



Transformative Pedagogy and Deep Learning Approach in Addressing 21st-Century Educational Challenges

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ABSTRAK

This study aims to analyze the implementation of transformative pedagogy and the deep learning approach in addressing the challenges of 21st-century education in higher education institutions in Papua, Indonesia. The study employed a qualitative descriptive approach involving lecturers and students as research informants. Data were collected through semi-structured interviews, classroom observations, and academic documentation. Data analysis was conducted through data reduction, data display, and conclusion drawing systematically. The findings reveal a novel contribution in learning practices, particularly the integration of critical reflection, collaborative discussion, and deep conceptual understanding that enhances student engagement and critical thinking skills. These findings contribute to the development of innovative learning strategies to improve the quality of higher education in Papua.

INTRODUCTION

The development of education in the 21st century requires fundamental transformation in learning practices to respond to the increasingly complex dynamics of social change, technological advancement, and globalization. Modern education systems no longer focus solely on knowledge transfer but also emphasize the development of critical thinking, creativity, collaboration, and communication as essential competencies required in a global society. According to Fullan (2020), effective learning in this era must integrate cognitive, social, and emotional skills so that learners are able to adapt to rapid changes. Furthermore, shifts in educational paradigms are also influenced by the rapid development of digital technologies, which shape how individuals access information and construct knowledge. Research conducted by Zhao and Watterston (2021) indicates that innovative pedagogical approaches play a crucial role in improving the quality of learning that aligns with the demands of 21st-century education.

Within this context, the concept of transformative pedagogy emerges as a learning approach that emphasizes changes in learners' ways of thinking through critical reflection and meaningful dialogue. This approach enables learners not only to receive information but also to construct new understandings based on experience and social interaction. Cranton and Taylor (2020) explain that transformative pedagogy encourages reflective processes that allow individuals to reassess previously held assumptions. In addition, the deep learning approach has become an important strategy for improving students' conceptual understanding. Research by Hattie and Donoghue (2020) demonstrates that learning processes emphasizing deep understanding can significantly improve knowledge retention and students' analytical abilities in solving complex problems.

Although numerous studies have discussed the importance of transformative pedagogy and deep learning approaches in modern education, their implementation in higher education contexts still faces several challenges. Several studies indicate that learning practices in many higher education institutions are still dominated by traditional lecture-based methods that prioritize memorization. Biggs and Tang (2022) argue that many university learning processes have not yet systematically integrated deep learning approaches into instructional practices. Meanwhile, Trilling and Fadel (2023) emphasize that the development of 21st-century skills requires learning strategies that are more participatory, collaborative, and student-centered. This condition indicates a gap between theoretical concepts of innovative learning and the actual teaching practices implemented in educational settings.

Furthermore, research on the implementation of transformative pedagogy in higher education within developing regions remains relatively limited. Most previous studies have been conducted in developed countries with well-established educational systems. Schleicher (2020) highlights that social and cultural contexts significantly influence the success of educational innovation implementation. In a different perspective, Selwyn (2021) argues that educational transformation requires adaptation to local contexts so that pedagogical

strategies can be effectively implemented. Therefore, further research is needed to provide a deeper understanding of how transformative pedagogy and deep learning approaches are applied within higher education contexts characterized by diverse social and educational conditions.

Based on these considerations, this study aims to analyze the implementation of transformative pedagogy and deep learning approaches in addressing the challenges of 21st-century education, particularly within the context of higher education learning environments. This research seeks to examine how learning strategies that emphasize critical reflection, collaborative discussion, and deep conceptual understanding can enhance student engagement and critical thinking skills. In addition, this study also aims to identify innovative learning practices that support the development of 21st-century competencies in higher education.

Theoretically, this research is expected to contribute to the enrichment of scholarly discussions on the integration of transformative pedagogy and deep learning approaches in higher education. The findings are also expected to expand the understanding of innovative learning implementation in diverse educational contexts. Practically, the results of this study may serve as a reference for educators and higher education institutions in designing more effective learning strategies that are relevant to the demands of 21st-century education. Furthermore, this study provides implications for the development of educational policies aimed at improving learning quality and strengthening students' competencies to face global challenges.

