Six Thinking Hats Method for Developing Critical Thinking Skills

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ABSTRACT

The purpose of this research is to assist the student teachers in their final year to think critically in analyzing the lesson plan document in the Kurikulum 2013 framework using the Six Thinking Hats method as a tool. This tool has visual imagery similar to colorful hats, with a specific point of view. The white hat acts as an information source, black hat identifies threats, the red hat represents emotion and intuition, the yellow hat identifies support and strength, the green hat stimulates creative ideas, and the blue hat becomes the leader of the discussion. This is a one-group post-test only experiment. The data is analyzed descriptively and interpreted qualitatively. The instrument is rubrics for analysis, also documentation and interview. The result shows that the average of the analysis scored 27,5 (out of 57) in a "moderate" level. This means students give short analysis with less-detailed description and the reasoning is less clear. The order from the lowest to the highest score is: yellow (scored 1,1)- white (1,2)-green (1,3)-red (1,5)-black (2,0). Although the result is still in the middle level, it still can be seen that this method is very potential to assist students to think critically, with a step by step development.

Keywords: critical thinking; Six Thinking Hats; analysis; HOTS; lesson plan

INTRODUCTION

The Kurikulum 2013 (K13) has been gradually implemented in the elementary education level. In the beginning, it was applied in some selected schools only. Now, most of the elementary schools have used K13, which is carried out for a certain class level and then gradually expanded to other levels. There are schools that have implemented K13 in all classes, yet some have not. The selection of the school considers its readiness.

School readiness, especially the readiness of teachers in preparing the learning activities, is the focus of this research, especially in preparing students to become scientific learners. Scientific nature is one of the skills demanded and is always recommended in the learning process both inside and outside the classroom. Known as the 5M, its scientific properties include: asking, observing, trying, reasoning, and communicating. Scientific learning is actually not a new concept, because they have been included in the Inquiry learning strategy, Discovery Learning, Problem-based Learning, experimental methods, which have been known and widely used by teachers. We have to keep in our mind that to successfully carry out each scientific stage, it needs critical thinking activities that should be initially trained and familiarized by the teachers to their students from the beginning to the end.

Thinking is one of the abilities possessed by humans. In general, humans who are quickly satisfied with the result of their thinking tend to have a weak thinking skill (Bono, 1992 (De Bono, 1992). On the other hand, confusion leads humans to be difficult to

think accurately because they tend to think of too many things (emotions, ideas, creativity, information, logic, etc.) at the same time. People who try to play a lot of balls at one time and find it difficult to manage them seems a good analogy to illustrate this condition. When we try to think practically, there are three basic difficulties usually coming: Firstly, emotions, we often have a tendency not to think at all, but directly rely on instant hunches, emotions, and prejudices as the basis for action. Secondly, helplessness, we may react with feelings of inadequacy: "I don't know how to manage this, I don't know what to do next. "Third, confusion, we try to think of all at once, and it ends with chaos as the result (Goodman, 2014.) This condition is also experienced by students in the higher education environment, especially FKIP PGSD students that they must have the ability to evaluate and analyze learning documents, one of which is the Lesson Plan or RPP.

Designing effective teaching does have to involve critical thinking skills so that it is normal that students need to consider it. Thinking critically means that students must judge, and think something carefully in order to evaluate and then finally decide whether something is acceptable or not (Zireva & Letseka, 2013). In this case, the student must be able to evaluate and analyze the Lesson Plan accurately to allow them to think correctly and efficiently to produce a recommended lesson plan with new ideas for improvement in accordance with the characteristics of their students. Furthermore, critical thinking is the process to think a wise reason for what is believed and what is done (Zireva & Letseka, 2013). Therefore, critical thinking is not something that is always interpreted negatively. In fact there are actually "active" elements in critical thinking activities (Hennessey, 2004) include: a) identifying elements based on reasoning; b) identifying and assessing an assumption; c) clarifying and interpreting existing ideas; d) assessing credibility, a claim; e) assessing various arguments in various forms; f) analyzing, evaluating and explaining and making decisions; g) producing inference; h) producing arguments (Fisher, 2011). Furthermore, critical thinking is a process that occurs in the cognitive realm which then stimulates the ability to interpret, analyze, and evaluate information, arguments or experiences (Kivunja & Kivunja, 2015). Based on this, critical thinking skills are needed for students

