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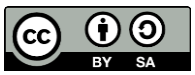

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Integrating Deep Learning into English Teaching: Developing Students' Skills at Senior High School

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Abstract

This case study was conducted to discuss the limitations of the pedagogical implementation of deep learning (DL) in English language teaching (ELT) in Indonesian high schools. The purpose of this study was to theoretically explore how the pedagogical application of deep learning is conceptualized in English language classrooms and how it contributes to the development of students' learning skills, with Senior High Schoolas the research object. Using a qualitative case study design, senior high school teachers (T=3) and students (S=42) were the study subjects. The main data were collected through semi-structured interviews with English teachers and supported by structured interviews given to 11th-grade students whose learning process had been implemented by deep learning. The findings indicated that deep learning contributes positively to the development of students' skills. Deep learning is an educational process that creates meaningful learning through real-world experiences. Teachers use interactive techniques, such as problem-solving and project-based learning, which are interspersed with traditional methods, including jigsaw. The results show that each individual experienced some improvement in their language skills, such as speaking, reading, and several other skills, through learning by applying teamwork, project-based learning, problem analysis, and creative expression skills. Additionally, several challenges related to its integration were identified. These have been identified to maximize the application of deep learning in English language teaching (ELT) and improve student learning skills (SLS) in Indonesia. This study concludes that institutional support, professional development for teachers, and improved digital literacy are still greatly needed and must be implemented consistently.

Keywords: *Deep Learning (DL); English Language Teaching (ELT); Kurikulum Merdeka; Student Skills*

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Introduction

In today's era of globalization, many things are evolving. The world is currently undergoing several reforms with adjustments to developments in each field of science that are increasingly advanced. These developments have a broad impact on the continuity of life, including in the field of teaching or education. In recent years, Indonesia has undergone several significant curriculum changes. These curriculum changes have certainly brought about shifts in education, including English language teaching (ELT), which increasingly emphasizes the importance of meaningful and student-centered learning experiences.

This is done to modify the teaching system to be more efficient and effective in enhancing students' skills. The Kurikulum Merdeka goals, which emphasize learning skills, discovery-based activities, teamwork, and the use of English in authentic settings, are also consistent with this method. Teachers must therefore act as facilitators who direct the learning process rather than as information centers, incorporating students' everyday lives into the educational process. The government's Merdeka Belajar policy, which prioritizes adaptable student-centered and technologically enhanced learning environments, is contributing to Indonesia's growing trend toward digital innovation in education (Subiyantoro et al., 2024).

Teachers have a significant responsibility in the learning process, enabling students to understand and participate actively in learning activities. They face various challenges in the teaching process and help students interpret the material presented (Sari & Niswa, 2025). Therefore, teachers are now required to be able to apply various teaching methods and models by adjusting to their students' abilities. This is the subject of joint evaluation to create adaptive teaching that keeps up with the latest developments in education.

There are many resources that teachers can use to make their teaching more interesting and to develop students' critical thinking skills. Artificial intelligence (AI) is a tool to enhance English language instruction and is a significant part of supplemental support systems for teachers and English language learners (Ghafar et al., 2023). This innovative update can help in creating teaching media and models that are more interactive and relevant to the increasingly modern real world. As a result, English language teaching will no longer be limited to mere exposition, but will also encourage students to explore and deepen their critical thinking skills.

The deep learning process in the Kurikulum Merdeka is referred to as "Deep Learning." Unlike surface learning, deep learning encourages critical thinking, self-reflection, and knowledge transfer, making it highly applicable in the context of teaching English as a Foreign Language (EFL) in Indonesia (Safira & Astuti, 2025). Deep learning relates strategies that emphasize the integration of concepts, critical thinking skills, knowledge transfer, reflection, and problem-solving in authentic contexts (Fan & Long, 2024).

Furthermore, intercultural sensitivity, motivation, and deep cognitive processes are crucial for enhancing learning outcomes in both online and in-person

learning based on English-Medium Instruction (EMI) (Fan & Long, 2024). Without compromising fundamental subject knowledge, deep learning even enables educators to create learning opportunities in secondary education that promote creativity, inquiry, and transformative learning (Modrek, 2025). It places a strong emphasis on students' active learning and the application of adaptable and competent knowledge to solve real-world issues (Qu & Li, 2022).

