

From diagnostic assessment to Deep Learning: Mapping non-cognitive needs and differentiated strategies in Indonesian language instruction

Rio Sahputra^{1*}, Musriana², Dina Ramadhanti³, Fazila Ade Zulfa⁴, Kasmita⁵

^{1 2 3 4 5} Universitas PGRI Sumatera Barat, Padang, Indonesia

*Corresponding Author: rio.sahputra.rs321@gmail.com

Submission: 19 August 2026

Revision: 31 August 2026

Accepted: 4 September 2026

Abstract

Differences in students' learning needs require responsive Indonesian language instruction in implementing Deep Learning. This study aims to map the non-cognitive learning needs of Grade X and XII students at SMA Negeri 2 Padang as a basis for differentiated instructional strategies. A descriptive quantitative approach with a cross-grade comparative design was employed involving 132 students through non-cognitive diagnostic questionnaires analyzed using means, frequencies, and percentages. The findings reveal variations in learning needs across groups. Oral communication confidence emerged as a relatively consistent need, while reading literacy was a concern among Grade X students. Students showed a tendency toward visual and auditory preferences alongside diverse learning choices, while laziness and physical fatigue were the most frequently reported barriers. This study contributes a diagnostic-to-pedagogical mapping that connects non-cognitive learning needs with the *mindful*, *meaningful*, and *joyful* principles of Deep Learning and with content and process differentiation, providing a concrete basis for designing responsive Indonesian language instruction.

Keywords: Non-cognitive learning needs; Deep Learning; Differentiated instruction; Oral communication; Reading literacy.

Abstrak

Perbedaan kebutuhan belajar peserta didik menuntut pembelajaran Bahasa Indonesia yang responsif dalam penerapan Pembelajaran Mendalam. Penelitian ini bertujuan memetakan kebutuhan belajar non-kognitif peserta didik kelas X dan XII SMA Negeri 2 Padang sebagai dasar perumusan strategi pembelajaran berdiferensiasi. Penelitian menggunakan pendekatan deskriptif kuantitatif dengan desain perbandingan lintas jenjang terhadap 132 peserta didik melalui angket asesmen diagnostik non-kognitif yang dianalisis menggunakan rata-rata, frekuensi, dan persentase. Hasil menunjukkan adanya variasi profil kebutuhan antarkelompok. Kepercayaan diri komunikasi lisan menjadi kebutuhan yang relatif konsisten, sedangkan literasi membaca menjadi perhatian pada kelas X. Peserta didik menunjukkan kecenderungan preferensi visual dan auditori dengan pilihan belajar yang beragam, sementara rasa malas dan kelelahan fisik menjadi hambatan yang paling sering dilaporkan. Kontribusi penelitian ini adalah menghasilkan pemetaan diagnostik-pedagogis yang menghubungkan kebutuhan non-kognitif dengan prinsip *mindful*, *meaningful*, dan *joyful* serta strategi diferensiasi proses dan konten sebagai dasar konkret perancangan pembelajaran Bahasa Indonesia yang responsif.

Kata Kunci: Kebutuhan belajar non-kognitif; Pembelajaran mendalam; Pembelajaran berdiferensiasi; Komunikasi lisan; Literasi membaca.

Introduction

The diversity of student characteristics is an important issue in Indonesian language instruction at the senior high school level. Students differ not only in academic ability but also in motivation, interest, readiness, self-confidence, learning preferences, and conditions that affect their engagement during learning (Sa'diyah & Nursaman, 2026). Therefore, responsive instruction requires initial information about students' needs so that teachers do not apply uniform treatment to different conditions (Kumalasari et al., 2026). Mapping learning needs is important because appropriate instructional decisions need to be grounded in students' actual conditions. Non-cognitive diagnostic assessment can be used to obtain such information before teachers determine appropriate learning experiences. In Indonesian language instruction, this mapping is important for identifying needs related to reading, speaking, discussion, material comprehension, and active participation in the learning process.

The need for responsive instruction has become increasingly relevant in the development of Indonesian education policy. Shafina and Mukhlis (2024) and Wulandari et al. (2023) show that differentiated instruction and diagnostic assessment can be used to respond to diverse student needs within the Kurikulum Merdeka. This development has subsequently been extended through Deep Learning. The Ministry of Primary and Secondary Education (2025a) introduces Deep Learning as an approach that emphasizes the quality of learning experiences through the principles of *mindful*, *meaningful*, and *joyful* learning, rather than as a replacement for the existing curriculum. Rahmawati et al. (2025) position it as a transformation of learning toward quality education, while Anwar and Sodik (2026) and Ratri et al. (2026) explain the interconnectedness of these three principles in educational practice. This policy is further reinforced through Regulation of the Minister of Primary and Secondary Education Number 13 of 2025 (Ministry of Primary and Secondary Education, 2025b).

In this study, Deep Learning is understood as a framework for designing learning experiences that correspond to students' needs. Langer (1997, 2000) explains *mindful learning* in terms of attention and openness to learning experiences. Ausubel (1968) and Novak (2002) emphasize the importance of connecting new knowledge with existing knowledge to produce meaningful learning. Meanwhile, Bhakti et al. (2019) show that *joyful learning* can support positive learning experiences and actively engage students. These three principles require forms of instruction capable of responding to student diversity. Tomlinson (2001, 2014) describes differentiated instruction as an approach that responds to differences in students' needs, readiness, and characteristics. On this basis, this study positions non-cognitive diagnostic assessment as the starting point for formulating differentiated strategies that support the principles of *mindful*, *meaningful*, and *joyful* learning in Indonesian language instruction.