who are planning to be teachers to let them able to evaluate learning documents. Therefore it is necessary for students to be guided to sharpen their critical thinking skills. Teachers must act as a mentor who will guide students in honing their critical thinking skills using appropriate methods. The number of material students must teach requires the right method to guide them in thinking (Üstünlüoğlu, 2014). The instructor is the party who holds the responsibility to determine the content, activities, and teaching and learning processes in the classroom and the goals, objectives, and strategies of teaching that will be applied in the classroom (Kabilan, 2000) Based on the opinions above, a teacher is expected to determine the right tools to help students to sharpen their thinking skills.

It has been generally proven that critical thinking skills must be sharpened so that students become accustomed. Since childhood, the ability to think independently must be sharpened and one strategy that is considered appropriate to apply is the Six Thinking Hats (Dhanapal, Tabitha, & Ling, 2014). In this case, a concept or tool is required to guide students to undermine their thinking power. Based on this explanation, the thinking concept offered by de Bono is considered suitable to be used as a tool. It was found that there were differences in the ways of thinking that were significant in the group using Six Thinking Hats as a thinking aid. This group is more skilled in completing the discussion topics given (Wulandari, 2017). Six Thinking Hats is a simple concept but appropriate to be applied in order to help students to think. As already stated earlier, a simple concept that is applied correctly can improve the ability to critically think and solve problems rather than using complicated concepts yet confusing (Bono, 1992). This concept suggests people think of only one thing at one time, to train the ability to separate emotional elements from logic aspects, creativity from information, and so on. It was found that the involvement of emotion can be overcome by applying the right tools (Badrujaman, Filliani, & Herdiyani, 2016). This concept rests on 3 fundamental difficulties that affect humans in thinking, especially critical thinking. The three difficulties include a) emotional difficulties. Humans have a tendency to not think at all but rely on feelings as a basis for decision making; b) Difficulties due to ignorance. In this case, humans often react with feelings of lack, "I don't know how to think about this" or "what should I

do next"; c) Difficulty arising from the confusion of Bono (1992). In this condition, humans try to think of many things, but eventually, all become lost.

The emphasis on scientific nature that demands criticality in thinking should be intensively socialized to teachers so that the various K13 training must also be reminiscent of HOTS or High Order Thinking Skills. In Bloom's taxonomy, HOTS included the skill to analyze, evaluate and copy. While low order thinking skills (LOTS) is the stage of remembering, understanding, and applying. LOTS of stages are basic knowledge or skills that must exist before being able to do HOTS. In other words, learning must determine the target of learning outcomes in the analytical, evaluative and creative level, which in itself will assist us to collect information and understand concepts. In each stage of this thinking skill, attitude to criticality will always help students.

Practices in the field may not be as ideal as in his theory because of various conditions that make teachers adjust their learning strategies, including preparing students to have a critical attitude as supporting scientific traits. Therefore, a technique is needed to introduce critical thinking skills which will later help students not only in classroom learning but in various aspects of their lives that require them to think critically. To answer this need, as an institution preparing elementary school teachers, FKIP graduates, especially PGSD, must have the ability to critically study learning tools. Ultimately, studying activities involves reading activities that are not just understanding the text but also critique it. There is a positive relationship between critical thinking skills and reading interest with critical reading skills (Sariyem, 2016). A study conducted by Nugraha (2018) reveals that the accuracy of understanding news texts is influenced by students' critical thinking skills. Furthermore, it was found that there was a positive relationship between critical thinking skills and learning independence with Mathematics learning outcomes. Independent character and critical thinking will support the effort to learn something more deeply so that it has the potential to gain higher achievement (Egok 2016).