Deep learning is applied through meaningful learning activities supported by technology as a means of assisting in the development of the teaching process. Deep Learning is applied through meaningful, joyful, and mindful. Deep learning in English language learning, particularly listening, speaking, reading, and writing comprehension, can improve the quality of learning through contextual activities, in-depth learning, and meaningful interactions between students (Rahimi & Sevilla-Pavón, 2024).

Meaningful Learning, in meaning, is the first foundation and the main element in the Deep Learning-based learning approach. This approach allows students to understand learning more deeply and comprehensively (Sari & Niswa, 2025). Joyful learning promotes emotional engagement, which research shows enhances creativity, reduces dropout rates, and fosters a positive school climate essential for effective (Susiani & Abadiah, 2021; Bachtiar et al., 2025).

Mindful learning involves students' ability to stay open to new perspectives, reflect on their learning experiences, and avoid automatic or mechanical mindsets (Benu et al., 2025). In the ELT context, Mindful learning can help students to be more sensitive to the nuances of language, such as intonation, social context, and implicit meaning (Moafian et al., 2019; Al-Rashidi & Aberash, 2024; Benu et al., 2025).

Research in the context of English Medium Instruction (EMI) reveals that when learning concentrates solely on surface learning, students frequently struggle to comprehend complex material. Many students are able to relate, connect, and assess information because they comprehend the reading's content, but are unable to understand its deeper meaning (Zhou et al., 2025). However, theoretical understanding of deep learning in the context of education is still subject to several ambiguities and conceptual misunderstandings, namely regarding its definition, application, and suitability for learning practices in secondary schools (Kovač et al., 2025).

Their findings show that deep processing is greatly influenced by motivation and self-efficacy; students' belief in their own abilities determines the extent to which they are able to engage deeply in learning. This challenge highlights the gap between meaningful learning objectives and students' learning experiences in the classroom, underscoring the need for further research on the application of deep learning approaches in secondary education.

In English language teaching practices in Indonesia, the learning process is still often oriented towards superficial understanding. Although the Kurikulum Merdeka focuses on inquiry-based teaching, some of its implementations in the

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classroom still tend to focus on achieving basic cognitive targets. This limits students' ability to relate English learning to real-life contexts, develop critical thinking, and build meaningful understanding, especially at educational levels that require more complex language and cognitive skills.

Previous research has stated that the Deep Learning approach has great potential in improving the quality of English language learning. Deep Learning in English language learning in elementary schools can improve students' conceptual understanding, encourage active engagement, and create a more meaningful learning experience. This approach is understood as a pedagogical approach that emphasizes three main principles, namely Meaningful Learning, Mindful Learning, and Joyful Learning. (Sari & Niswa, 2025).

In line with these findings, in the context of vocational education at SMK Negeri 1 Bengkayang, the application of Deep Learning in English teaching has shown an increase in student competence. Through project-based assignments, inquiry-based learning, and reflection, students are actively involved in the authentic and contextual use of English. Deep Learning is related to the development of six global competencies (6C). However, challenges such as teacher readiness, resource limitations, and assessment alignment remain important issues in its implementation.

Although both studies prove the effectiveness of the Deep Learning approach in English language learning, there are still significant research gaps. To date, empirical studies on the application of the Deep Learning approach in senior high schools are still limited due to the more complex academic context. In addition, there has not been much field research that specifically explores how the Deep Learning approach contributes to the comprehensive development of high school students' learning skills, including cognitive processes, learning experiences, and student responses during the learning process.

To fill this gap, this study uses a qualitative field approach, as used in the two previous studies, because this approach allows researchers to understand the learning process in depth and contextually. The qualitative approach is considered appropriate for exploring how Deep Learning is implemented in high school English classes, how students experience the learning process, and how teachers design and adjust learning strategies according to the curriculum requirements and student characteristics at Senior High School.