Research on learning needs, differentiated instruction, and Deep Learning has been conducted with diverse areas of focus. Research on differentiated instruction indicates that the approach can support Indonesian language instruction and speaking literacy, but studies have largely focused on student perceptions, specific skills, or limited classroom contexts, as demonstrated by Shafina and Mukhlis (2024) and Saleh et al. (2023). Research on diagnostic assessment has also demonstrated the value of needs mapping as a basis for differentiated instruction, but has not specifically connected it with the principles of Deep Learning (Wulandari et al., 2023). Research on Deep Learning at the senior high school level is beginning to develop, but much of it remains conceptual, policy-oriented, or general in scope (Prihantoro et al., 2025; Ratri et al., 2026). Other studies indicate that speaking anxiety and reading literacy represent actual needs among senior high school students (Khaerunnisa et al., 2020; Maistika & Murti, 2023; Purba & Siahaan, 2023; Fasirah et al., 2024). However, these findings have not yet been widely integrated into a single mapping of non-cognitive needs to operationalize Deep Learning through differentiated strategies.

Based on this gap, this study aims to map the non-cognitive learning needs of Grade X and XII students at SMA Negeri 2 Padang and formulate differentiated strategies that can operationalize the principles of *mindful*, *meaningful*, and *joyful* learning in Indonesian language instruction. The mapping covers motivation, interest, readiness, self-confidence, learning preferences, and learning conditions and barriers identified through diagnostic assessment. The urgency of this study lies in the need to translate diagnostic data into concrete instructional decisions, particularly when students demonstrate different needs in oral communication, reading literacy, learning experience preferences, and conditions that affect engagement. This study is not intended to examine the effectiveness of Deep Learning but rather to provide an empirical basis for teachers to determine more responsive learning experiences. Accordingly, this study is expected to strengthen the connection between student needs assessment, Deep Learning, and differentiated instructional practices in Indonesian language instruction at the senior high school level.

Method

This study, conducted from July to August 2026, employed a quantitative descriptive approach with a cross-grade comparative descriptive design to map the profile of students' non-cognitive learning needs in Indonesian language instruction (Creswell, 2014). No treatment or intervention was administered; therefore, the study describes students' conditions during a single measurement period. The Ministry of Primary and Secondary Education (2025a) and Rahmawati et al. (2025) position Deep Learning around the principles of *mindful*, *meaningful*, and *joyful* learning, which were used in this study as a conceptual basis for interpreting the mapping results. Tomlinson (2001, 2014) positions differentiated instruction as a response to diverse student needs; in this

study, the approach was positioned as an operational strategy formulated based on the findings. The study involved 132 students from SMA Negeri 2 Padang, consisting of 97 Grade X students and 35 Grade XII students. The sample was selected purposively in accordance with the objectives of the study, as described by Lenaini (2021).

The research instrument was a non-cognitive diagnostic assessment questionnaire developed and administered independently by each group of teachers to their respective students. The instruments covered motivation to learn Indonesian, interest, learning readiness, self-confidence, learning preferences, and learning conditions and barriers related to socio-emotional aspects. The Grade X-1 group used 14 items, X-2 used 5 items, X-3 used 20 items, while the Grade XII group used 16 items. Response formats included a five-point Likert scale with verbal labels, an emoji-based scale, and a direct numerical scale. All responses were coded into a numerical range of 1–5 for descriptive analysis. Differences in the number of items, response formats, and indicator coverage were retained as characteristics of the instruments. Therefore, standardizing the score range was not considered to make the instruments fully equivalent, and the results were primarily interpreted at the group level.

Data were collected through Google Forms distributed to students in each class group. The data were checked for completeness and duplicate entries before coding and analysis. The data were analyzed descriptively using means, frequencies, and percentages. Means were used to describe score tendencies for the available aspects or indicators, whereas frequencies and percentages were used to describe students' reported preferences and learning barriers. For questions allowing multiple responses, each response was counted based on its frequency; therefore, the percentages were not treated as mutually exclusive categories. Patterns of needs were compared across the Grade X groups and, to a limited extent, with the Grade XII group for indicators with sufficiently comparable measurement meanings. No hypothesis or significance tests were conducted because the study focused on descriptive mapping. The mapping results were then synthesized with the principles of *mindful*, *meaningful*, and *joyful* learning to formulate differentiated instructional strategies.

Results and Discussion

Mapping student profiles and characteristics of learning needs in Indonesian language instruction

The mapping of students' non-cognitive learning needs involved 132 students from SMA Negeri 2 Padang, consisting of 97 Grade X students and 35 Grade XII students. The Grade X students came from three groups: Group 1 with 29 students, Group 2 with 34 students, and Group 3 with 34 students, while Grade XII consisted of 35 students in Group 4. The instruments used included non-cognitive assessments with different formats and numbers of items across groups. These differences in

measurement instruments were retained as part of the research data, with scores presented on a 1–5 scale to facilitate the description of learning needs profiles. The distribution of students and the characteristics of the instruments for each group are presented in detail in Table 1. All data were subsequently summarized descriptively.

Table 1. Distribution of the research sample

Grade level	Group	Number (n)	Instrument
Grade X	Group 1	29	Non-cognitive (14-item Likert scale)
Grade X	Group 2	34	Non-cognitive (5-item emoji scale)
Grade X	Group 3	34	Non-cognitive (20-item Likert scale)
Grade XII	Group 4	35	Non-cognitive (16-item Likert scale)
Total	4 groups	132	—

Source: Authors' analysis of research data.