The curriculum of PGSD bachelor program has facilitated students to be able to develop these abilities in several subjects including Internship 1, 2 and 3. The curriculum

of study skills specifically has been designed in Apprenticeship 2 which are currently underway. The aim of this Internship 2 course is to study and review the Kurikulum 2013 at the Elementary School level aiming to develop learning tools.

The description of critical thinking skills in the K13 learning framework above is the background situation that based the need to educate elementary school prospective graduates of SWCU PGSD to master thinking skills before teaching their students to practice critical thinking. Therefore, the focus of the subject of this study was specifically Internship 2 students who were instructed to analyze the Kurikulum 2013 of Elementary School which demanded their carefulness and criticality. The determination of research subjects with the background of the internship assignment situation was very important for producing new applicable knowledge for prospective teacher students, as well as for researchers who are also a teacher of PGSD students so as to be able to identify the ability level of students, and design follow-up for lecture design. It was found that Six Thinking Hats applied to a group of students can improve their thinking skills and improve learning outcomes (Upadana, Lasmawan, & Atmadja, 2013). Therefore, it is also hoped that this research will be useful in supporting critical thinking activities that will stimulate students' creative ideas in conducting an in-depth study of the learning tools of the Kurikulum 2013. This is important in adapting the government documents to the students' context and the local school environment. The results of the study on the learning tools carried out by the teacher have a direct impact on the development of effective learning concept because it can assist students to design a learning method in accordance with their learning style. In addition, by conducting studies under this topic, a teacher can evaluate the learning device. This means that educators are able to determine the best way of learning for their students, which will later produce innovative learning tools and fulfill the needs of students. Considering those benefits, this research was then conducted.

This study implemented the 6 Thinking Hats, a tool that is generally implemented in the process of evaluating learning tools. The implementation of the 6 Thinking Hats was expected to help students think critically when analyzing learning devices. Guidance/scaffolding was necessary to guide

their minds so that they can more fully describe the components of the study. Students think according to the colors provided. By wearing a different hat, students must think based on the point of view requested by the hat. They must think deeply and critically about a subject matter. The concept of 6 Thinking Hats directs students' emotions and feelings well corresponding to each other. Helplessness feelings will arise when students do not have a clear plan of what they have to do, and using different colors provided a basic framework to students to determine some clear steps (Bono, 1992). Next, confusion will arise because students tend to be difficult to determine which aspect should be considered first. So, 6 different colors in the concept of 6 Thinking Hats is a 6-step cognitive approach to help students to think and analyze critically in order to understand a problem and try to generate new ideas. The above idea is supported by Aithal & Kumar (2016) stating that Six Thinking Hats are very effective tools to assist the decision making, both individually and in groups. These colors are black, blue, green, red, white and yellow and each of them represents a philosophical and logical approach to thinking critically about problems. The results of other studies reinforce the reason for the use of the 6 Thinking Hats method, arguing that it can assess student performance in conducting an analysis using qualitative descriptive assessment (Marzano, 1998).

METHOD

This research was carried out through an experimental study with one group post-test only design. The stages were: a) action planning, b) implementation of actions, c) post-test evaluation, and d) analysis and interpretation, d) reflection. This research was carried out with the subjects of SWCU PGSD 2 internships in three classes containing 19 people. The object of the research study was the results of the Kurikulum 2013 review. The independent variable used as treatment was the 6 Thinking Hats method, while the dependent variable was the result of the Kurikulum 2013 review. Data was collected through pre-tests and post-tests. The instruments were questionnaires and review assessment rubrics. The data analysis technique was carried out through post-test analysis with a rubric, then the meaning was interpreted more deeply with a qualitative approach which in this case by

comparing it to the theory of critical thinking and its independent variables. The roles and examples of questions and guiding statements commonly used to understand the function of each hat of each color explained below.

White hat. The white hat symbolizes "information". When a white hat is being used, everyone will focus on information about:
What do we know?
What do we need to know?
What did you miss?
What questions should we ask?
How could we get the information we need?