LITERATURE REVIEW

Transformative Pedagogy in 21st Century Education

Transformative pedagogy is a learning approach that emphasizes changing students' perspectives through critical reflection, dialogue, and meaningful learning experiences. This approach is rooted in transformative learning theory that emphasizes that the learning process is not only oriented towards the accumulation of knowledge, but also on changing the way individuals perceive the world around them. According to Taylor and Cranton (2021), transformative pedagogy provides space for learners to revisit old assumptions and build new understandings through a process of critical reflection. In the context of higher education, this approach is increasingly relevant because students are expected to be able to develop analytical skills and social awareness in understanding various global phenomena. Research conducted by Mezirow and Taylor (2020) shows that reflection-based learning and critical dialogue can improve students' ability to evaluate information more deeply. Therefore, the application of transformative pedagogy is an important strategy in creating a more participatory and reflective learning environment.

In addition, transformative pedagogy also plays a role in developing students' critical thinking skills and reflective awareness. This approach encourages students to actively engage in the learning process through discussion, problem analysis, and exploration of various perspectives. Brookfield (2020) explains that the process of critical reflection in transformative pedagogy

allows students to understand the relationship between personal experience and broader social reality. In another study, Hoggan (2022) found that learning based on critical reflection can increase students' epistemological awareness of the knowledge formation process. Thus, transformative pedagogy not only contributes to the improvement of cognitive abilities, but also strengthens the social and reflective dimensions in the learning process.

Deep Learning Approach in Higher Education Learning

The deep learning approach in education refers to a learning process that emphasizes deep conceptual understanding as opposed to just superficial mastery of information. This approach allows learners to connect the concepts learned with real experiences as well as apply them in different situations. According to Entwistle and McCune (2021), deep learning encourages students to develop an integrated understanding through the analysis, synthesis, and evaluation of information. In learning practice in college, this approach is often associated with active learning strategies such as group discussions, project-based learning, and collaborative problem-solving. Research conducted by Dolmans and Loyens (2020) shows that a learning approach that emphasizes concept exploration and problem-solving is able to improve students' high-level thinking skills.

Furthermore, deep learning also plays a role in improving the quality of student involvement in the learning process. When students are encouraged to understand concepts in depth, they tend to be more active in exploring various sources of information and developing a more comprehensive understanding. Research by Ashwin (2021) shows that learning strategies that are oriented towards conceptual understanding can increase students' motivation to learn as well as strengthen their involvement in the academic process. In addition, a study conducted by Gibbs (2022) found that deep learning-based learning is able to improve students' ability to conduct critical analysis of various complex problems. Thus, the deep learning approach is one of the important strategies in improving the quality of learning in higher education.

Integrating Transformative Pedagogy and Deep Learning in 21st Century Education

The integration between transformative pedagogy and deep learning approaches is one of the innovative strategies in facing the challenges of 21st century education. These two approaches have similarities in emphasizing the importance of students' active involvement in the learning process as well as the development of a deep understanding of the concepts learned. According to Illeris (2021), an effective learning process occurs when the cognitive, emotional, and social aspects of students are harmoniously integrated in the learning experience. The integration between critical reflection and conceptual understanding allows students not only to understand information, but also to be able to use it reflectively in a broader context. In another study, Biesta (2022) emphasized that 21st century education requires a pedagogical approach that is able to develop reflective thinking skills and students' critical awareness of various social and global issues.

In addition, the implementation of the integration of transformative pedagogy and deep learning also has the potential to improve the quality of learning oriented towards the development of 21st century competencies. These

competencies include critical thinking skills, creativity, communication, and collaboration which are the main needs in a knowledge-based society. Research by Voogt and Roblin (2023) shows that learning strategies that emphasize collaboration and critical reflection can improve students' ability to solve complex problems. Meanwhile, a study conducted by Darling-Hammond (2024) confirms that student-centered learning can improve the quality of the learning experience and strengthen higher-level thinking skills. Thus, the integration between transformative pedagogy and deep learning approaches has great potential in creating learning that is more relevant to the demands of 21st century education.

