing is a logical, systematic problem-solving process using formal Indonesian language and following set writing requirements of higher education institutions. In line with this, Flower and Hayes (2010:71) state that scientific writing is a complex problem-solving process that has three elements, i.e. scope of task, long-term memory of the writer, and

writing process. The three elements are not linear stages as the writer continuously reviews the writing and moves back and forth (Zuchdi, 2009:6). Review of the developed writing can be considered the fourth element in writing process. The review can help the writer express logical, systematic ideas that are not contradictory. These maintain consistency of the content idea of writing.

There are five stages in scientific writing teaching and learning, i.e. (1) pre-writing, (2) draft development, (3) revision, (4) editing, and (5) publication (Thompkins, 2011:9-24). Tompkins also affirms that writing stages are not linear. Writing process is non-linear, meaning that it is circular. For instance, after editing, the writer might need to review the alignment of the writing with the writing framework or the initial draft. Activities of each stage can be detailed.

Scientific writing is a language skill acquired through ongoing practices (Gere, 1985). In participative, collaborative teaching and learning, scientific writing skills can be acquired through learning by utilizing developed teaching material product collaboratively and democratically. Participative, collaborative learning is a democratic teaching and learning process (Basuki, 2008). Collaborative learning is based on the ability to develop knowledge and skills through meaningful interaction with the surrounding and the cultural, social environment (Vygotsky, 1978). Students are provided with flexibility to develop their own learning style and strategy.

Miller (2000) states that participative, collaborative learning is completely or partly under control of students as the learning subjects. This shows that learning initiative, creativity, productivity, and activity come from the students. The main role of a lecturer is to be a facilitator and motivator who helps students meet their learning needs.

Participative, collaborative learning requires students to develop knowledge and skills in their minds through collaboration with their lecturer and fellow students (Piaget, 1981). Participative, collaborative learning is an active process of students developing learned knowledge and skills through meaningful interaction with the surroundings. Learning is a process of assimilating and connecting past experiences and new ones. Participative, collaborative learning process has seven characteristics (Suparno, 1997:61) (a) developed harmonization, (b) comprehensive identification, (c) source and possibility of challenges, (d) identified teaching and learning objectives, (e) developed teaching and learning program, (f) implemented teaching and learning, and (g) assessment on process, result, and impact of implemented teaching and learning process.

Social intelligence relates with interaction among individuals in a group or community at work, in the community or at learning venue, requiring the individuals to have social competence to know themselves and others. Couldhard (2009) states that social intelligence is the ability to understand and manage interpersonal relationships. It uplifts the function of inner soul that has capability and sensitivity to identify meanings behind reality (Buzan, 2012).

## **2. Method**

Model developed in this research is A Recursive Reflective Design and Development Model (Willis, 1995; 2000) and Research Development Research (Borg & Gall, 2003). The sources of the research data are practitioners, experts, students, lecturers, and teaching and learning process. The data collection instruments are (a) observation guideline of teaching and learning process, (b) scoring guideline, and (c) product assessment guideline for practitioners and experts. The observation guideline is used to observe teaching and learning process delivered by lecturers and their students. The scoring guideline is used to score scientific writing (proposal, paper and article) of students.

Data analysis in this research is divided into three (a) data analysis from testing results of practitioners and experts, (b) data analysis of product trial, and (c) data analysis of product effectivity test results. The data analysis of the product effectivity test is done by statistical analysis. Comparison of pre-test and post-test of teaching and learning using the developed product is done by pair sample t-test.

### **3. Result and Discussion**

Teaching materials determine comprehensive, successful teaching and learning (Tompkins, 1990). Therefore, excellent, high quality teaching and learning development is important. Teaching materials cover planning, prediction, and projection of what will be done during teaching and learning process (Depdiknas, 2008). Teaching materials describe knowledge, skills, and attitudes that should be acquired by students to meet the set competence standards and basic competences.

The developed teaching material product is based on papers presented in scientific forums, scientific journals, and papers uploaded on websites, scientific magazines, student scientific work, and other scientific sources. The teaching material sources do not depend on existing textbooks that make students bored. They are theoretical, including boring tasks for students.