Red Hat. The red hat symbolizes emotions, feelings, and intuition. The red hat is a very important hat. Ideal thinking should not involve your feelings and emotions. In fact, the emotion must be there, and it seems you just disguise the emotions behind the logic. So, even we already try to get rid of our emotions, that still will influence the thinking process. The red hat allows emotions and feelings. The red hat validates emotions and gives an official place:
I do not like this idea at all.
I feel that this plan will not work.
My intuition says that raising prices will damage the market.
My instincts say that this plan is very dangerous.
I think this plan is a waste of time.

Black hat. This hat is most often used in normal behavior. Black hats are the basis for "critical thinking". In general, black hat covers all aspects of "alertness".
Does this fit our values?
Does this fit our resources?
Does this fit our strategy and goals?
Does this fit our abilities?

Yellow Hat. Black hat plays an important role in our thinking culture, in arguing and in other fields. The black hat also plays a major role in education because the purpose of education is to tell children "how the real world is". It is important to give them an explanation when they find something confusing. Conversely, the yellow hat is almost always ignored. Under the yellow hat, we look for values, benefits, and reasons for something to function.
What good value did you find?
What advantages did you find?
Why do you think the idea is good?

What contribution can you make?
What alternative ways can you give?

Green Hat. Green is associated with plants, growth, and energy, branches and buds. The green hat is a productive hat, giving rise to creative energy. It is a generative and creative hat.
What can we do? What are the alternatives?
Why does this happen? What are the possible explanations?
Maybe the leader will say,
"We need some new ideas here."

Blue Hat. The blue hat is like an orchestra conductor. It has the role as a regulator of other hats and thoughts. The blue hat is related to the control process. At the beginning of the discussion, the blue hat has two main functions. The first function is to define the focus and purpose e.g. What are we here for?; What are we thinking?; and what is our final goal?
The blue hat defines focus in the initial stage.
"We need more information about this field."
"We lack ideas to get out of this mess."

The implementation phase begins with the introduction and stabilization of objectives for students, a description of the material to understand the implementation of the 6 Thinking Hats method, also to practice using methods with other problems. After that, the method for the main task, namely reviewing lesson plans was practiced.

The steps to implement 6 Thinking Hats in developing critical thinking skills and the study of PGSD Internship 2 students were: a) students were divided into groups of 6 people and students would be randomly given the opportunity to choose their hat; b) students who got a blue that would lead the discussion and make a summary; c) students were given time to think according to the function of each hat; d) students would discuss the results of their studies; e) each student would be given a green hat to stimulate their critical thinking to produce new ideas; f) students who got a blue that would summarize the results of the discussion and prepare recommendations for the new lesson plan.

RESULTS AND DISCUSSION

Result

The first stage was planning which was done by compiling the material and preparing a

meeting plan. Evaluation from this initial stage was an assessment instrument that was prepared more thoroughly and quickly, as well as study examples which were also included in the material summary. It was not separated in different files. Secondly, the meeting schedule would be better if it was immediately set from the start, not waiting for new announcements so that all could participate fully from the beginning to the end.

The second stage was starting the research actions by arranging meetings with Internship II students. The first meeting aimed to introduce the aims and objectives of the study, the second meeting was to provide material and conduct discussion, and the third meeting was to discuss the analysis and monitor the progress of the analysis activities. From the first meeting, students could accept the aims and objectives of the study by agreeing that they need sufficient analytical skills for Internship II assignments and to sharpen their skills. Students said that they had never received any teaching about techniques for analyzing things, especially with the 6 Thinking Hats, nor had they been used for tools to study the lesson plan in the framework of the Kurikulum 2013, The evaluation in this first meeting aims to reinforce some weak goals so that although students had known that there was a task to do analysis in lecture and in the second internship, they still feel this is just an additional task, and not yet fully will study this material. Commitment to learning and developing oneself needs to be formed first.