METHODOLOGY

This study uses a qualitative approach with a descriptive research design to analyze the implementation of transformative pedagogy and deep learning approaches in learning in higher education. The qualitative approach was chosen because it is able to provide a deep understanding of pedagogical practices, student learning experiences, and academic interactions between lecturers and students in the context of learning. This method allows researchers to explore educational phenomena contextually and interpretively through the direct experiences of participants. Qualitative research is also effective for understanding the dynamics of the learning process that cannot be measured through quantitative data alone (Creswell & Creswell, 2021). In addition, this approach is often used in educational research to dig deep into innovative learning practices in an academic environment (Merriam & Tisdell, 2022).

The population in this study is lecturers and students who are involved in the learning process at one of the universities in Papua, Indonesia. The sampling technique uses purposive sampling, which is the selection of participants based on certain criteria that are relevant to the research objectives. The criteria for lecturer participants are lecturers who actively teach courses in the field of education, such as learning strategies or learning methodologies, and have experience in applying discussion methods and critical reflection in lectures. Meanwhile, the students selected are students who actively participate in the lecture for one semester. In this study, the number of participants interviewed was five people, consisting of two lecturers teaching courses in the field of education and three students from education study programs who took the course. The selection of these participants is based on the consideration that they have firsthand experience in the learning process involving critical reflection activities, collaborative discussions, and deep conceptual understanding. The number of participants is considered adequate in qualitative research because it allows researchers to obtain rich and in-depth data from informants relevant to the focus of the research (Palinkas et al., 2020).

Data collection in this study used three main techniques, namely semi-structured interviews, class observation, and academic documentation. In-depth interviews were conducted with two lecturers and three students to obtain information about their experiences in the learning process based on transformative pedagogy and deep learning. Interviews were conducted in-

person with an average duration of 30–45 minutes for each participant. Class observation was carried out during three lecture meetings to observe learning activities, academic interactions, and student involvement in class discussions. Documentation is used as an additional source of data which includes semester lesson plans, teaching materials, and student assignments related to learning activities. These diverse data collection techniques aim to increase the depth and richness of research data (Kallio et al., 2020).

The research instruments are in the form of interview guidelines and observation sheets that are compiled based on the concept of transformative pedagogy and deep learning approaches in higher education. The interview guidelines consist of several main questions that explore the lecturer's experience in applying reflective learning strategies, collaborative discussion methods, and learning strategies that encourage students' deep conceptual understanding. To ensure the quality of the data, this study uses source and method triangulation techniques by comparing data from interviews, observations, and documentation. In addition, researchers also conduct member checking, which is reconfirming the results of data interpretation to participants to ensure that the information obtained is in accordance with their experience (Nowell et al., 2020).

The research procedure is carried out through several systematic stages. The first stage is research planning, which includes problem identification, literature study, and preparation of research instruments. The second stage is the implementation of research, which includes determining participants, conducting interviews with two lecturers and three students, and observing the learning process in the classroom during three meetings. The third stage is data processing and analysis, which is carried out gradually during and after the data collection process. The last stage is the preparation of a research report, which includes data interpretation, preparation of research findings, and drawing conclusions. Systematic research procedures are important to ensure that research is conducted in a transparent and academically accountable manner (Tracy, 2020).

The data analysis in this study uses thematic analysis to identify patterns, themes, and meanings that emerge from the research data. The analysis process is carried out through several stages, namely data reduction, data coding, theme categorization, and drawing conclusions. Data reduction is carried out by selecting data that is relevant to the research focus on the implementation of transformative pedagogy and deep learning. Next, the data were coded to identify key themes that emerged from the interviews and observations. Thematic analysis allows researchers to systematically organize qualitative data and produce a more in-depth interpretation of the phenomenon being studied (Braun & Clarke, 2021). In this study, the data analysis process was also assisted by NVivo software to organize interview and observation data in a more structured manner to facilitate the process of coding and analyzing data (Castleberry & Nolen, 2022).

