

# IMPROVING PROSPECTIVE TEACHERS' CRITICAL THINKING THROUGH HIGHER ORDER THINKING SKILLS-ORIENTED LEARNING WITH LESSON STUDY SETTINGS

## MELHORANDO O PENSAMENTO CRÍTICO DOS PROFESSORES POR MEIO DE PENSAMENTO DE ORDEM SUPERIOR APRENDIZAGEM ORIENTADA PARA HABILIDADES COM CONFIGURAÇÕES DE ESTUDO DE LIÇÕES

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**Abstract:** This study aims to improve the critical thinking skills of prospective teacher through Higher Order Thinking Skills (HOTS) based learning with Lesson Study settings. The design used in this study is action research with multi cycles with Lesson Study. The research subjects were the students of Elementary School Teacher Education Department. The instrument to measure student's critical thinking skills is a test in the form of a description. The observation sheet is used to observe the implementation of HOTS-based learning in the Lesson Study setting. Student responses are measured using a questionnaire with the number of questions 20 items. There was an increase in critical thinking skills as indicated by an increase in students learning achievement. This is seen from the percentage of student learning achievements in the pre-cycle of 63.15 and 60.20 in the medium learning achievement criteria. After the action of the first cycle, which is an average of 72.51 and 74.38 is on the criteria for high learning achievement. And in the second cycle increased that is an average of 81.83 and 82.54 in the criteria for high learning achievement. There is an increase in critical thinking skills which is indicated by an increase in learning achievement.

**Keywords:** Higher Order Thinking Skills Based Learning. Lesson Study. Critical Thinking Skills.

**Resumo:** Este estudo visa melhorar as habilidades de pensamento crítico do futuro professor por meio do aprendizado baseado em Habilidades de Pensamento de Ordem Superior (HOTS) com configurações de Estudo de Lição. O design utilizado neste estudo é a pesquisa-ação com vários ciclos com Lesson Study. Os sujeitos da pesquisa foram os alunos do Departamento de Formação de Professores do Ensino Fundamental. O instrumento para medir as habilidades de pensamento crítico do aluno é um teste na forma de uma descrição. A folha de observação é usada para observar a implementação do aprendizado baseado em HOTS no ambiente de Estudo de Lição. As

respostas dos alunos são medidas usando um questionário com o número de perguntas de 20 itens. Houve um aumento nas habilidades de pensamento crítico, conforme indicado por um aumento no desempenho do aprendizado dos alunos. Isso é visto pela porcentagem de aproveitamento de aprendizado do aluno no pré-ciclo de 63,15 e 60,20 nos critérios de aproveitamento de aprendizado médio. Após a ação do primeiro ciclo, que tem média de 72,51 e 74,38 está nos critérios de alto rendimento escolar. E no segundo ciclo aumentou que é uma média de 81,83 e 82,54 nos critérios de alto rendimento escolar. Há um aumento nas habilidades de pensamento crítico, o que é indicado por um aumento no desempenho da aprendizagem.

**Palavras-chave:** Aprendizagem Baseada em Habilidades de Pensamento de Ordem Superior. Estudo de Lições. Habilidades de Pensamento Crítico.

## 1. Introduction

The rapid development of science and technology is the current of globalization. This rapid change took place in the 21st century. The 21st century learning requires students to think critically. In high-level thinking skills students are taught to think critically, logically, reflective, metacognitive, and think creatively (Alifah et al., 2023; Arifin et al., 2020). This ability to think will arise when individuals or students are faced with problems that they have not met before. HOTS (High Order Thinking Skills) is in accordance with the Standard Content of Candy 22 of 2006 which states that Mathematics is given to all students to equip them with the ability to think logically, analytically, systematically, critically, and creatively, and the ability to work together (Anwar et al., 2020; Kwangmuang et al., 2021).