The second meeting was to explain the material and familiarize students were with the 6 Thinking Hats method through the distribution of the material summary and explanation from the researcher, followed by a question and answer section and practice proceeded with an easy example and continued with another step using Lesson Plan. After that, the researcher gave assignments to students to study lesson plans, instructions, and schedules. Based on the evaluation, this meeting should provide a more extensive explanation and practice of thinking skills. At the third meeting, even though the number of students attending was fewer, the researcher could ensure that this activity was carried out well and the assignments were delivered properly and sent to each student's email.

Stage three was the assignment to do analysis on the lesson plan which will be

utilized as the main data. This was run for approximately one month. After the documents collected, the researcher identified them one by one using the prepared instruments. The post-test analysis took approximately one week. The following are the results of data analysis and interpretation.

The following table is the recording of the lesson plan assessment.

Table 1. Results of Average Score Assessment

Hats	The Average Score of Each Hat
white	1,2
red	1,5
black	2
yellow	1,1
green	1,3
total average	27,5

Categories	Range	Total
High	39-57	1
Average	20-38	14
Low	0-19	4

The data shown above is an assessment based on the attached instrument. The Blue Hat was not included on the grounds that this analysis activity was led/carried out by students using their own minds. From the table above, it can be seen that the average value obtained by students was 27.5 from a range of between 0 and 57. Therefore, students were categorized in the "moderate" level. They did the analysis but gave less detailed, not appropriate, and unclear reasons. While the average values ranging from the lowest to the highest were yellow (1.1) - white (1.2) - green (1.3) - red (1.5) - and black (2.0). The number of students in the "high" category was only one while most of them (14 students) were in the "moderate" category, and 4 others were in the "low" category.

Table 2. Student Values

Categories	Ranges	Total
High	39-57	1
Average	20-38	14
Low	0-19	4

Discussion

Based on the results presented above, here is the discussion of data obtained from each hat.

Realizing the importance to have good critical thinking skills, the researchers tried to provide alternative tools as a follow-up. This has received special attention in Australia since 2001 when the Graduate Skill Assessment (GSA) was first launched. That assessment emphasizes four elements of university graduates, namely the ability to think critically, problem-solving, interpersonal understanding, and written communication (Lloyd & Bahr, 2010) The results of this study can be the basis for the utilization of the 6 Thinking Hats tool. Based on the average values , it can be said that the results were not that good. (27.5). But based on the supporting data in the form of the lesson plan review before using 6 Thinking Hats, this value had experienced an increase. The results of the study which did not implement the 6 Thinking Hats method were indeed not recorded as the main comparative data, but more as a complementary, obtained from documents from the researcher (as an intern lecturer) for several internships. The review on the lesson plans which did not apply the 6 Thinking Hats shows that the critical analysis was very low and it had a repeated pattern. Therefore, it was believed that a more helpful thinking tool was necessary. The answer was given during the analysis also looks too simply directed to closed questions given.

Based on the perspective of each hat, the yellow hat indicated the ability of students to identify the support they could provide for the learning needs they are designing, including learning resources and support from school and outside the school. Unfortunately, these points were in the lowest position. This means that students were less able to identify, explore possibilities/potentials around them, utilize media from outside the classroom (community, nature, school) that can help them to learn. On the one hand, this was a bit contradictory to the theory that has been learned in lectures on contextual learning material, since the knowledge should enable students to use the context and support of housing that contains social, cultural, and environmental elements for their students' learning. Based on the answers given after the analysis, most students only provided identification of the learning they had

often encountered/experienced but did not provide deeper reasons considered by comparing between the effectiveness or efficiency and weaknesses or strengths of things that already exist.

The original idea that should have arisen as a supporter of learning activities was also not yet apparent. Only were some common practices mentioned again. Thus students need to be retrained to see the potential benefits that could be generated from the learning material.

The white hat indicated the ability of students to identify the scope of the material and the novelty of the topic, to raise the idea of learning needs, and to identify students' initial knowledge. But based on the analysis, only a small number of students mentioned the details of the material points, so they were less aware of the needs of the activity and the media, and not really updated with the latest developed material. As it has been explained, this would affect the teachers' creativity in designing learning activities.