RESULTS AND DISCUSSION

Integration of Critical Reflection in the Learning Process

The results of the study show that critical reflection is one of the main elements in the application of transformative pedagogy in learning in higher education. Based on the results of interviews, observations, and learning documentation, reflection is not only used as a closing activity for lectures, but has become part of the learning process that takes place from the beginning to the end of learning. Lecturers encourage students not to immediately accept the material as completed knowledge, but to retest it through questions, personal experiences, and concrete situations in the context of education. This pattern shows that learning is directed to form thinking awareness, not just mastery of the content of the material. In classroom observation, students appear to be more engaged when lecturers ask them to explain the relationship between the theory they are learning and their own learning experience or with the educational problems they understand. These findings suggest that critical reflection has served as a bridge between conceptual knowledge and the formation of personal meaning in the learning process.

The depth of reflection can be seen from the way the lecturer directs students not to stop at descriptive answers. In the interview, the lecturer emphasized that students are deliberately encouraged to associate theory with real experience so that a more personal and in-depth thought process emerges. This can be seen in the following statement: Furthermore, the lecturer explained: *"I don't usually get a chance to talk to the students about the specifics. I asked them to tell me their stories, for example, whether they had seen such a situation in class or not, and then they thought it could happen. From there, they don't just answer, they really think."* (D1, interview November 12, 2025). The quote shows that critical reflection is positioned as a strategy to encourage students to interpret, not just reproduce material. The same thing also arises from the experience of students who feel that the learning model makes them more aware of the meaning of the material being studied. Students stated: Meanwhile the students also said: *"If the lecturer tells us to reflect, at first it is a bit difficult because we have to be honest with what we understand and what we don't understand. But that's where I came to know where I was, and slowly I understood better."* (M1, interview November 14, 2025).

Another student emphasized that reflection makes the learning process closer to real experience, so that theory does not feel abstract. He said: Then another student added: *"Usually after the discussion, the lecturer asks again for our personal opinion. So it's not just what the book contains, but what we think after learning the material. I think that's what makes learning feel deeper."* (M2, interview November 16, 2025). Based on the overall data, it can be understood that critical reflection not only increases the depth of understanding, but also helps students build a more conscious, open, and analytical thinking position towards the learning material.

Collaborative Discussion as a Space for Perspective Exchange

The findings of the study show that collaborative discussions are not just a learning technique used to enliven the classroom, but rather become the main

space for students to build understanding through interaction with others. In the observed learning, lecturers do not dominate the flow of discussion, but rather play the role of facilitators who provoke questions, direct the flow of conversations, and provide space for students to respond to each other. This situation creates more open and participatory learning. Students not only express opinions, but also learn to assess, compare, and negotiate their ideas with the ideas of their classmates. From the observation results, it can be seen that group discussions make students who were initially passive become more courageous when they are in small groups before presenting the results of the discussion to the class forum. Thus, collaborative discussions function as a means of forming academic courage as well as strengthening understanding through the exchange of perspectives.

The depth of the function of this collaborative discussion can be seen from the lecturer's explanation who emphasized that the discussion is not only to find the right answer, but to bring together various points of view. One of the lecturers explained: One of the lecturers explained: "*I deliberately made a discussion not to quickly reach conclusions. I want them to hear each other first. Sometimes from one simple question many points of view emerge, and that's what makes the class live.*" (D2, interview November 18, 2025). The statement shows that discussions are used as a learning process, not just as a complementary activity. Students also feel that discussions give them the opportunity to see material from a perspective they didn't think of before. A student said: "*If I had a discussion, I realized that one material can be understood differently. Sometimes I think my answer is correct, but after listening to my friends, I see that there is another side that makes more sense.*" (M2, interview November 20, 2025).

Other students added that the discussion made them not only receive explanations, but also learn to reinterpret knowledge in their own language. He stated: Another student added: "*During the discussion, we are forced to understand because if we don't understand it, it is difficult to explain it to friends. So we can't help but read again, ask again, and it makes the understanding stronger.*" (M3, interview November 22, 2025). From these findings, it can be concluded that collaborative discussions play an important role in forming an active, dialogical, and perspective-rich learning atmosphere. Discussions not only increase student participation, but also deepen their understanding through the process of explaining, criticizing, and refining ideas.