Among Grade X students, the mapping results indicate fairly clear differences in non-cognitive learning needs profiles across groups. Group 1 obtained the highest overall mean score of 4.23, followed by Group 3 with a score of 4.12. Both groups had mean scores above 4 on the measurement scale. In contrast, Group 2 obtained an overall mean score of 3.38, making it the group with the lowest overall score among the three Grade X groups. These differences indicate that the learning needs profiles of Grade X students were not entirely uniform, even though they were at the same grade level. Thus, the mapping did not reveal a single profile that could represent all Grade X students. This pattern is directly reflected in the measurement results for each group. A comparison of the overall mean scores for the three groups is presented in Figure 1.

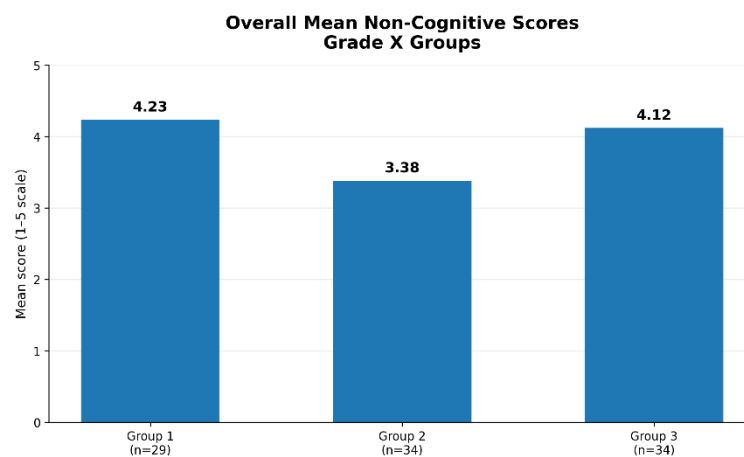


Figure 1. Mean overall non-cognitive scores of Grade X groups

Source: Authors' analysis of research data.

In terms of the patterns across groups, Groups 1 and 3 showed relatively stronger non-cognitive profiles than Group 2. The mean score of 4.23 for Group 1 was the highest, while the difference between Groups 1 and 2 reached 0.85 points. Group 3 was also

0.74 points higher than Group 2. These findings indicate that Group 2 stood out as the group with relatively lower non-cognitive needs based on the overall score. This pattern is important because the mapping was conducted across several Grade X groups rather than within a single group, making variations in profiles across groups more visible. The findings also indicate that descriptions of learning needs should take into account the conditions of individual groups rather than relying solely on an overall grade-level profile. This condition further confirms the existence of variations in learning needs.

Among the Grade XII students, the mapping results show that learning readiness was the aspect with the highest mean score, at 4.47. This was followed by learning motivation, with a mean score of 4.20, and learning interest, at 4.15. In contrast, self-confidence had the lowest score, at 3.83. The difference between learning readiness and self-confidence reached 0.64 points, indicating a noticeable difference among the measured aspects. This pattern shows that Grade XII students had relatively high levels of readiness, motivation, and interest in learning, while self-confidence was lower than the other three aspects. Thus, the Grade XII profile was characterized not only by strong learning readiness but also by one relatively weaker aspect. The mean profiles of the four aspects are presented in Figure 2.

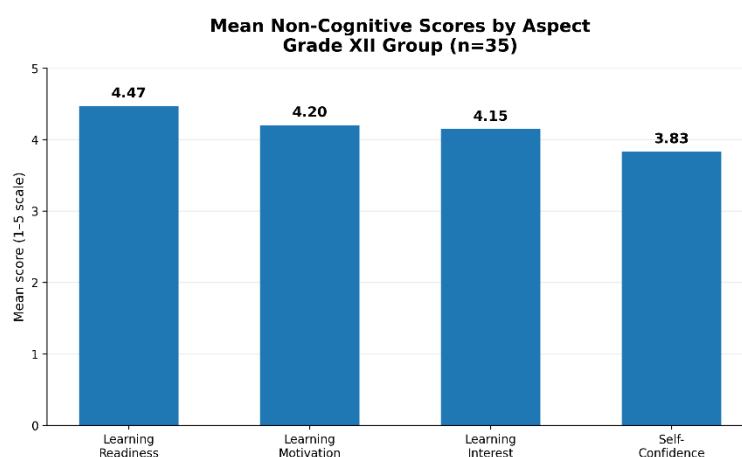


Figure 2. Mean non-cognitive scores by aspect among Grade XII students (n = 35)

Source: Authors' analysis of research data.

The most consistent finding in the mapping was observed in the indicator of oral communication confidence. In Grade X Group 1, anxiety when answering the teacher's questions had a mean score of 3.41. In Grade X Group 2, feelings when giving a classroom presentation had the lowest score among the indicators presented, at 2.91. In Grade X Group 3, confidence in speaking in class had a score of 3.56, while the ability to express ideas orally reached 3.65. In Grade XII Group 4, overall self-confidence had a mean score of 3.83. These data indicate that issues related to oral communication confidence emerged across several groups and were not limited to a single grade level. Thus, oral communication represents an important finding in this

mapping. A comparison of the oral communication confidence indicators is presented in Figure 3.