The developed product of teaching and learning material has specific characteristics compared with conventional one. The characteristics can be seen from the inductive patters of the teaching material delivery (Mardanu, 2007). The inductive pattern teaching material delivery is in line with participative, collaborative teaching and learning. The participative, collaborative teaching and learning soul reflects on (a) objective development, (b) teaching material development, (c) selected method, (d) facilitator, (e) climate, and (f) evaluation tool development that involves student participation. Participative teaching and learning covers six stages of (a) developed harmonization, (b) comprehensive identification, (c) source and possibility of challenges, (d) identified teaching and learning objectives, (e) developed teaching and learning program, (f) impelemented teaching and learning, and (g) assessment on process, result, and impact of implemented teaching and learning process.

The developed teaching material product has been recognized as appropriate and can be used in scientific writing teaching and learning process in practice as it has been through series of testing, e.g. practitioner test, expert test, field test, and product effectivity test. Therefore, it can be used to improve social, emotional intelligence of students, process quality, and teaching and learning result quality. It is believed that good teaching and learning from developed research results can be used to improve social, emotional intelligence, student writing skills, process quality, and teaching and learning result quality. The results of the developed scientific writing teaching material can also raise awareness of the lecturers to develop ongoing scientific writing teaching and learning at higher education institutions.

Data from the teaching material trial shows improved participation and collaboration among students in teaching and learning process. Students are motivated to be enthusiastic, excited, and active physically and emotionally in participating in the whole scientific writing teaching and learning process. This is also shown when doing the effectivity test of teaching material, proving improved teaching and learning result quality.

The effectivity test shows improved teaching and learning achievement, demonstrated in different scores between pre-test and post-test of participative, collaborative scientific writing teaching and learning. The different scores are significant. The product effectivity test shows that the average score of the pre-test of the scientific writing (paper) in the first teaching and learning process is 79,96 and the post-test 94,04. The average score of the treatment is 17,08.

The pair sample t-test shows significance (2 tails)  $p=0,000 < \alpha= 0,005$ . It means that there is significant difference between pre-test and post-test scores. The statistical test results show that the use of developed teaching and learning tool product significantly impacts on student learning achievement. Therefore, it can be stated that there is improved student scientific writing learning result/achievement.

Teaching materials developed in this research is intended to meet the needs of scientific writing teaching and learning. Scientific writing teaching materials are teaching and learning components that can be used to develop knowledge, skills, and critical thinking of students. They can also be used as implementation guideline for teaching and learning process, teaching and learning process interaction, and evaluation process implementation, either process evaluation or result evaluation. Quality teaching materials from research results can lead to meeting the needs of scientific writing teaching and learning. Quality teaching materials can improve student scientific writing skills, process quality, and teaching and learning result quality.

Teaching tools of developed teaching and learning product are designed and developed for students to participate and collaborate more actively in teaching and learning process physically and emotionally (Basuki, 2008). Student active participation and collaboration physically in teaching and learning process are shown during discussion, question and answer, group work presentation, reflection, and remedial. It is clear that all activities require physical participation and collaboration in teaching and learning process. Student active participation and collaboration emotionally can be seen in their activities when thinking, initiating, recreating, contributing ideas, problem-solving, and suggesting that relate with implemented teaching and learning process. Improvement of both aspects shows high interest and motivation of students in scientific writing teaching and learning process.

The development research results show that participative, collaborative teaching and learning is better than conventional one in scientific writing teaching and learning process. Participative, collaborative teaching and learning as a generative teaching and learning model can improve scientific writing skills of students, process quality, and teaching and learning result quality. Why is participative, collaborative teaching and learning better than conventional one? There are four rationales as elaborated below.

*First*, participative, collaborative teaching and learning process is based on constructivism philosophy. It requires students to play a more active participation in developing learned knowledge and skills independently through meaningful interaction with teaching materials, surroundings, and social cultural environment (Suparno, 1997; Piaget, 1970, Vygotsky, 2002). In this context, students should participate and collaborate more actively in teaching and learning process. The role of lecturers is as facilitators, motivators, inspirators, and mobilizers to ensure smooth teaching and learning process as well as active participation and collaboration of students physically. These can be done through discussions, presentations, and portfolios. Active participation and collaboration emotionally can be done by students through question and answer activities, questioning, problem-solving, discussing, initiating, and demonstrating interest, attitude, attention, high motivation, and other active attitudes.