Development of Conceptual Understanding through a Deep Learning Approach

The results of the study show that the deep learning approach appears mainly in the efforts of lecturers to encourage students to understand concepts in depth, not just memorize definitions or theories. In observed learning, lecturers tend to provide open-ended questions, case studies, and analytical tasks that require students to connect concepts with real situations in the world of education. This pattern makes students unable to rely solely on memorization, as they are required to explain reason, the relationship between concepts, and the possibility of applying theory in a concrete context. The results of the documentation of student assignments also show that the answers produced are more argumentative than just a summary of the material. Students are seen trying to build reasoning, not just copying the content of the reading. These

findings show that deep learning approaches have been directed to form more structured, applicative, and meaningful understandings.

The depth of this approach can be seen from the explanation of lecturers who consciously avoid learning that is only oriented to memorization. One of the lecturers said: A lecturer said: "*I do give more cases or real situations, because if I just ask a theory, students usually answer only what is in the book. But if they are given a case, they have to really understand it before they can respond.*" (D1, interview November 15, 2025). The quote shows that lecturers use case studies as a way to test and at the same time foster the depth of student understanding. Students also feel that this form of learning forces them to think more seriously about the material. One of the students said: Students also benefit from the learning approach: "*If I only read the theory, sometimes I feel understood, but not necessarily. But when I was given an example of a case, it was only then that I realized whether I really understood it or not.*" (M3, interview November 24, 2025).

Another student explained that deep learning helps them see the relationship between concepts, rather than learning them separately. He said: Another student added: "*The learning is not piecemeal. For example, one concept turns out to be connected to another concept, continuing to connect with conditions in the field. That's what makes me feel more understood, not just memorized.*" (M1, interview November 26, 2025). These findings confirm that the deep learning approach in this study serves to deepen the structure of student understanding. Students not only know the content of the material, but are also able to interpret, connect, and apply it in more real educational problems.

Increased Student Engagement and Confidence in Learning

Another theme that emerged strongly from the results of the study was the increase in student involvement in learning. Based on the observation results, students appear to be more active when learning is designed through discussion, reflection, and case analysis than when learning takes place in one direction. This involvement can be seen from the frequency with which students ask questions, give responses, express opinions, and respond to friends' arguments. Not only that, students also seem more confident in expressing their views, especially when lecturers give space for differences of opinion and do not immediately judge the answers correctly or wrongly. Learning situations like this create a sense of academic security, so that students feel that their opinions are worth expressing. Thus, student involvement in this study means not only physical presence in the classroom, but also intellectual and emotional involvement in the learning process.

The increase in involvement was also explained directly by the lecturer who saw changes in student behavior during the lecture process. A lecturer said: A lecturer said: "*If they are given a space to speak and their opinions are respected, they usually become more courageous. Students who were initially silent began to want to talk, albeit slowly.*" (D2, interview November 25, 2025). The statement shows that the learning strategies used not only have an impact on understanding, but also on the courage of students to get involved. From the student side, these changes are also felt in real terms. One of the students explained: The students also said: "*I usually don't dare to speak in class, but because the lecturer gives me the opportunity*

and the atmosphere is not stressful, it is more comfortable to give opinions." (M2, interview November 27, 2025).

Other students added that involvement in learning makes them more confident in their own thinking abilities. He stated: Another student added: *"If we are often invited to discuss and ask for opinions, over time we become convinced that our thoughts also have value. It makes me more confident when studying."* (M3, interview November 28, 2025). These findings show that transformative pedagogy and deep learning approaches not only impact cognitive aspects, but also strengthen student engagement, courage, and confidence in following the learning process.

The findings of the study show that the integration of critical reflection in the learning process is able to encourage students to build a deeper understanding of the material studied. These results are in line with transformative learning theory that emphasizes the importance of reflection as a key mechanism in changing learning perspectives. Critical reflection allows learners to revisit assumptions they have previously had and relate them to new experiences gained during the learning process (Hoggan, 2022). In the context of higher education, this approach not only helps students understand concepts more comprehensively, but also strengthens reflective awareness of the role of knowledge in real life. Research conducted by Taylor and Snyder (2021) also shows that reflection activities in learning can improve students' ability to critically evaluate the information received. Thus, the findings of this study strengthen the argument that critical reflection is an important component in transformative pedagogy that contributes to the development of students' critical thinking skills.