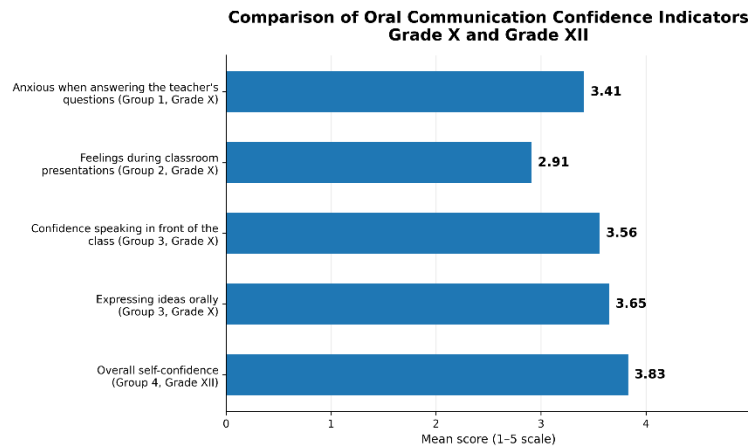


Figure 3. Comparison of oral communication confidence indicators across Grades X and XII

Source: Authors' analysis of research data.

Overall, the mapping results reveal three main patterns in students' learning needs profiles. First, Grade X students had different non-cognitive profiles across groups, with Group 2 showing the lowest overall mean score. Second, among Grade XII students, learning readiness was the strongest aspect, whereas self-confidence had the lowest score. Third, indicators related to oral communication showed a consistent pattern as an area requiring attention across several groups. These findings indicate that students' learning needs are not limited to readiness and motivation to learn but also include aspects of confidence in communication. This mapping provides a basis for identifying more specific learning needs in the subsequent stage of analysis, including students' learning preferences and the barriers they experience.

Mapping student learning preferences and barriers in Indonesian language instruction

The mapping in this section describes two aspects that complement the profile of students' learning needs: preferences for participating in learning activities and barriers that may interfere with the learning process. Data on learning preferences were obtained from 35 Grade XII students. Students were provided with several choices of activities or ways of learning and could select more than one option; therefore, the percentage for each category represents the distribution of observed preferences rather than the classification of students into mutually exclusive categories. Meanwhile, data on learning barriers were obtained from 34 students in Grade X Group 2 and describe the barriers they reported when studying at home. These two sets of data were used to illustrate variations in students' learning experiences in terms of both their preferences and the conditions that may hinder their engagement.

The mapping results show that Grade XII students' learning preferences were distributed across six types of activities or ways of learning. The preference for visual learning through images or diagrams was the most frequently selected, at 21.7%, followed by auditory learning through oral activities at 19.2%. Group discussion and practice or project work were each selected by 16.7% of students. The preference for audiovisual materials or videos reached 15.0%, while independent reading was the least frequently selected option, at 10.8%. Thus, the mapping shows that visual and auditory preferences were the most prominent, although students' choices remained distributed across various types of activities. The distribution of the six learning preferences is presented in Figure 4.

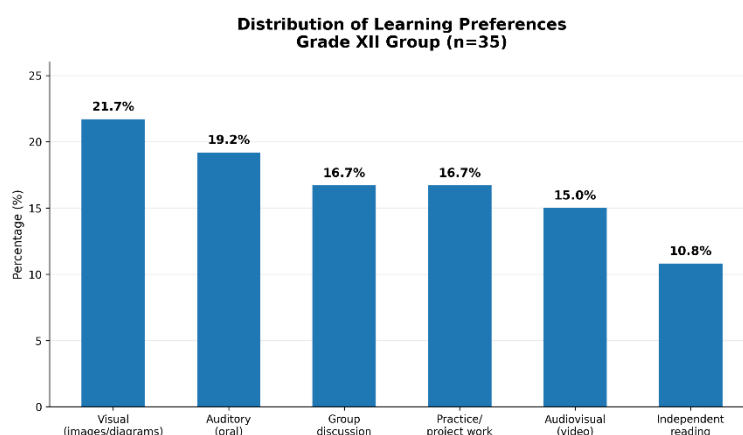


Figure 4. Distribution of learning preferences among Grade XII students (n = 35)

Source: Authors' analysis of research data.

The distribution indicates that students were not concentrated on a single type of learning activity. Following visual and auditory preferences, three other options had relatively similar percentages: group discussion at 16.7%, practice or project work at 16.7%, and audiovisual activities at 15.0%. Meanwhile, independent reading accounted for 10.8%, making it the least frequently selected option among the six activities. This pattern indicates diverse learning preferences within the Grade XII group. Furthermore, because students could select more than one alternative, the distribution represents combinations of activity preferences selected by students rather than the assignment of a single learning style to each individual. Thus, the mapping indicates that students' learning experiences encompassed visual, oral, collaborative, practical, audiovisual, and independent reading activities, with varying levels of preference.

In addition to learning preferences, the mapping also identified barriers experienced by students when studying at home. In Grade X Group 2, laziness and physical fatigue were the most frequently reported barriers, with each category accounting for 18.4%. The next most frequently reported barrier was the use of mobile phones, social media, and games, at 11.3%. Noise in the home environment was reported at 8.5%, while

accumulated learning materials or assignments accounted for 6.4%. Thus, the two leading barriers had the same percentage and were considerably higher than the other reported barriers. These findings indicate that the learning barriers reported by students were not limited to the home environment or the devices they used but also included students' physical conditions and readiness when engaging in learning activities at home. The four main barriers are presented in Figure 5.

