

Learning process improvement in online learning during COVID-19: the lesson study contribution

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Abstract

The COVID-19 pandemic necessitated rapid adaptations in higher education, requiring lecturers to adopt innovative strategies to maintain instructional quality. This study examines the use of lesson study as a collaborative approach to enhance student learning and improve the effectiveness of online instruction. Grounded in a model adapted from Cumhur and Guven, the lesson study framework follows three core stages: planning, implementation, and reflection. This qualitative research involved 80 fourth-semester students and a team of educators, including one model lecturer, three peer lecturers, and five observers. Data were collected through questionnaires and documentation and analyzed using an interactive model comprising data collection, reduction, display, and conclusion drawing. Findings indicate that reflective practices during the lesson study process significantly contributed to the development of well-structured lesson plans, ultimately supporting a more effective and coherent online learning experience. The study highlights the potential of lesson study to foster continuous professional development and improve online teaching practices during periods of educational disruption.

Keywords: Instructional design; lesson study; online learning; reflection; teaching innovation

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1. INTRODUCTION

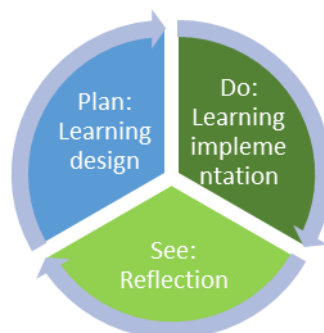
The COVID-19 pandemic began in March 2020, marked by the entry of the virus into Indonesia (Astuti and Mahardhika, 2020). At that time, Indonesia and the global community experienced significant regulatory transformations across the economic, industrial, health, and education sectors (Muhyiddin and Nugroho, 2021). The present study concentrates on the education sector, specifically examining instructional practices during the COVID-19 pandemic in 2020. Instructors were required to employ creative pedagogical strategies to fulfill educational objectives across various levels. Learners were mandated to engage in home-based online learning to ensure the continuity of academic instruction at the tertiary level (Lischer et al., 2022; Pillay et al., 2023; Somabut et al., 2024). This research investigates the effectiveness of home-based learning in achieving intended educational outcomes.

To enhance the attainment of learning objectives, the preparation of structured instructional or lesson designs by academic staff was essential (Kim et al., 2022; Liu et al., 2022; Cameron et al., 2021). A comprehensive learning design typically includes clearly defined objectives derived from competencies and corresponding indicators, instructional content and educational media, sequential learning activities based on selected methods and strategies, as well as techniques and instruments for evaluating both the learning process and its outcomes (Naidu, 2006; Reimers and Chung, 2019; Shahrill et al., 2024).

An observed institutional issue pertained to the lack of direct supervision by the designated supervisory team. This issue arose due to a predominant focus by the supervisory team on identifying deficiencies in teaching performance (Jandrić et al., 2022; Yuan et al., 2022; García-Morales et al., 2023), rather than providing developmental support aimed at enhancing instructional quality (Lorensius et al., 2022; Setyaningsih and Sukono, 2022; Sugiarti, 2022). Additionally, a lack of confidence was evident among faculty members during instructional delivery, particularly under observation by supervisory personnel.

These challenges prompted the present investigation into the role of reflective practices within the implementation of lesson study in contributing to instructional planning. Lesson study was selected as the primary intervention due to its systematic procedures, which are conducive to the advancement of teaching and learning quality. The selection of lesson study was also informed by global initiatives aimed at enhancing the efficacy of faculty development programs (Aykan and Dursun, 2024). Lesson Study has emerged as a notable professional development model, facilitating continuous pedagogical improvement (Goei et al., 2021; Saito et al., 2020; Hussain et al., 2022). Originating from the Japanese concept of "jugyo kenkyu," Lesson Study comprises three core components: collaborative lesson planning, classroom implementation by one instructor while peers conduct structured observation, followed by a reflective session to revise the initial lesson plan (Furuta et al., 2022; Dotger, 2011; Lewis, 2009). This method fosters collaboration and skill development among educators, resulting in improved instructional planning (Chen et al., 2020; Fernández-Morales et al., 2020).