Green hat focused on creative and innovative ideas including the latest trend and innovation in media, activities, and evaluations. This hat occupied the middle position of the ranking, meaning there was a potential of creativity in students' brain and needed to be sharpened. The original idea of learning methods is indeed relatively not too innovative, but students can advise on changing models that they considered less effective and replaced it a more suitable model. Some students have also provided suggestions for the media and teaching aids and considered the advancement of technology. The analysis that has not been deeply carried out was the one in terms of evaluation techniques and tools. This weak analysis was most likely influenced by the assessment rubrics that have been already available in the learning tool documents from the government so that teachers sometimes only follow what already existed. Analysis of current trend regarding the development of science related to the topic of learning material was also rarely done. Thus students need to be always keeping up with the latest developments in science or accessing the latest information to make them aware of the development of their world.

The red hat is in the second highest position, which leads to effective analysis in learning as both teacher and student. It facilitated the analysis on the children character

in forming their responses to the teacher, the children character building, and the affective side in terms of teacher preparation. Those reflect teacher awareness to class needs. The good enough rating indicated that students actually understand that learning needs to be prepared not only in terms of the formation of academic abilities but also in the affective side. This condition should be able to trigger them to be more serious in preparing effective learning activities in the classroom.

The highest position was occupied by the analysis from the black hat. This refers to a challenge /obstacle/weakness of the lesson plan that has been developed. Similar to the condition on the red hat, when students are aware of various obstacles or weaknesses, they should be challenged to come up with a solution. In this study, it turned out that this was not the case.

The results of the above analysis are slightly contradicted with the findings of the study by Dhanapal et al., (2014) because green hats turned out to be the most favorable one since students got the opportunity to produce creative ideas. The second most favored hat was the black one, although from the teacher's perspective it turns out to be the least desirable. From their findings, reflections that can be drawn are that students should be given more encouragement to express their ideas and stimulate their creativity, such as directing them to explore information from various places and sources to inspire a creative inspiration.

The discussion of the data obtained from each hat shows that the thoughts delivered in each of them supported each other to form strong-reasoned ideas. When the thought of one of the hats was not accurate, it was likely that the analysis or ideas formed still needed to be improved. Each hat had the same importance as they brought a different perspective that led to the best problem-solving in their context (Kivunja, 2015).

Critical thinking activities which were carried out were based on the intellectual standards described by Paul & Elder (2002), namely: 1) critical thinking has a purpose. In this case, students have the aim to produce an effective learning design, so they must check whether the results of the analysis and their ideas have reached the goal which in this case is to create effective learning; 2) Critical thinking is applied to solve a problem by answering some related questions. Students still need to find the best way to create an integrated relationship

between subjects in lesson plans, make learning activities right on target, and help students to be successful in answering the main questions in learning, so the 6 Thinking Hats method is very helpful in doing the analysis; 3) Critical thinking is based on an assumption and perspective. This is the personal reflection of the students regarding their assumptions as teachers, their assumptions about learning activities, and the ideal conditions they want to create in the classroom. This assumption will distinguish the results of critical thinking from one student to another; 4) Critical thinking is based on information, data, and evidence. That way, students need extensive insight to obtain information about everything needed in learning, starting from information about students, environment and culture, theory related science, learning strategies, learning media, and evaluation tools. That information help students to think critically and creatively optimally. Moreover, as prospective teachers who have learned the theory of learning, students must produce knowledge, not only gain knowledge, especially to compete in the 21st century (Kaur, 2017). This is because the results of their critical thinking which comes from an in-depth analysis of theoretical knowledge, contextual conditions, and the needs of students, can form innovative ideas that develop according to the needs at the present time; 5) Critical thinking is formed from concepts and ideas. Therefore students need to choose and sort out the concepts they know correctly. 6) The results of critical thinking have implications and consequences, which must be considered in the context of the class because the needs of each class tend to be different.