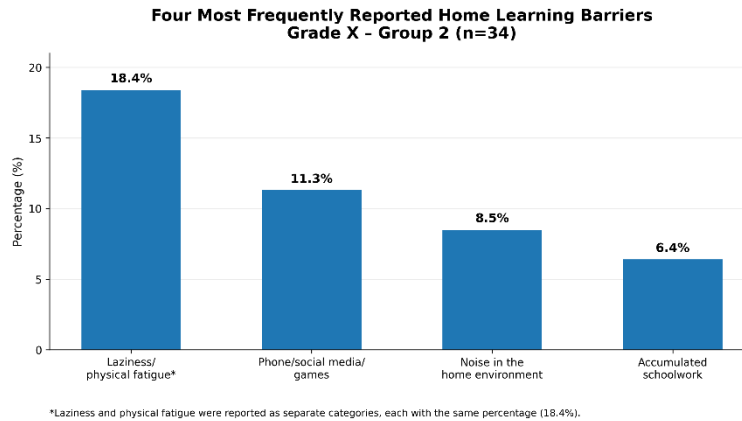


Figure 5. Four most frequently reported barriers to studying at home among Grade X Group 2 students (n = 34)

Source: Authors' analysis of research data.

Overall, the mapping results in this subsection reveal two main characteristics of students' learning needs. In terms of preferences, visual (21.7%) and auditory (19.2%) activities were the most frequently selected, although students also expressed preferences for discussion, practice or project work, audiovisual activities, and independent reading. In terms of barriers, laziness and physical fatigue, each at 18.4%, were the most frequently reported, followed by the use of mobile phones, social media, and games at 11.3%. Thus, students' learning needs were diverse, both in terms of the activities they preferred and the conditions that could hinder their learning process. These findings complement the mapping presented in the previous subsection by showing that students' needs profiles encompass not only abilities and self-confidence but also activity preferences and the conditions accompanying their learning experiences.

Mapping learning needs as a basis for implementing Deep Learning through differentiated instruction

Deep learning cannot be achieved by applying the same treatment to students with different learning needs. Instruction needs to be designed by considering how students attend to learning experiences, connect learning materials with their existing knowledge, and engage actively in the learning process. Langer (1997, 2000) describes *mindful learning* as a learning process that encourages attention to experience and openness to different perspectives, while Ausubel (1968) and Novak (2002) position the connection between new knowledge and existing knowledge structures as the

basis of meaningful learning. In this context, differentiation provides an approach that enables teachers to adjust content, processes, and learning experiences according to students' needs (Tomlinson, 2001, 2014; Tomlinson & Imbeau, 2010). Thus, mapping learning needs is an important stage in translating the principles of *mindful*, *meaningful*, and *joyful* learning into concrete learning experiences.

One important finding of this study is the consistent need related to oral communication confidence. Among the Grade X groups, the indicator of anxiety when answering teachers' questions reached a score of 3.41 in Group 1, feelings when giving presentations reached 2.91 in Group 2, while confidence in speaking in front of the class and the ability to express ideas orally reached 3.56 and 3.65, respectively, in Group 3. In Grade XII, the overall self-confidence score reached 3.83 but remained the lowest-scoring aspect compared with learning readiness at 4.47, motivation at 4.20, and interest at 4.15. These findings indicate that moving to a higher grade level does not necessarily eliminate students' needs related to oral communication. This result is consistent with Khaerunnisa et al. (2020), who found public speaking anxiety among senior high school students. Maistika and Murti (2023) and Purba and Siahaan (2023) also demonstrated relationships between self-efficacy and speaking or presentation anxiety. Thus, the need for oral communication in this study is not merely a matter of providing opportunities to speak but is related to how speaking experiences are designed so that students can gradually develop confidence.

These findings have important implications for the selection of learning processes. If students with relatively low oral communication confidence are immediately placed in individual presentation situations, the learning process may become more oriented toward performance demands than toward conscious and reflective learning experiences. Grieve et al. (2021) showed that fear of presentations and public speaking can affect students' engagement in communication activities. From Langer's (1997, 2000) perspective, *mindful* learning experiences need to provide space for attention, awareness of experience, and openness to different possibilities. Therefore, process differentiation can be used to structure communication experiences in stages, beginning with small-group discussions involving 3–4 students, progressing to larger groups, and then moving toward individual presentations. Reflection after speaking activities can complement this process so that students are not evaluated solely on their performance but also have opportunities to recognize the development of their learning experiences.

Another need that requires attention is relatively weak reading literacy among Grade X students. The research mapping indicates a need related to reading ability, particularly in carrying out reading activities and comprehending texts effectively. This finding is consistent with Fasirah et al. (2024), who identified several factors associated with reading literacy among senior high school students, as well as Amir et

al. (2025), who demonstrated a relationship between reading motivation and reading literacy among senior high school students. From Ausubel's (1968) perspective, new information is more readily understood when it can be connected to students' existing knowledge. Novak (2002) likewise emphasizes the importance of knowledge connections in producing meaningful learning. Therefore, the pedagogical response to reading literacy needs should not be limited to increasing the amount of reading material but should also consider text complexity and its connection to students' experiences. Content differentiation can be implemented by providing texts with varying levels of complexity, contexts that are relevant to students' lives, and guiding questions that support the process of understanding the content. Because comparable literacy data were not available for the Grade XII group, this finding is used as the basis for a specific recommendation for Grade X and is not used as a basis for direct comparison across grades.

In addition to academic ability and readiness, this study found that students' learning preferences were not concentrated on a single type of learning experience. Among Grade XII students, visual preferences involving images or diagrams were selected by 21.7% of students, followed by auditory preferences through oral explanations at 19.2%, group discussions and practice/project activities at 16.7% each, audiovisual activities at 15.0%, and independent reading at 10.8%. This pattern indicates variations in the ways students prefer to engage in learning activities. However, these findings should not be interpreted as indicating that each student has a single fixed *learning style*. Fallace (2023) shows that the visual, auditory, and kinesthetic typology has a long history of development and should be understood critically. Because the research instrument allowed students to select more than one type of preference, the findings are more appropriately understood as tendencies in preferences for particular types of learning experiences rather than as a classification of students into rigid learning-style categories. The implication is that Indonesian language instruction can provide a combination of visual, auditory, audiovisual, discussion, practice, and reading activities according to the learning objectives.