Figure 1
Lesson study stages



Lesson Study follows a tripartite structure: Plan, Do, and See (Reflection), which is believed to support the achievement of learning objectives and enhance the instructional process (Cumhur and Guven, 2022). This framework is illustrated in the corresponding schematic (Figure 1).

Lesson Study commences with the PLAN stage, which involves the development of a learning design aimed at facilitating student learning. This stage emphasizes a student-centered approach, whereby planning focuses on enabling active student participation in instructional activities (Ahmed et al., 2022). The planning process is conducted collaboratively, involving lecturers and relevant stakeholders to enhance the richness and diversity of instructional ideas.

The second stage, DO, refers to the implementation of the previously developed learning design within the designated academic setting. Instruction is delivered by the model lecturer selected during the planning phase (Jackson, 2022; Morell et al., 2023). The primary objective of this stage is to assess the effectiveness of the proposed instructional model. Other lecturers involved in the Lesson Study team serve as observers of the instructional process. Additional academic staff may also be included as observers, some of whom may be appointed as facilitators for subsequent activities. Before the implementation of lessons, a preparatory briefing is typically provided to all observers. This session outlines the instructional procedures and reinforces ethical standards to be upheld during observation. Observers are equipped with standardized observation sheets, which are prepared in advance to ensure consistency in the evaluation of observed aspects. The focus of the observation includes student interaction with instructional materials, teaching staff, and the learning environment, as well as peer-to-peer engagement (Albayrak and Yilmaz, 2022; Özbey and Kayri, 2023).

The third and final stage is SEE, or reflection. Upon conclusion of the instructional session, all participants convene in a designated discussion space. These reflective discussions are facilitated by a designated academic or external expert. The procedure begins with a debriefing from the model lecturer, who shares experiences and insights from the implementation. Observers are then invited to share observations and insights, particularly those relating to student engagement and instructional effectiveness. Constructive feedback, including suggestions and critiques, is presented to foster pedagogical improvement. The essential aim of this reflective practice is to extract actionable insights for application in future instructional contexts.

The structured process of PLAN, DO, and SEE has gained widespread adoption in professional development initiatives for educators in Indonesia. This structured framework offers significant potential for

enhancing instructional quality within both schools and higher education institutions. According to Suratno and Iskandar (2010), although reflective practices are recognized as a critical component in advancing teacher professionalism in Indonesia, their implementation has not received equivalent attention compared to the Japanese Lesson Study model introduced in the early 2000s. The Japanese model emphasizes collaboration between educators in the systematic improvement of instructional quality through planning, observation, and reflection.

1.1. Purpose of study

This study addresses a critical gap in understanding how structured collaborative teaching models, such as lesson study, can enhance the quality of online learning. The objective was to explore the implementation of lesson study as a reflective teaching practice to improve instructional planning and execution.

2. METHODS AND MATERIALS

This study employed a quantitative approach. Data were presented through descriptive analysis within the context of peer tutoring implemented via the Lesson Study framework in writing instruction (Elkomy & Elkhail, 2022).

2.1. Participants

This study was conducted in 2021, English Education Department of Muhammadiyah University of Pringsewu. The subject of this study were 80 students in forth semester. This study involved five lecturers as observer, lecturer model, and three peer lecturers.

2.2. Data collection tool

The objectives of this study were achieved by collecting data using several techniques, namely questionnaires and documentation. Data analysis uses an interactive model that consists of data collection, data reduction, data display, and conclusion drawing. Open questionnaire containing questions about the implementation of peer tutoring in lesson study. The questionnaire was given to the lecturer as a model in lesson study, another lecturer as an observer in lesson study, and also to the students of Muhammadiyah Pringsewu University. The process was conducted in an online learning process.

2.3. Data analysis

Data analysis in qualitative studies occurs concurrently with data collection and continues after data collection during a designated period (Flick, 2022). Analysis is conducted on responses provided during interview sessions. If post-analysis responses are deemed unsatisfactory, the process is continued until data credibility is achieved. Furthermore, qualitative data analysis is conducted interactively and continuously until completion, ensuring data saturation (DeCoito & Estaiteyeh, 2022).