In addition to critical reflection, the results of the study also show that collaborative discussions play an important role in increasing student engagement in the learning process. These findings support the view that dialogical learning can create space for students to develop their thinking through social interaction and the exchange of ideas. According to Boud and Dawson (2021), collaborative discussions allow students to build knowledge together through the process of argumentation and negotiation of meaning. In another study, Mercer and Wegerif (2020) explain that open academic dialogue can strengthen critical thinking skills because students are involved in the process of considering a variety of different perspectives. The results of this study show that discussions not only increase student participation, but also enrich the way they understand concepts through interaction with classmates. Thus, collaborative discussion strategies have proven effective in supporting transformative pedagogical practices that place students as active subjects in the learning process.

The findings of the study also show that the deep learning approach plays an important role in deepening students' conceptual understanding of learning materials. This approach encourages students to relate theoretical concepts to real experiences and apply them in a broader context. Biggs and Tang (2022) explain that deep learning occurs when students not only memorize information, but try to understand the relationships between the concepts learned. Research by Entwistle and Peterson (2023) also shows that learning that emphasizes concept analysis and problem-solving is able to improve the quality of students'

understanding of academic materials. In this study, the provision of case studies and analytical assignments is one of the effective strategies to encourage students to understand concepts more deeply. This shows that the integration of deep learning in learning can strengthen students' analytical skills while improving the quality of the learning process in higher education.

The results of this study also show that the application of transformative pedagogy and deep learning contributes to increasing student involvement in the learning process. Students no longer play the role of passive recipients of information, but become active participants involved in discussion, reflection, and analysis of the material. These findings are in line with research conducted by Felten and Lambert (2020) which states that student-centered learning can increase learning motivation and a sense of ownership of the learning process. In addition, studies by Healey, Flint, and Harrington (2021) show that student involvement in collaborative learning activities can strengthen critical thinking skills and increase academic confidence. In the context of this study, student involvement can be seen from increased participation in class discussions and students' courage in expressing opinions. Thus, the integration of transformative pedagogy and deep learning can create a more active and participatory learning environment.

Although this study shows a positive contribution from the application of transformative pedagogy and deep learning in learning, there are some limitations that need to be considered. This study involved a relatively limited number of participants, namely two lecturers and three students, so the findings of this study could not be generalized widely in other higher education contexts. However, this limitation does not reduce the exploratory value of research because the qualitative approach does aim to gain a deep understanding of the phenomenon being studied (Tracy, 2020). In addition, this study only observes the learning process over a certain period of time so it cannot see the long-term impact of the application of transformative pedagogy on student academic development. Therefore, further research is recommended to involve a wider range of participants and use a mixed-methods approach in order to provide a more comprehensive picture of the effectiveness of integrating transformative pedagogy and deep learning in higher education.

CONCLUSIONS AND RECOMMENDATIONS

This study shows that the application of transformative pedagogy and deep learning approaches in learning in higher education can increase student involvement, strengthen critical reflection, and deepen conceptual understanding of learning materials. The integration of critical reflection, collaborative discussion, and case study analysis has been proven to encourage students to be more active in the learning process as well as develop critical thinking skills that are relevant to the demands of 21st century education. These findings confirm that student-centered learning strategies can create more meaningful and contextual learning experiences. Therefore, higher education institutions are advised to develop innovative learning models that integrate transformative pedagogical approaches and deep learning as part of a learning quality improvement strategy.

FURTHER STUDY

This study has limitations in the relatively limited number of participants and the scope of learning observation carried out in a certain time. Therefore, further research is recommended to involve a wider number of participants and use a mixed-methods approach in order to provide a more comprehensive picture of the effectiveness of the application of transformative pedagogy and deep learning in various higher education contexts.

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