These diverse preferences can be connected with the principle of *joyful learning*, but not in the sense that learning must always be made enjoyable without regard to academic objectives. Bhakti et al. (2019) view *joyful learning* as an alternative learning model that can support students' happiness during the learning process. In this study, the preference for images or diagrams at 21.7%, oral explanations at 19.2%, and discussion and practice at 16.7% each provides an empirical basis for providing varied learning experiences. This means that the *joyful* principle can be realized through process variation that provides students with more pathways for engagement, rather than by establishing a single method considered the most enjoyable for the entire class. In Indonesian language instruction, such variation may include the use of infographics to understand information, reading and discussion to develop language

comprehension, audiovisual materials to enrich context, and role-play or language games to increase engagement. This approach also avoids the deterministic use of learning preference data.

Another aspect that reinforces the need for variation in learning processes is the learning barriers reported by students. In Grade X Group 2, laziness and physical fatigue were each reported by 18.4% of students, followed by the use of mobile phones, social media, and games at 11.3%, noisy home conditions at 8.5%, and accumulated school assignments at 6.4%. These data indicate that barriers to learning are not limited to academic activities but also involve students' conditions while engaging in the learning process. However, the findings regarding laziness and physical fatigue cannot be directly interpreted as academic burnout because this study did not measure burnout using a specific instrument. Therefore, these data are more appropriately used as diagnostic information concerning barriers perceived by students. Within the framework of *joyful learning*, varied activities, active breaks, brief language games, and light physical activities can be used to make the learning process more dynamic (Bhakti et al., 2019), without turning these findings into a psychological diagnosis.

Based on the overall findings, the relationship between learning needs and the principles of Deep Learning needs to be translated into specific instructional decisions. Relatively low oral communication confidence is directed toward the *mindful* principle through process differentiation because the primary need lies in structuring communication experiences in a gradual and reflective manner. Relatively weak reading literacy among Grade X students is directed toward the *meaningful* principle through content differentiation because students need reading materials that can be adjusted in terms of complexity and connected to relevant contexts. Meanwhile, diverse learning preferences and barriers such as laziness and physical fatigue are directed toward the *joyful* principle through variation in the learning process. The mapping of these relationships is presented in Table 2.

Table 2. Mapping of learning needs, Deep Learning principles, and differentiation strategies

Identified learning needs	Deep Learning principles	Type of differentiation	Examples of implementation in Indonesian language instruction
Relatively low oral communication confidence	<i>Mindful</i>	Process differentiation	Small groups (3–4 students), medium-sized groups, gradual individual presentations, and reflection
Relatively weak reading literacy among Grade X students	<i>Meaningful</i>	Content differentiation	Texts with varying levels of complexity, contexts from students' lives, and guiding questions

Diverse learning preferences with visual and auditory tendencies	<i>Joyful</i>	Process differentiation	Infographics, reading and discussion, audiovisual materials, role-play, and language games
Laziness and physical fatigue as frequently reported learning barriers	<i>Joyful</i>	Process differentiation	Active breaks, brief language games, light physical activities, and varied activities

Source: Research data and authors' synthesis.

Table 2 serves as an analytical bridge between the diagnostic findings and the design of instructional actions. It shows that a single learning need does not necessarily have to be addressed through a single stand-alone method but can instead be translated into a relationship among students' needs, Deep Learning principles, forms of differentiation, and concrete learning activities. Oral communication confidence, for example, is translated into process stages that allow students to move from relatively safe communication situations toward more challenging ones. For reading literacy, content differentiation enables teachers to adjust the complexity of materials without eliminating the learning objectives. Meanwhile, diverse preferences and learning barriers provide a basis for enriching learning experiences through visual, auditory, participatory, and dynamic activities. Thus, the primary function of Table 2 is not merely to summarize the research findings but to demonstrate a pedagogical decision-making chain from identified needs to Deep Learning principles and differentiated strategies that can be implemented in the classroom.

The mapping shows that differentiated strategies can function as an operational mechanism for realizing the principles of Deep Learning. This position is consistent with Tomlinson (2001, 2014), who positions differentiation as a response to variations in students' readiness, interests, and needs. In Indonesian language instruction, such strategies can be used to organize how students access materials, engage in the learning process, and demonstrate their involvement. The findings of Saleh et al. (2023) concerning differentiated instruction in speaking literacy and Shafina and Mukhlis (2024) concerning students' perceptions of differentiated Indonesian language instruction reinforce the relevance of this approach to Indonesian language instruction. Wulandari et al. (2023) also demonstrate the importance of diagnostic assessment in supporting differentiated instruction. Thus, this study extends these relationships by positioning the mapping of non-cognitive needs as the starting point for determining Deep Learning principles and appropriate forms of differentiation.