Based on the existing gaps, this study focuses on the following research questions: 1) How do teachers conceptualize and implement deep learning? The aim is to examine how deep learning is applied in English classes; 2) What learning skills are developed through deep learning? The aim is to analyze the contribution of the Deep Learning approach to the overall development of students' skills; 3) What challenges do teachers and students encounter? The goal is to analyze and find solutions related to the challenges that arise during the deep learning process.

The novelty of this research lies in its focus on the high school level, which has not been widely studied by previous research, as well as its efforts to integrate

the Deep Learning approach as a pedagogical strategy in EFL learning in high schools. Theoretically, it enriches the literature on Deep Learning in English language education. Practically, the results are expected to serve as a reference for teachers and educational institutions, or even future researchers, in developing English language learning to achieve a progressive 21st-century generation.

The researchers chose Senior High School as the subject of their study because it has actively implemented an independent curriculum, a supportive digital learning environment, and diverse teachers and students. This makes the school a suitable place to implement deep learning in English teaching at the senior high school level in accordance with the curriculum procedures currently in place.

Method

This study uses a descriptive qualitative approach, namely a case study design, to explore the integration of Deep Learning in English language learning and the development of student learning skills (SLS) at Senior High School. Case studies are suitable for analyzing real phenomena in depth, especially when the boundaries between the phenomenon and its context are unclear (Yin, 2018). This is why the researcher chose this type of research design, because it allows the researcher to comprehensively understand the process of implementing Deep Learning in the classroom directly.

In this study, the research participants consisted of three English teachers (T=3) from Senior High Schoolwho had applied Deep Learning principles in their teaching. Using purposive sampling, the respondents, namely the three teachers, *Table 1.* shows that the teachers were selected based on their diverse teaching experience over the past few years and their active involvement in the implementation of the Merdeka Belajar curriculum currently being applied in Indonesia. The criteria for selecting these respondents also took into account the teachers' willingness to share their experiences and perspectives in depth through semi-structured interviews with around 8 questions.

Participant Code (T) Teacher	Role	Teaching Experience
T1	English Teacher	Since 2003 (22 years)
T2	English Teacher	Since 1994 (31 years)
T3	English Teacher	Since 2007 (18 years)

Table 1. Research Participant (Teacher)

In addition to teachers, students also participated as respondents, so this study considered the perspectives of both teachers and students. It should be noted that there are 12 classes in each grade at Senior High School, with approximately 36 students in each class. In this study, the student respondents consisted of 42 students (S=42) in grade 11 from several classes that were randomly selected

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based on data saturation, which is when the interviews no longer produced new information/data had already b11th-gradeeen obtained from the 42 students. The respondents in this study were focused on 11th-grade students because at that level, students already have a fairly mature foundation in English and are not yet burdened with final exam preparations.

In addition, the focus was only on students who had implemented deep learning and were taught by the three teachers who had been interviewed previously. The questions for these students consisted of seven questions; these questions were written reflections during the learning process to explore in depth the application of deep learning in their classrooms. The study's primary instruments were semi-structured and structured interview guides that were created based on three primary research areas: 1) comprehension of the deep learning concept in English Language Teaching, 2) deep learning strategies and implementation in learning activities, and 3) difficulties and assistance required in its application.

In-depth exploration was made possible by the interview guides' open-ended questions, which also included follow-up questions that allowed respondents to freely express what they had previously learned and used. The researcher conducted one-on-one in-person interviews with each participant to gather data. These interviews lasted roughly fifteen minutes per teacher. The interviews were conducted at the school, and the schedule was adjusted to ensure privacy and comfort.

All matters related to privacy were communicated before the interview took place. Meanwhile, interviews with students were conducted through written responses in a Google form with open-ended questions to explore detailed information about the learning process they had experienced. Respondents were given approximately 15 minutes to answer the questions on the Google form. The questions for students were in the form of open-ended questions to explore in-depth information related to the teaching process that students experienced.

To document nonverbal cues, movements, or context during the data collection process, field notes and classroom observations were also used to support the data. Semple's classroom observations included group discussions, text analysis, and student products. Before the data collection process, the researchers obtained permission because this data collection process coincided with the Pengenalan Lapangan Persekolahan (PLP) process, in which researchers were sent to the field to observe the learning process at school.