Over the long term, interactive models such as linking analytical stages can serve as conceptual frameworks. The process follows the steps outlined by Miles and Huberman (2009) as follows:

a. **Data reduction**, which involves the selection, concentration of attention, simplification, abstraction, and transformation of raw data obtained from field notes. This stage generates a clearer understanding of observational outcomes, interview objectives, and documentation.

b. **Data display**, which refers to the organized presentation of collected information, facilitating the drawing of conclusions and immediate action. In qualitative studies, data display may include narrative

overviews, diagrams, tables, graphs, pictograms, and similar formats. An organized presentation enhances the comprehensibility of previously unstructured data.

c. **Conclusion drawing and verification**, wherein inferences are formulated based on reduced and displayed data. Preliminary conclusions are tentative and subject to revision if unsupported by subsequent data collection. However, when initial conclusions are validated through consistent evidence during additional data gathering, the conclusions may be regarded as credible.

3. RESULTS

The Lesson Study activities were conducted in alignment with the framework outlined by Cumhur and Guven (2022). The implementation followed three main stages: plan, do, and see. Each stage comprised three open class sessions: I, II, and III. Observations were conducted during each session based on a predetermined schedule. The Lesson Study planning team included one lecturer serving as an observer, one lecturer acting as the model instructor, and three additional lecturers functioning as peer collaborators. The evaluation criteria for the lesson plan were adopted from Aykan and Yıldırım (2022), as presented in Table 1 below:

Table 1

Lesson plan evaluation criteria

Criterion	Subcriteria
Professional skill	Planning education Creative learning environments Managing the learning process Evaluation and assessment
Integration	Pilot knowledge Integrating discipline Connecting with life Level of appropriateness
Performance	Effective communication Critical thinking Empathizing Collaboration Problem-solving Creativity
Attitudes and Values	Democratic attitude Respect

Subsequent stages involved collaborative planning of writing course instruction by the instructional design team, which operated under an egalitarian collaboration system and implemented peer tutoring activities. Team members exchanged information and cooperated in the development of writing instruction. Each instructional plan for Chapters 1 to 3 was designed distinctly from the plans used in Open Class sessions I, II, and III (Table 2). The learning process was implemented in an online classroom environment.

Table 2

Chapter design open class I, II, and III draft

Open class I	Open class II	Open class III
Pre-activity: Lecturers provide a video brainstorming in learning	Lecturers provide the opportunity to students to see other sources	Lecturers used the results of the work of students as teaching material through a WhatsApp group
While activity: Make group Outline an expository text.	Determine 1 tutor for each group and review the other groups' draft of an expository text and present it.	Monitor each group and replace 1 tutor who has not collaborated in a group Starting the editing process with the tutor and group members.
Post activity: Giving an assessment directly	Giving a task to review other group work in the class	Giving individual assignments by sharing the data via what's up to edit based on the procedure in writing expository text.

3.1. The result of reflection (see) from the implementation of the lesson study activity

Observations were conducted by two observers throughout the entire duration of the instructional sessions. These observation activities were guided by structured observation sheets, with a focus on student responses and classroom engagement. Reflective discussions were held following the completion of Open Class Cycles 1, 2, and 3. The planning for the first cycle chapter design was carried out on April 26, 2020, followed by the implementation of the first open class and reflection session on April 30, 2020. According to the observation results, the model lecturer conducted the lesson in alignment with the collaboratively developed chapter design. Students actively participated in and experienced the learning process.

Planning for the second cycle chapter design was conducted on May 14, 2020, with the corresponding open class and reflection taking place on May 15, 2020. Based on reflections from Cycles 1 and 2, the model lecturer reported noticeable differences in instructional delivery after implementing the structured chapter design developed collaboratively. Additionally, it was noted that identifying disengaged students was challenging without assistance from the observers.