At the conceptual level, these findings also support the view that Deep Learning should not be understood merely as a change in teaching methods but as a change in the quality of students' learning experiences. Rahmawati et al. (2025) position Deep Learning as a transformation of learning toward quality education, while Prihantoro et al. (2025) discuss the implementation of this approach in the context of senior high schools in Indonesia. Mustapa et al. (2025) demonstrate a relationship between

differentiated instruction and *deep learning* in the implementation of the Kurikulum Merdeka. Ratri et al. (2026) likewise show that implementing Deep Learning requires connections among principles, instructional practices, and students' conditions. This study contributes to the diagnostic dimension of this process by demonstrating that decisions to provide *mindful*, *meaningful*, and *joyful* learning experiences can begin with an empirical mapping of students' learning needs. Accordingly, the strategies proposed here are not positioned as evidence that Deep Learning improves learning outcomes but as pedagogical designs developed based on identified needs.

Overall, the findings indicate that mapping learning needs can provide a logical basis for designing more responsive Indonesian language instruction. Relatively low oral communication confidence requires gradual and reflective processes; reading literacy needs among Grade X students require appropriately adjusted content; while variations in learning preferences and barriers require more diverse and dynamic processes. The dialogue among the research data, the theories of Langer, Ausubel, Novak, Tomlinson, and Bhakti, and findings from previous studies indicates that the three principles of Deep Learning can be translated through differentiated strategies tailored to the characteristics of students' needs. Therefore, the primary contribution of this study lies in the diagnostic-to-pedagogical chain, which connects the results of non-cognitive needs mapping with the selection of learning principles and concrete forms of differentiation. Nevertheless, these designs remain pedagogical implications derived from a descriptive study and do not yet constitute empirical evidence regarding the effectiveness of Deep Learning implementation.

Conclusion

This study confirms that mapping students' learning needs is an important foundation for designing deep and differentiated Indonesian language instruction. The mapping of 132 students revealed variations in learning needs profiles across groups, with oral communication confidence emerging as a relatively consistent need, reading literacy requiring attention among Grade X students, and learning preferences and barriers indicating that students' learning experiences are not uniform. These findings are important because Deep Learning, which is oriented toward *mindful*, *meaningful*, and *joyful* learning experiences, requires pedagogical responses that correspond to students' actual conditions rather than uniform treatment across the entire class. Accordingly, the mapping results were translated into differentiated strategies: process differentiation to develop oral communication gradually and accommodate diverse preferences and learning conditions, and content differentiation to adjust the complexity of reading materials to students' needs. In this way, non-cognitive diagnostic assessment serves not only to identify students' characteristics but also as a basis for making concrete instructional decisions.

The main contribution of this study is its connection of the diagnosis of non-cognitive learning needs with the principles of Deep Learning and the selection of differentiated strategies in Indonesian language instruction, resulting in a mapping framework that teachers can use as a basis for instructional design. Nevertheless, the findings should be interpreted in light of the study's limitations, particularly the differences in instruments across groups, the imbalance in the number of groups at the Grade X and XII levels, the unavailability of all indicators for every group, and the use of descriptive analysis, which limits generalizability and does not permit an evaluation of the effectiveness of Deep Learning. In addition, the strategies formulated in this study remain pedagogical recommendations based on diagnostic findings, rather than evidence of intervention effectiveness. Future research should employ more standardized and validated diagnostic instruments, involve more balanced samples, and empirically examine the implementation of differentiated strategies based on Deep Learning. Such testing is important to determine the extent to which the resulting designs can improve oral communication confidence, reading literacy, student engagement, and the quality of learning experiences in Indonesian language instruction.

References

- Amir, J., Dalle, A., & Syamsudduha. (2025). Pengaruh motivasi membaca terhadap kemampuan literasi membaca siswa sekolah menengah atas. *Didaktika: Jurnal Kependidikan*, 14(1), 1523–1530. <https://doi.org/10.58230/27454312.2600>
- Anwar, M., & Sodik, H. (2026). Kerangka konseptual pembelajaran mendalam (deep learning) dan implementasinya dalam pendidikan di Indonesia. *Tafhim Al-'Ilmi: Jurnal Pendidikan Dan Pemikiran Islam*, 17(2). <https://doi.org/10.37459/tafhim.v17i01.340>
- Ausubel, D. P. (1968). *Educational psychology: A cognitive view*. Holt, Rinehart and Winston.
- Bhakti, C. P., Ghiffari, M. A. N., & Salsabil, K. (2019). Joyful learning: Alternative learning models to improving student's happiness. *Jurnal VARIDIKA*, 30(2), 30–35. <https://doi.org/10.23917/varidika.v30i2.7572>
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage Publications.
- Fallace, T. (2023). The long origins of the visual, auditory, and kinesthetic learning style typology, 1921–2001. *History of Psychology*, 26(4), 334–354. <https://doi.org/10.1037/hop0000240>
- Fasirah, H., Anshari, A., & Juanda, J. (2024). Analisis faktor determinan kemampuan literasi membaca: Studi kasus di SMA Negeri 5 Makassar. *Jurnal Onoma:*

Pendidikan, Bahasa, Dan Sastra, 10(2), 1633–1642.
<https://doi.org/10.30605/onoma.v10i2.3490>