High-level thinking is a process involving mental operations such as classification, induction, deduction, and reasoning (Nurhayati et al., 2020; Widarti et al., 2020). In high-level thinking processes are often faced with a lot of uncertainty and also demand a variety of applications that sometimes conflict with the criteria that have been found in the evaluation process. But more important in this process of thinking is the construction and demand for understanding and meaning that the structure is found to be irregular (Acesta, 2020; Malik, 2020). Thus, metacognition, which is thinking of how one thinks, and self-regulation of one's thought processes is a central feature in higher-order thinking (Noprinda et al., 2019; Widyaningsih et al., 2020). Whereas according to. High-level thinking skills are defined as the use of the mind widely to find new challenges (Ningsih et al., 2018; Rahmawati et al., 2021; Saraswati et al., 2020). This high-level thinking ability requires someone to apply new information or prior knowledge and manipulate information to reach possible answers in new situations. High-level thinking is thinking at a higher level than just memorizing facts or saying something to someone just as something was told to us.

One of the recent educational innovations that is interesting to discuss is about Lesson Study, which appears as an alternative to overcome the problem of learning practices which so far Indonesian language education is seen as less effective in attracting interest in some subjects. As it is understood, that learning practices in Indonesia have for a long time generally tended to be conventional, namely through oral communication techniques. Such conventional learning practices tend to emphasize how teacher-centered rather than how student learning is centered, and as a whole we can understand the results

which apparently do not contribute much to improving the quality of student learning processes and achievements.

To change the habit of learning practices from conventional learning to student-centered learning is indeed not easy, especially among lecturers who belong to the laggard group (refusal to change / innovation). In this case, Lesson Study seems to be used as an alternative to encourage change in the practice of learning towards a far more effective direction (Fiorella et al., 2021; Shoffa, 2017). Language learning that sometimes looks easy but in fact often causes failure of students to take national examinations causing the students' low interest in learning languages when continuing their education in college. This is if you can anticipate Indonesian language education with Lesson Study in language courses such as English and Indonesian Language Education I. The stages of Lesson Study consisting of a Plan-Do-Check-Act are expected to be able to increase the interest and results of language learning for students in the Department of Teacher Education.

The concept and practice of Lesson Study was first developed by lecturers of basic education in Japan, which in Japanese is termed *kenkyuu jugyo*. Makoto Yoshida is a person who is considered to be of great merit in developing *kenkyuu jugyo* in Japan. The success of Japan in developing Lesson Study seems to have begun to be followed by several other countries, including in the United States which was steadily developed and popularized by Catherine Lewis, who has conducted research on Lesson Study in Japan since 1993 (Vermunt et al., 2019; Yoshida et al., 2021). While in Indonesia it is now being socialized. to be used as a model in order to improve the student learning process, even in some schools it has begun to be practiced. Although in the beginning, Lesson Study was developed in basic education, but now there is a tendency to be applied also to secondary education and even higher education (Anif et al., 2020; Jayanthi et al., 2019). Lesson Study is not a strategy or method in learning, but it is one of the coaching efforts to improve the learning process carried out by a group of lecturers collaboratively and continuously, in planning, implementing, observing and reporting on learning achievements.

Lesson Study is not a momentary project, but it is an ongoing activity that is endless and is an effort to apply the principles in Total Quality Management, namely to improve the process and results of student learning continuously, based on data (Toharudin, 2020). Lesson Study is an activity that can encourage the formation of a learning society that consistently and systematically performs self-improvement, both at the individual and managerial level. Lesson Study as one model of educator professional

development through the study of collaborative and sustainable learning based on the principles of collegiality and mutual learning to build learning communities. In this study, we will apply the Higher Order Thinking Skills approach based on Lesson Study to increase students' interest in the subject of Indonesian Language Education I and English so that they can improve the process and thinking ability of students in the subject itself according to the core functions of Lesson Study.

## **2. Methodology**

This research is seen from the aspect of the methodological approach, using action research methods focused on classroom situations, or commonly known as classroom action research. This method was chosen based on the consideration that in action research focused on the social situation of the class, requires a number of information and follow-up directly based on the natural situation that occurs in the implementation of learning. Another consideration is that the formulation of an action plan based on existing and developing social situations in classroom learning requires a series of follow-up actions from empirical situations that support the implementation of an action program. Action research is a special approach in class research, so it is an accumulation between research procedures and actions (Arikunto, 2010).

In its implementation, classroom action research focuses more on the process of self-reflection on social situations that occur which are carried out collaboratively and accompanied by Indonesian language education 1 actual to make changes towards the occurrence of improvements and improvements to existing social situations. Research on learning that occurs in the classroom is basically intended to examine and provide solutions to the problems that occur and are experienced by the teacher in relation to the social situation of the class, which in its implementation is contextual and highly dependent on the social reality of the class.