The data collection process was carried out between October and early November 2025. After that, thematic analysis was used to examine the data (Braun & Clarke, 2006). The process started with familiarization, in which the researcher read the transcripts of the interviews several times and made notes about preliminary concepts. After that, significant data segments were found and labeled as part of the initial coding process. These segments were subsequently grouped into more general themes.

The conceptualization of deep learning implementation strategies, student skill development, application challenges, and shortcomings/needs for support in the deep learning process were among the themes that surfaced. Before presenting the results through thematic narratives bolstered by participant quotes, each theme was precisely identified and defined. To reduce subjectivity and guarantee validity and credibility, the researchers employed triangulation with field notes, peer discussions, and member verification.

One method for improving the validity and dependability of research findings is the application of triangulation. Credibility is the extent to which a study is reliable and plausible. Meanwhile, the extent to which a study accurately evaluates the topic or concept being studied is known as validity (Noble & Heale, 2019). The member verification process was carried out by confirming data interpretations with participants to ensure the accuracy of the representation of the experiences of the respondents involved.

In addition, the researchers applied reflexivity by critically acknowledging and considering their positioning and potential biases during the research process.

Results

Finding

The findings of this study were obtained based on an in-depth analysis of interviews with three English teachers at Senior High Schoolwho had implemented deep learning in their teaching process, as well as responses from 11th-grade students via Google Forms using structured interview questions. The data obtained shows that a fairly strong pattern of deep learning-based implementation has begun to form in this school, although there are still many shortcomings in its application.

The main findings focus on three things: 1) how teachers understand the concept of deep learning; 2) how they apply the concept of deep learning in teaching English as a foreign language and how students perceive their learning experiences in class; 3) what the challenges are for Teachers and Students in Implementing Deep Learning.

Teacher conceptions of deep learning

From the interview results, it can be concluded that Teachers 1 (T1) understand deep learning as a student-centered learning approach, in which students not only receive material but also construct meaning in a profound way through relevant and contextual learning experiences. The Teachers 1 (T1) emphatically stressed that deep learning is essentially shifting the center of activity from the teacher to the student. She mentioned that so far, many practices have been carried out, such as group discussions, game-based activities, the use of visual stimuli, and linking material to everyday life, which reflect the principles of deep learning, even though they are not labeled as deep learning. She said that when learning begins with something close to the daily lives of students, such as bathing

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routines or breakfast habits, students can quickly understand the context of the material being taught. The teacher also explained that simple questions such as

> "Do you usually eat breakfast? (T1)
>
> "Do you think breakfast is important?" (T1)

Language content, like hortatory, can be connected to it. Students are then expected to think critically about the issues they face on a daily basis. In this way, rather than concentrating solely on memorization of structures, students can make connections between language concepts and practical application.

A more theoretical viewpoint on deep learning was offered by teacher 2 (T2). He clarified that this idea originated from the machine learning approach's adaptation, which was later developed into a human education strategy. Thus, deep learning is meaningful learning that requires awareness and active involvement from students, not just passive listening. He emphasized that the curriculum at Senior High School has always emphasized processes such as group discussions, cross-subject projects, problem solving, and the use of varied learning resources. Therefore, the policy change that introduced the term deep learning did not drastically change teachers' practices, but provided a new basis for the existing learning patterns.

The teacher 3 (T3) provided a concrete example of how deep learning is applied in English teaching. She explained that learning advertisement material is made more meaningful by asking students to create their own product advertisements, then promote them through digital media such as Canva or even TikTok.

> "When teaching, I can use many available learning media. Such as Kahoot, Quiziz, or assignments for children can be done through media that they commonly use. Such as Canva or presentations in the form of videos, Capcut. Well, later on, the assignments can be uploaded to their TikTok accounts. This is also a means of self-actualization." (T3)

This statement shows that the application of deep learning combines creativity, active participation, and the use of technology as a supporting medium. The use of social media such as TikTok or Canva allows students to express their ideas and engage in learning with real-world contexts by aligning with developments in information media.

Student learning experiences

Student engagement increases when they feel that their work is relevant to the real world. Student data also reinforce this finding. Based on the results of the analysis of student responses in deep learning-based learning, in which they often relate the material to real life, most students expressed a strong understanding when the material was directly related to real experiences.