- Grieve, R., Woodley, J., Hunt, S. E., & McKay, A. (2021). Student fears of oral presentations and public speaking in higher education: A qualitative survey. *Journal of Further and Higher Education*, 45(9), 1281–1293. <https://doi.org/10.1080/0309877X.2021.1948509>
- Kementerian Pendidikan Dasar dan Menengah. (2025a). *Naskah akademik pembelajaran mendalam: Menuju pendidikan bermutu untuk semua*. Pusat Kurikulum dan Pembelajaran.
- Kementerian Pendidikan Dasar dan Menengah. (2025b). *Perubahan atas Peraturan Menteri Pendidikan, Kebudayaan, Riset, dan Teknologi Nomor 12 Tahun 2024 tentang Kurikulum pada Pendidikan Anak Usia Dini, Jenjang Pendidikan Dasar, dan Jenjang Pendidikan Menengah*.
- Khaerunnisa, P., Nugraha, A., & Arumsari, C. (2020). Profil kecemasan berbicara di depan umum siswa SMA. *QUANTA: Kajian Bimbingan Dan Konseling Dalam Pendidikan*, 4(3), 107–113. <https://doi.org/10.22460/q.v4i3p107-113.1982>
- Kumalasari, E., Ni'ammah, N. W., & Junaris, I. (2026). Toward the dehumanization of Islamic Education teachers: A conceptual synthesis of workload complexity in the Merdeka Curriculum. *Societa: Journal of Society and Change*, 1(1), 126–142. <https://perfidiajournal.com/index.php/societa/article/view/31>
- Langer, E. J. (1997). *The power of mindful learning*. Addison-Wesley.
- Langer, E. J. (2000). Mindful learning. *Current Directions in Psychological Science*, 9(6), 220–223. <https://doi.org/10.1111/1467-8721.00099>
- Lenaini, I. (2021). Teknik pengambilan sampel purposive dan snowball sampling. *Historis: Jurnal Kajian, Penelitian Dan Pengembangan Pendidikan Sejarah*, 6(1), 33–39. <https://doi.org/10.31764/historis.v6i1.4075>
- Maistika, L., & Murti, H. A. S. (2023). Hubungan self efficacy dengan kecemasan berbicara di depan umum pada siswa-siswi SMA Kecamatan Gabus Kabupaten Grobogan Jawa Tengah. *JiIP: Jurnal Ilmiah Ilmu Pendidikan*, 6(10), 8215–8223. <https://doi.org/10.54371/jiip.v6i10.2274>
- Mustapa, A., Ramadhani, K., Dewi, L. P., Oktarina, N., & Widodo, J. (2025). Implementasi pendekatan pembelajaran kurikulum merdeka: Understanding by design, berdiferensiasi, dan deep learning. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 10(2), 427–441. <https://doi.org/10.23969/jp.v10i02.25134>
- Novak, J. D. (2002). Meaningful learning: The essential factor for conceptual change in limited or inappropriate propositional hierarchies leading to empowerment of learners. *Science Education*, 86(4), 548–571. <https://doi.org/10.1002/sce.10032>

- Prihantoro, P., Prayitno, H. J., Indri, I., & Kusumaningtyas, D. A. (2025). Deep learning: Policies, concepts, and implementation in senior high schools in Indonesia. *Journal of Deep Learning*, 1(1), 11–24. <https://doi.org/10.23917/jdl.v1i1.10964>
- Purba, U. E. B. G., & Siahaan, E. M. (2023). Hubungan antara self efficacy dengan kecemasan presentasi tugas di depan kelas pada siswa SMA. *Jurnal Pendidikan Tambusai*, 7(2), 16344–16353.
- Rahmawati, Y., Mu'ti, A., Suyanto, S., & Herianingtyas, N. L. R. (2025). Pembelajaran mendalam: Transformasi pembelajaran menuju pendidikan bermutu. *Jurnal Penelitian Kebijakan Pendidikan*, 18(1), 1–16. <https://doi.org/10.24832/jpkp.v18i1.1281>
- Ratri, S. Y., Wagiran, Riyadi, A., Firdaus, F. M., & Delosa, J. (2026). Deep learning (pembelajaran mendalam) dalam pendidikan Indonesia: Tinjauan sistematis teori dan praktik. *Jurnal Ilmu Pendidikan Dan Pembelajaran*, 4(2), 176–191. <https://doi.org/10.58706/jipp.v4n2.p176-191>
- Sa'diyah, S. T. H., & Nursaman. (2026). Shifting community educational orientation toward madrasah diniyah: A case study at Madrasah Diniyah Nurul Huda Pilang. *Eduvista: Journal of Education and Innovation*, 1(1), 273–285. <https://perfidiajournal.com/index.php/eduvista/article/view/55>
- Saleh, N. A., Haslinda, H., & Ulviani, M. (2023). Pengaruh model pembelajaran berdiferensiasi terhadap literasi berbicara pada mata pelajaran Bahasa Indonesia siswa kelas X SMAN 1 Pangkep. *Jurnal Motivasi Pendidikan Dan Bahasa*, 1(2), 147–166. <https://doi.org/10.59581/jmpb-widyakarya.v1i2.408>
- Shafina, V., & Mukhlis, M. (2024). Persepsi siswa terhadap pembelajaran Bahasa Indonesia berdiferensiasi pada Kurikulum Merdeka di SMAN 11 Pekanbaru. *Ideguru: Jurnal Karya Ilmiah Guru*, 10(1), 147–157. <https://doi.org/10.51169/ideguru.v10i1.1088>
- Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms* (2nd ed.). ASCD.
- Tomlinson, C. A. (2014). *The differentiated classroom: Responding to the needs of all learners* (2nd ed.). ASCD.
- Tomlinson, C. A., & Imbeau, M. B. (2010). *Leading and managing a differentiated classroom*. ASCD.
- Wulandari, G. A. P. T., Putrayasa, I. B., & Martha, I. N. (2023). Efektivitas asesmen diagnostik dalam pembelajaran berdiferensiasi pada pelajaran Bahasa Indonesia. *Nusantara: Jurnal Pendidikan Indonesia*, 3(3), 433–448. <https://doi.org/10.14421/njpi.2023.v3i3-5>