Besides that in classroom action research, the reflection cycle is the main requirement that must be carried out by the researcher so that the results achieved are in accordance with what is desired referring to the theory put forward by Stephen Kemmis and Robin Mc Taggart (Agung, 2010). This research is planned for two cycles, each cycle consisting of four main parts which include, planning, implementation, observation and reflection. The collection of research data on the implementation and results of the program of action will

be carried out using several research instruments, namely observation guide sheet, interview guidelines, field notes, and document documentation.

### 3. Results

This research phase begins by conducting a pre-cycle test in the course of Indonesian Language Education I and English in a predetermined class through random sampling techniques. The class chosen for the Indonesian Language Education course is C class 1 semester and for English courses is the first semester H grade. From the results of the pre-cycle test, it was found that the results of students' critical thinking skills in the Indonesian Language Education course I and English is still low. Based on the results of the study, in the learning process of Indonesian language 1 and English for two cycles it went well according to what had been planned previously. The increase in student learning achievements obtained in each cycle, namely the average learning achievements have increased. The acquisition is presented in Figure 1.

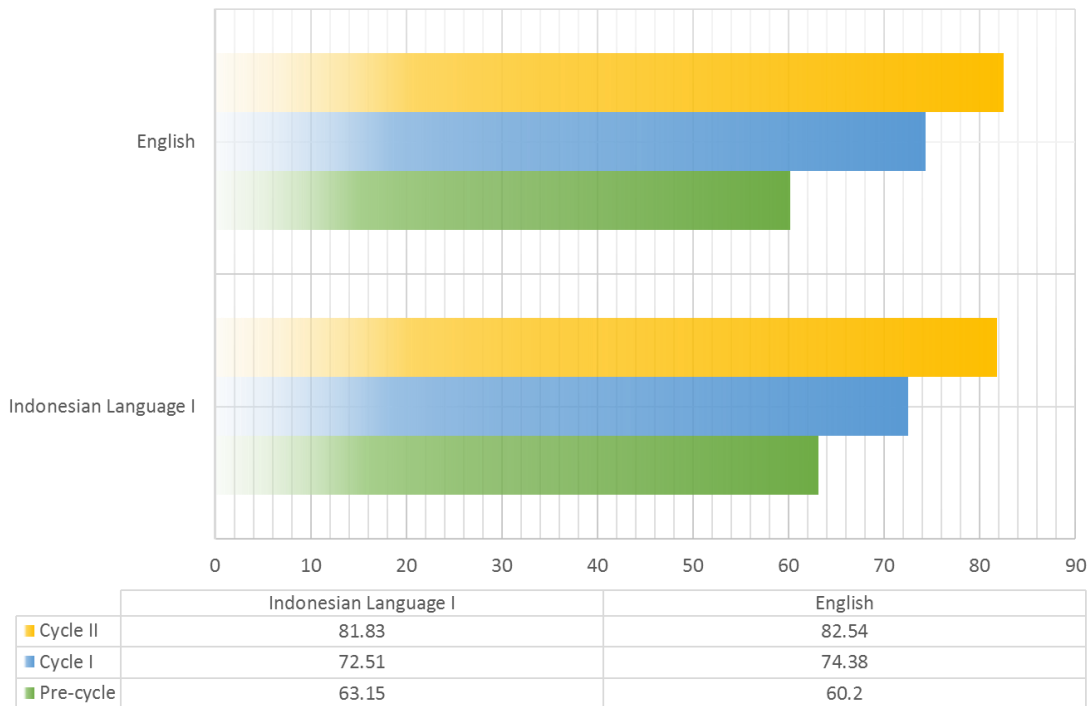


Figure 1. Learning Achievements Comparison in Each Cycles

From the Figure 1, in general an increase in learning achievements is shown through the average class learning achievements. Reflections help improve the learning process, at least this makes students get more opportunities and experiences in completing critical thinking exercises through group discussions. In this study after observations and reflections during the implementation of action research, Indonesian language 1 and English were presented with findings, namely learning achievements for Indonesian language education 1 and English, IC and H class students conducted in 2 cycles also showed an increase in student learning achievements. In the pre cycle, data on student learning achievements were recorded, which were 63.15 and 60.20 on average learning achievements criteria. After the action of the first cycle, then the start of an increase in student learning achievements is an average of 72.51 and 74.38 is on the criteria for high learning achievements. In the second cycle by paying attention to the results of previous reflections, several improvements were made in an effort to improve student learning achievements, so that student learning achievements increased, namely an average of 81.83 and 82.54 in the criteria for high learning achievements. This means that the action until the second cycle is stated to be in accordance with the indicators of success criteria that are set, namely student learning achievements at the end of the cycle at high criteria. In this classroom action research through the application of a higher order thinking skills approach, there is an increase in critical thinking skills which is shown by an increase in learning achievements in Indonesian 1 and English language courses in class I C and I H Semester 1 in the 2017/2018 academic year.

#### **4. Discussion**

There was an increase in critical thinking skills as indicated by an increase in learning achievements in Indonesian 1 and English language courses in IC and IH Semester 1 students in the PGSD Department of UNDIKSHA 2017/2018 academic year through a higher order thinking skills approach with lesson study. Because by implementing lesson study, educators can analyze learning problems and solve them with the best solution so that the quality of learning improves and students' learning outcomes also increase so that it indicates that students' learning competence increases. Lesson Study has 4 (four) main objectives, namely to gain a better understanding of how students learn and lecturers teach, obtain certain results that can be utilized by other lecturers, outside the Lesson Study