One student (S8) stated that

> "Yes, often. When asked to connect the material to life experiences or real situations, I find it easier to understand the lesson content because I can see its direct connection to everyday life. This makes me think more critically and not just memorize, but also understand the meaning behind each piece of material. For example, when learning about descriptive text, I can write about people or places I know, so it feels more real and meaningful." (S.8)

Another student's response

> "..... when learning English and being asked to connect the material to real-life experiences or situations, I feel that I understand the material better and think more critically. This is because I can directly apply the lessons in the context of everyday life, so I don't just memorize but also really understand how to use it. In addition, learning becomes more interesting and easier to remember because it is related to personal experiences." (S.18)
>
> "In my opinion, it makes us understand better and think critically, because we get to know how to use English in real life, not just memorize it." (S. 30)
>
> "I feel that I understand the material better because I can relate my experiences to material that I have never studied before...." (S. 38)

This quote suggests that linking English learning materials to students' real-life experiences can help them gain a deeper understanding. Thus, they are able to understand meaning in a deeper context rather than just focusing on memorizing materials and superficial descriptions. This finding indicates the main principle of deep learning pedagogies in meaningful learning and knowledge transfer. Students build stronger conceptual understanding by actively connecting new knowledge with prior experiences.

The majority of students who responded said as much. In contrast to rote learning, they stressed that making connections between lessons and everyday life allowed them to understand concepts more deeply. Additionally, they believed that their comprehension improved and their critical thinking abilities were sharpened when teachers gave them specific examples, connected ideas to pertinent circumstances, or asked them to consider personal experiences. This demonstrates how the deep learning approach influences meaning-making by fusing academic knowledge with practical situations.

Figure 1. Students' Preferences toward Deep Learning-Oriented Activities

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Based on Figure 1. The results of the 42 respondents, students have diverse preferences in the English learning process. As many as 28.6% of respondents stated that it was easier to understand the material through direct explanations from the teacher, indicating that the teacher-cantered approach is still considered effective in helping structured understanding. However, the most dominant finding indicates that students understand the material better with a variety of learning methods or models, such as game-based learning, watching videos, using applications, working on project assignments, or doing thinking exercises. Overall, these results show that a combination of conventional and innovative learning, utilizing technology as a supporting tool to create interesting teaching models, methods, or media, has the potential to improve students' understanding of the English language learning.

Developed Skills

Based on the results of interviews with teachers, it was found that the skills that developed the most were speaking and collaboration.

> "If it's a language teacher, it's because we see it from two sides, writing and speaking." (T1)
> "Okay, it seems like speaking." (T2)
> "Perhaps speaking is more prominent. Children are not so good at reading because they are busy reading WhatsApp messages." (T3)

Teachers emphasised that speaking skills were the easiest to observe changes in, particularly through activities such as group discussions, impromptu presentations, and video-making assignments. These findings were further supported by field observations in the form of student learning video assignments in *Figure 2*. The videos show that many students are able to express their ideas more fluently, speak with more confidence, and actively collaborate with classmates during oral assignments.

Figure 2. Documentation of students' speaking activities obtained from project videos

From these assignments, students tend to participate more actively when learning involves visual and collaborative elements, so that progress in speaking skills is more apparent here. However, teachers also mentioned that reading skills

were still a challenge because students were less interested in reading long texts and were still focused on social media.

Challenges and constraints

During the study, several challenges were identified from the perspectives of teachers and students. These challenges can affect the effectiveness of learning and require further attention in order to optimise the deep learning approach.

Teacher Perspective

1. *Uneven Skills*

   Teachers emphasize that students' English language learning abilities are still not developing evenly. Some students excel in only one skill, such as understanding grammar, but have difficulty speaking, or conversely, are fluent in speaking but weak in writing and sentence structure.