Observers 1 and 2 identified the same group of students in the first open class who demonstrated a lack of focus due to distractions from digital devices. Recommendations were made to improve supervision of device usage in subsequent sessions. Further suggestions were provided regarding students who exhibited difficulty working in groups; for future sessions, it was recommended that these students be given individual assignments to enhance focus and group learning engagement. Observations from the second open class also revealed a group requiring reassignment of the peer tutor, as the tutor possessed similar comprehension levels to the other group members, limiting instructional effectiveness.

Planning for the third cycle chapter design occurred on April 26, 2020. Observations from the third open class indicated that students had developed the ability to collaborate effectively within their groups, supported by guidance from peer tutors. Students who previously demonstrated limited focus in earlier sessions showed improvement, consistently engaging in group activities and fulfilling responsibilities within the online learning environment.

To evaluate the implementation of peer tutoring within the Lesson Study framework, additional data were collected from the model lecturer. A questionnaire administered to the model lecturer indicated enthusiasm and satisfaction in collaboratively designing chapter content with peer tutors. Several benefits were reported, including more organized instruction, utilization of critical thinking, and incorporation of valuable insights derived from Lesson Study activities. The model lecturer expressed appreciation for the support received in extracting ideas and gathering feedback for future instructional planning, all of which were informed by observation and reflection outcomes.

According to the questionnaire completed by Observer 2, additional benefits were identified. Observer 2 expressed enthusiasm regarding the opportunity to provide evaluative input and contribute to the planning of subsequent chapter designs. The implementation of peer tutoring was recognized as a valuable component in facilitating reflection, enhancing the quality of instruction, and simplifying the planning process. Additional benefits included collaborative efforts with the instructional team to anticipate and address challenges arising during Lesson Study sessions.

4. DISCUSSION

Based on the data and the tables presented, it is evident that the variations in chapter design across Open Class 2 and Open Class 3 are directly influenced by the outcomes of observation and reflection sessions. These findings suggest that observation and reflection are integral components in shaping and refining subsequent instructional designs. Adjustments made between classes indicate a responsive approach, where feedback from previous sessions informs the development of more effective lesson components. This iterative process underscores the dynamic nature of lesson study, where teaching strategies are continually enhanced through real-time analysis and critical reflection. The capacity to modify instructional plans based on direct classroom insights contributes to a more targeted and adaptive learning experience for students.

In this context, the involvement of colleagues plays a crucial role not only in the planning phase but also throughout the cycle of observation and reflection. Collaborating with peer tutors or fellow lecturers enhances the quality and relevance of the instructional design, as multiple perspectives contribute to a richer understanding of student needs and classroom dynamics. This finding aligns with previous research by Kim et al. (2022) and Liu et al. (2022), who emphasize the importance of collaborative lesson planning in higher education. By engaging in shared planning and reflective discussions, educators can design learning experiences that are better tailored to student conditions, particularly in online settings during the COVID-19 pandemic. Such collaborative practices facilitate the realization of authentic learning experiences and support the achievement of intended learning outcomes.

5. CONCLUSION

The findings indicate that the integration of peer tutors within lesson study activities positively impacted both the teaching process and participants' experiences. Following the implementation, the model lecturer and the observing lecturers expressed a sense of enthusiasm and satisfaction, particularly during the development of Chapters Designs I, II, and III. The involvement of peer tutors contributed to improved student achievement and enhanced the collaborative environment among educators. One of the key benefits observed was the capacity of the chapter design process to support meaningful reflection, enabling lecturers to more effectively plan subsequent lessons. This process also fostered a sense of professional growth and collegiality, as lecturers worked collaboratively to address emerging challenges in online learning environments.

Based on these outcomes, the study recommends that future online teaching initiatives include proactive preparation for potential technical disruptions, such as unstable internet connections and device compatibility issues. Ensuring technical readiness is essential for maintaining the continuity and effectiveness of the learning process. Moreover, the lesson study model, when supported by peer tutoring and collaborative planning, serves as a practical framework for adapting instruction in real time and improving both teaching quality and student engagement. These findings underscore the value of collaborative professional practices in overcoming the limitations of remote learning environments.

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Conflict of Interest: The authors declare no conflict of interest.

Ethical Approval: The study adheres to the ethical guidelines for conducting research.

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