participants; improve learning systematically through collaborative inquiry and building a pedagogical knowledge, where a lecturer can draw knowledge from other lecturers (Asyari et al., 2016; Yulianto et al., 2017).

High-level thinking is a process involving mental operations such as classification, induction, deduction, and reasoning (Nurhayati et al., 2020; Widarti et al., 2020). In high-level thinking processes are often faced with a lot of uncertainty and also demand a variety of applications that sometimes conflict with the criteria that have been found in the evaluation process. But more important in this process of thinking is the construction and demand for understanding and meaning that the structure is found to be irregular (Acesta, 2020; Malik, 2020). Thus, metacognition, which is thinking of how one thinks, and self-regulation of one's thought processes is a central feature in higher-order thinking (Noprinda et al., 2019; Widyaningsih et al., 2020). Whereas according to. High-level thinking skills are defined as the use of the mind widely to find new challenges (Ningsih et al., 2018; Rahmawati et al., 2021; Saraswati et al., 2020). This high-level thinking ability requires someone to apply new information or prior knowledge and manipulate information to reach possible answers in new situations. High-level thinking is thinking at a higher level than just memorizing facts or saying something to someone just as something was told to us.

Lesson study implementation shows an increase in learning achievement. This is in accordance with the success criteria indicators set. Lesson study also guides the students collaboratively, first analyzing the learning problems, both from the aspect of teaching materials and learning methods. Furthermore, the students collaboratively find solutions and design innovative and student-centered learning (Astuti et al., 2019; Kusuma et al., 2017). Student-centered learning will have an impact on student activity, so that learning is not monotonous and boring. While the teacher as an observer (observing activities between students), and then continued with post-learning discussions to reflect on it (Annisa et al., 2021). Lesson Study can improve various student skills, starting from improving students' critical thinking skills, improving learning outcomes, students' ability to solve problems and can also increase students' active participation in learning (Lukitasari et al., 2021). Benefits that can be taken from Lesson Study, including lecturers can document the progress of their work, lecturers can get feedback from other members / communities, and lecturers can publish and disseminate the final results of Lesson Study. In the context of education in Indonesia, this third benefit can be used as one of the Lecturers' Scientific Writings, both



for the sake of promotion and certification of lecturers with regard to the stages in lesson study, several opinions were found. That lesson study is carried out through four stages using the concept of plan-do-check-act (pdca). Three stages in lesson study, namely planning (plan), implementation (do) and reflection (see).

## **5. Conclusion**

There was an increase in critical thinking skills as indicated by an increase in learning achievements in Indonesian 1 and English language courses of prospective teachers through a higher order thinking skills-oriented learning with lesson study settings. The Higher Order Thinking Skills-oriented learning with Lesson Study settings refers more to active, creative, effective and fun ways of learning students, where students are stimulated to improve their critical thinking skills. With this, there was an increase in learning achievements in Indonesian language education courses 1 and English students of prospective teachers.

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