   > "Sometimes, some children are very good at writing, but not good at speaking or expressing their ideas. But some children are very good at expressing their ideas, but when they write, their writing is poor. Then there are also children who are only good at theory. This means that, in theory, for example, they are only good at grammar." (T1)

   Therefore, based on this case, a strategy is needed to maintain a balance in the development of students' skills. This imbalance poses a challenge for teachers, especially when they are asked to implement deep learning-based learning that requires the integration of various language skills. The challenges experienced by teachers are in line with the findings from student responses, which show that most of their difficulties lie in limited vocabulary, grammar, and the ability to convey ideas in depth in English.

2. *Varying Student Motivation*

   In the context of other challenges, teachers mentioned that student motivation varies greatly.

   > "….. the student comes with high motivation to learn or low motivation to learn." *(T1)*

   Differences in student motivation levels are an important factor in the successful implementation of deep learning. Students with high motivation tend to be more actively involved in the learning process, while students with low motivation can hinder classroom dynamics and learning effectiveness.

   There are students with low motivation, which can disrupt the rhythm of the class and have a negative influence on other students. This condition is also confirmed in the students' answers, where some of them admit to feeling pressured, afraid of making grammatical mistakes, or lacking confidence when asked to think deeply. This fear and lack of internal motivation directly contribute to a decline in the quality of class discussions, critical thinking skills, and students' courage to engage in

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deep learning activities.

3. *Heavy Workload and Time Constraints*

Another major issue for teachers is the heavy workload. Teachers find it challenging to consistently create cutting-edge media or methods when they have a teaching schedule.

> "….. Perhaps we should maximize the media ….." (T3)

This indicates that teachers recognise the potential of digital media as a tool for developing teaching models or methods, but feel constrained by time limitations and other responsibilities that need to be prioritised.

This statement shows teachers' awareness of the potential of digital media in supporting deep learning as a tool for developing a more efficient teaching process. Teachers emphasize the need to optimize the use of various digital platforms and tools to make learning more interesting, interactive, and relevant to students' experiences.

In fact, students indicate that they find visual media, digital applications, or project-based activities that require creative exploration very helpful. This discrepancy shows a gap between students' expectations and teachers' ability to meet them due to time constraints.

4. *Technology management*

Another significant issue is the use of technology. Teachers claim that personal electronics frequently cause distractions that impair students' ability to concentrate.

> "… how to use technology so that it is not misused, so that it does not have a negative impact…" (T2)

Teachers realize that technology can help develop useful learning tools, but it can distract students if not applied appropriately.

5. *Teaching capacity building*

To maximize the application of deep learning so that it not only happens sporadically but also develops into an organized and long-lasting practice professional training is equally crucial.

> "Training is not just in-house learning. Training at school. Well, training for yourself." (T1)

Teachers realize that training is an effort of self-development to be able to design effective learning by utilizing technology to develop it, and guide students appropriately.

This is directly linked to students' need for more targeted instruction in the areas of critical thinking, comprehending difficult texts, and employing suitable vocabulary. It will be challenging to consistently apply strategies that can assist students in overcoming these obstacles, if teachers' professional competence is not improved.

Student Perspective

1. *Limited Vocabulary*

   There are indications that students experience several problems in applying deep learning, one of which is difficulty finding the right words to express their ideas or to fit the context and tenses.

   > "It seems that the biggest challenge I face is finding technical words in English." (S2)
   > "I sometimes have difficulty understanding English if the sentences are unfamiliar to my ears." (S10)
   > "The challenge I feel when asked to think more deeply... is the difficulty of finding the right vocabulary to convey my ideas." (S15)
   > "The challenge is finding English vocabulary that I don't know when answering questions." (S19)
   > "It's difficult to understand the grammar and meaning of words I've never encountered before." (S21)
   > "Translating what's in my mind into English." (S23)

   Vocabulary is a key point for some students in understanding teaching concepts. Therefore, special training is needed to improve their skills. Perhaps students should accustom themselves to being exposed to English in their daily lives independently in order to expand their individual vocabulary.

2. Difficulties with Grammar

   Many students have difficulties with grammar, which affects their ability to write, speak, or construct sentences correctly.