A student who could consciously reflect on the five aspects above had the potential to be a critical and creative teacher. Implementing the Six Thinking Hats method is a way of multi-direction thinking and not directing itself and learning does not always rely on memorization

The above analysis can lead to an idea that critical thinking skills will be more difficult to develop if students are not used to practicing it. In this context, students are not accustomed to doing learning activities with the Six Thinking Hats method for problem-solving so that the skills of giving ideas are lacking. The development of critical thinking skills with training requires prior motivation from students so that the intrinsic factors that could lead students to be aware of the benefits of this thinking method can be more optimally raised.

In addition to the two components above, teachers' readiness and ability to implement this method can also be a determining factor for their success (Upadana et al., 2013)

Related to the critical thinking barriers put forward by de Bono, namely emotion, helplessness, and confusion, the Six Thinking Hats method that was implemented might actually cause less supportive emotions when they were shocked and not ready, but if it had been understood well before, it indeed could be a tool to reduce confusion and weakness when students have to do analysis. This depends on how awareness, motivation, and learning goals from practicing critical thinking are built.

CONCLUSION AND SUGGESTIONS

6 Thinking Hats Method is a critical thinking tool that includes analysis of potential strength/ support that can be provided; analysis of challenges / potential failures; analysis of affective and intuition factors; analysis of information needed; analysis of innovative ideas / creativity / alternative ideas; and the analysis of how those analysis work which is then concluded. 6 Thinking Hats has a huge potential to help students conduct an analysis, especially the lesson plan of Kurikulum 2013 because it has open questions, more triggers students' original ideas, and leads to more detailed analysis and creativity.

Students were not used to thinking openly and specifically, but there seemed to be an improvement in their ability to analyze. There needed to be more intensive training so that eventually students could become independent, critical and creative thinkers. This finding is in line with the research findings of Dhanapal & Ling (2014), that students need to practice early and need more time so that thinking skills can indeed be learned and succeed optimally. In the context of this article, the aim was to make students to become critical and creative teachers so they can teach their students to be critical and creative thinkers. Courses that specifically study critical and creative thinking skills will greatly assist students in carrying out all their academic, professional and personal activities.

The success of critical and creative thinking is also inseparable from the role of the lecturer/teacher. In this case, teachers' understanding of the benefits of learning itself, namely whether the instructor has the

knowledge, willingness to try, and the skills to teach critical and creative thinking to students. Dhanapal & Ling (2014) shows that teachers who do not have the knowledge or do not take courses in critical and creative thinking skills also consider thinking skills not too important to be taught. Therefore, there needs to be aware of the instructors and prospective lecturers to prepare their students to become independent, critical and creative thinkers.

The output of critical thinking and ideas or decisions resulted from the process 6 Thinking Hats require the approval of all team members that had contributed to do the critical thinking using various hats, in this context the lecturer/teaching team and students. But this method is not always necessary to be continued to use in some particular circumstances. Various learning backgrounds in the school allow students to produce different critical and creative thoughts. For example, students who are accustomed to a middle to lower quality school environment and students who are accustomed to the middle to high-quality school will give different consideration details. Those differences might lie on the class rules, student and teacher relations, types of homework, etc. Therefore, students need to have enough experience to be able to see reality in different situation of an educational institution to be able to support their success in critical and creative thinking.

This research still did not take into account a number of aspects that can still be examined in more detail, including involving more participants with criteria as required to produce a more robust pattern interpretation and more valid significance. This method can also be for experimented in the classroom action research for other learning materials, such as language learning material (Dhanapal & Ling, 2014), counseling (Badrujaman, Filliani, & Herdiyani, 2016), other fields of science, as well as organizational life skills (Aithal & Kumar, 2017). The creativity that was trained in green hat allows for the development of the creative thinking theory because creativity and criticality support each other.

The application of the Six Thinking Hats method can be supported by technology media e.g. online and offline application that guides users in their thinking processes are such as those developed by Ercan & Bilen, (2014). Website or application can be developed into a special template that directs users to analyze a Lesson Plan for prospective teachers or instructors.

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