*Second*, participative, collaborative teaching and learning meets competence-based teaching and learning principles (Blanchard, 2001). Student competence is the main consideration in teaching and learning process. Participative, collaborative teaching and learning implementation in teaching and learning process can be done through these steps (a) students being familiar with problem-solving and finding something meaningful, (b) students developing learned knowledge and skills in their minds, (c) teaching and learning process being set to develop and not to receive knowledge, and (d) students developing their knowledge and

skills through active participation and collaboration in teaching and learning process. Therefore, participative, collaborative teaching and learning should be implemented for students as adult learners who have obtained sufficient competence and can be independent in teaching and learning process. Independence is a key determining factor of participative, collaborative teaching and learning.

*Third*, participative, collaborative teaching and learning can provide students with wider opportunities to experiment and develop creativity and critical thinking based on their learning styles (Bereiter, 1994). Students are trained to problem-solve collaboratively when learning on campus or encountering problems in their daily life. Therefore, they will not be bound in theoretical learning and practising.

*Fourth*, participative, collaborative teaching and learning is intended to improve social, emotional intelligence in teaching and learning process (Shymansky, 1992; Suparno, 1997). Students are continuously motivated to identify or develop their own concepts of what they are learning through different activities, e.g. observation, discussion, trial and error, and experiment.

The student learning journals on participative, collaborative teaching and learning during the product effectivity test indicate these: 63% students state that they acquire knowledge mostly from teaching and learning process; 26% students state they acquire much knowledge; 4% students state they acquire less knowledge. None of the students states that they acquire no knowledge. It is normal to have a high percentage of students (63%) stating that they acquire much knowledge.

The reason is because participative, collaborative teaching and learning enables students to have a sense of belonging towards teaching and learning process, to be free to develop their common sense and creativity, to discuss, to be active looking for additional teaching materials, to be free expressing ideas and sharing ideas with peers, to present work results in front of peers, and to be supervised and motivated by lecturers. Only 4% students state that they have less knowledge; yet this should not be ignored. Ongoing monitoring by lecturers is required to ensure that the process and the result of teaching and learning can succeed.

Student attitudes when attending teaching and learning process are elaborated here. There are 22% students who are very happy with participative, collaborative teaching and learning, 56% happy, 7% less happy, and none unhappy. When combined, there are 78% students who are very happy and happy. This shows that participative, collaborative teaching and learning really attracts students. This happens because the students are accommodated to express their ideas, self-confidence, and creativity without any intervention from lecturers, and to be able to really participate and collaborate actively, physically and emotionally. On the other hand, only 7% students who are less happy with participative, collaborative teaching and learning. These typical students rely upon knowledge shared by lecturers, have difficulties to get along with their peers; they are usually introvert with lack of ideas (Author, 2015).

Participative, collaborative teaching and learning requires persistence and high democracy (Chidren Dream, 2007; Basuki, 2008). This is important as participative, collaborative teaching and learning should prepare all learning facilities and mental readiness of students. The democratic attitudes are important to create open learning environment that accepts suggestions and different ideas, avoids dominance of one individual, and supports collaboration and shared responsibilities. The democratic attitudes in participative, collaborative teaching and learning should be improved to prepare students to deal with national issues that are becoming complex.

#### 4. Conclusion

The research shows that the developed teaching material product can improve social and emotional intelligence as well as scientific writing skills of students. The improvement can be seen from two aspects, i.e. improved participation and collaboration of students as well as improved student learning achievement. The improved student participation and collaboration can be seen from their active participation and collaboration physically and emotionally in teaching and learning process. On the other hand, the improved student learning achievement can be seen from the improved score of their final learning results, i.e. the difference between pre-test and post-test score. Improved student learning achievement is quite significant. The improvement can also be seen from the comparison between learning result score and participative, collaborative teaching and learning by utilizing the developed product and the learning score with the conventional teaching and learning without utilizing the developed product. The comparison of the two shows that the learning result score and the participative, collaborative teaching and learning are higher than the learning result score with conventional teaching and learning. The comparison between the two is also significant. This shows that participative, collaborative teaching and learning can significantly improve social and emotional intelligence as well as process quality and student learning results.

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