   > "The challenge I feel right now is the lack of verbs and lack of understanding of grammar." (S7)
   > "Difficulty finding words, difficulty constructing good grammar." (S12)
   > "The challenge is that sometimes it is difficult to arrange words or sentences in English to explain my own ideas, so it takes longer to think and choose the right words." (S26)

   Students sometimes experience confusion in constructing English words that are different from their mother tongue. Therefore, adjustments are necessary, even though grammar is not the main focus of fluency in speaking, but that does not mean it can be ignored. In fact, it can help in understanding the concepts of a reading or speech.

3. *Understanding listening articulation*

   In the context of teaching, training listening skills is a very disruptive challenge.

   > "Listening, because sometimes the sound is not clear." (S18)

   These students have difficulty understanding the material if the articulation of the teaching audio is unclear. This is a matter for teacher evaluation, to ensure that the audio is clearly conveyed and that students may need to familiarise themselves more often with the listening teaching

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process, with independent practice such as frequently listening to English videos or podcasts.

4. *Confidence and Motivation Issues*

   Some students feel pressured, afraid of making mistakes, or lack confidence in their abilities. This affects their active class participation and causes them to become quiet.

   > "Limited vocabulary and a slight lack of confidence due to fear of making grammatical mistakes." (S29)
   >
   > "Perhaps the fear of speaking with incorrect grammar."(S33)

   They feel unsure of their own abilities. This needs to be evaluated together to find ways to boost their confidence. The solution may be to communicate more often with teachers, friends, and people around them to gather information related to vocabulary and hone their speaking skills.

Discussion

This discussion section interprets the research findings based on three problem formulations, with reference to the principles of the Kurikulum Merdeka, which is learner-centered, and the theory of pedagogical deep learning.

Implement Deep Learning

Teacher Conceptualize

Based on the first research question, the results show that English teachers at Senior High Schoolview deep learning as an approach that places students at the centre of the learning process. Deep learning is understood as an active learning process that involves collaboration, problem-solving, and linking material to real-life contexts and has been implemented for a long time. Deep learning approach complements communicative methodologies that prioritise the use of language in real contexts, critical thinking, and collaboration (Biggs & Tang, 2011).

The implementation of deep learning in English teaching is reflected through the use of project-based and problem-based learning models, such as tasks that raise contextual issues, such as flooding. This approach is in line with the spirit of Kurikulum Merdeka, which emphasises holistic learning and competency development. Previous research has reported that the curriculum's emphasis on inquiry-based learning, project-based tasks, and reflective activities engages students more deeply and makes learning more meaningful. (Indahtriyani, 2025)

Teacher 3 (T3) stated that digital media such as Canva, CapCut, Quizizz, and TikTok are used as tools to support project-based learning activities to enhance student creativity and engagement. Thus, technology is a supporting medium within the framework of deep learning pedagogy. However, some teachers use basic media such as YouTube and WhatsApp solely as a means of communication. This is unfortunate because it could help in developing more collaborative teaching media and methods. This ultimately affects the depth and consistency of deep learning implementation in English classes. These findings are in line with previous

research showing that teachers' technology-related comprehension competencies play a role in supporting successful deep learning integration (Zeng, 2025).

Student experience

The application of deep learning in English language teaching improves student understanding by emphasizing meaningful and contextual learning. Although some students still prefer direct explanations from teachers, most students benefit from diverse learning methods supported by technology, such as videos, games, and project-based activities. The informatization of education is the core and symbol of educational modernization.

We must leverage the advantages of technology and transform traditional models to accelerate the deep integration of new technologies and education (Shi & Lan, 2024). Therefore, effective implementation of deep learning involves combining deep learning with intensive guidance from teachers using questions that stimulate students' critical thinking with the help of technology, to develop more critical teaching to achieve the objectives of the material in real life, to ensure that students are not confused in the process of knowledge transfer.

Development of Learning Skills

In response to the second research question, the results show that the deep learning approach contributes positively to the development of students' learning skills. The most notable improvement was seen in speaking and collaboration skills. Activities such as group discussions, video making, and presentations provided opportunities for students to use English authentically and communicatively. Deep learning is effective in developing communication and collaboration competencies, which are part of the six global competencies (6Cs).

Through collaborative activities, students not only develop linguistic abilities but also social skills that are important in 21st-century learning (Fullan et al., 2018). Previous research confirms that the development of deep information processing requires clear scaffolding, guided learning, and continuous independent learning strategies (Yaguarema et al., 2022). Teachers also observed disparities in skill mastery among students, with some excelling in certain skills, such as speaking or grammar, but being weak in others.

These findings emphasize the importance of designing learning that balances the development of all competencies, so that deep learning does not only focus on communicative skills, but also on strengthening critical thinking, creativity, character, and citizenship (Fullan et al., 2018)

Challenges and solutions

Based on the third problem formulation, this study identifies a number of challenges faced by teachers and students in implementing deep learning. One of the main challenges is the difference in students' learning motivation levels. Low motivation affects classroom dynamics and hinders student engagement in

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learning activities that require deep thinking, such as self-reflection and independent inquiry. One of the fundamental components of deep learning is motivation, and inconsistent motivation can prevent students from participating in higher-level tasks like analysis, evaluation, and self-reflection when learning a foreign language (Jiang, 2022).

Another challenge relates to the use of technology. Although technology can help in developing teaching media and methods to increase learning engagement, the use of personal devices without clear management has the potential to cause distraction. These findings are in line with previous research emphasizing that technology is only effective when supported by strong pedagogical structures and classroom regulations (Zeng, 2025).

In addition, teachers highlighted the need for ongoing professional training to support the consistent implementation of deep learning. Without clear pedagogical guidance, learners tend to have difficulty applying deep information processing strategies. Previous research shows that deep learning requires teachers to play an active role in providing guidance, scaffolding, and continuous feedback (Yaguarema et al., 2022). Therefore, teacher training is an important factor in ensuring the sustainability of deep learning implementation.

Limitations and Future Research Directions

This study has several limitations, including the fact that it was conducted over a relatively short period of time, approximately two weeks, thereby limiting its ability to capture long-term developments related to deep learning practices. Secondly, this study was conducted with a qualitative research focus that emphasised an in-depth understanding of the cases studied. Future research should use a mixed method approach that combines in-depth analysis and broad data coverage to obtain more comprehensive results.

Conclusion

At Senior High School, the use of deep learning in English language instruction has demonstrated great promise assisting students in acquiring a variety of learning abilities. Fluency confidence teamwork and creativity in the classroom have all improved for many students. They are participating in educational activities that examine subjects by relating them to actual situations. Because deep learning exercises enable students to share their individual experiences and viewpoints some students who were previously reluctant to participate in class are now more inclined to do so.

This shift demonstrates, how applying deep learning principles consistently results in a more encouraging and student-centered learning environment. Students are encouraged to actively participate in creating meaning when teachers use deep learning through cross-curricular projects contextual learning and technology-supported activities. They are assisted in analysing, interpreting, and relating what they learn to real-world situations rather than merely absorbing

information, which enhances the learning process.

This method, gives students the impression that what they learn in class has a direct application to their everyday lives. But, the move to deep learning does not imply that conventional teaching techniques should be dropped. Strategies like role-playing, grammar instruction, puzzles, and structured explanations, are crucial for improving student's fundamental abilities. To make learning more varied engaging and successful, it is crucial to strike the correct balance between cutting-edge and conventional approaches. Combining these two methods, helps avoid boredom particularly for students who are still getting used to a more independent learning style or who require clear guidance.

Despite the fact, that the results demonstrate the success of integration there are still difficulties. High workloads that make it challenging for teachers to create lessons that fully integrate deep learning principles, differences in student abilities as not all students develop at the same pace some student's motivations and knowledge levels, which affect the quality of class discussions and learning outcomes and differences in teacher's comprehension of digital technology, which results in uneven use of technology are some of the challenges faced.

As a result, deeper learning implementation calls for increased support from a variety of stakeholders. In addition, to introducing the idea of deep learning teachers should receive structured guidance for ongoing professional development that teaches them useful techniques for lesson planning evaluation and facilitation. This is essential, because when the setting offers sufficient assistance educators and learners can concentrate more on raising the standard of instruction.

Thus, the goals of the Kurikulum Merdeka Belajar can be strengthened by these efforts. Students' language and critical thinking abilities will improve with a more methodical and regular application of deep learning.

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