

Students' Pedagogical Competence in the Implementation of Differentiated Learning

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ABSTRACT. The diversity of pupils' characteristics in madrasah ibtidaiyah requires trainee teachers to possess pedagogical competences capable of accommodating differences in pupils' readiness to learn, interests and learning profiles. One approach relevant to these needs is differentiated learning. This study aims to analyse the pedagogical competencies of students on the Primary Madrasah Teacher Education (PGMI) programme in implementing differentiated learning. The study employed a mixed-methods approach with an explanatory sequential design, involving 23 PGMI students at STIT Muhammadiyah Bojonegoro. Data were collected through questionnaires, observations of teaching practice, interviews and analysis of learning documents. The results of the study indicate that the students' pedagogical competence falls within the 'moderate' category. In the questionnaire, content differentiation received the highest score of 3.43, followed by process differentiation at 3.35, whilst product differentiation was the lowest aspect with a score of 2.42. The observation results showed a similar pattern, with content differentiation at 83.91 %, process differentiation at 82.17 %, and product differentiation at 60.00 %. The findings indicate that students are relatively better prepared to apply differentiation in content and process, but still require further development in mapping learning needs, diagnostic assessment, product differentiation and reflection. This study provides an empirical contribution in the form of a mapping of PGMI students' pedagogical competences in the implementation of differentiated learning, whilst also highlighting aspects of competence that are relatively well-developed and those that still require strengthening. These findings form the basis for strengthening practical experience, diagnostic assessment, lesson planning, microteaching and reflection in the education of prospective PGMI teachers.

Keywords: Differentiated Instruction, Pedagogical Competence, PGMI Students, Prospective Teacher

Abstrak Keberagaman karakteristik peserta didik di madrasah ibtidaiyah menuntut calon guru memiliki kompetensi pedagogik yang mampu mengakomodasi perbedaan kesiapan belajar, minat, dan profil belajar peserta didik. Salah satu pendekatan yang relevan dengan kebutuhan tersebut adalah pembelajaran berdiferensiasi. Penelitian ini bertujuan menganalisis kompetensi pedagogik mahasiswa Pendidikan Guru Madrasah Ibtidaiyah (PGMI) dalam mengimplementasikan pembelajaran berdiferensiasi. Penelitian menggunakan mixed methods dengan desain explanatory sequential yang melibatkan 23 mahasiswa PGMI STIT Muhammadiyah Bojonegoro. Data dikumpulkan melalui angket, observasi praktik mengajar, wawancara, dan analisis dokumen pembelajaran. Hasil penelitian menunjukkan bahwa kompetensi pedagogik mahasiswa berada pada kategori sedang. Pada angket, diferensiasi konten memperoleh skor tertinggi sebesar 3,43, diikuti diferensiasi proses sebesar 3,35, sedangkan diferensiasi produk menjadi aspek terendah dengan skor 2,42. Hasil observasi menunjukkan pola yang serupa, dengan diferensiasi konten sebesar 83,91%, diferensiasi proses 82,17%, dan diferensiasi produk 60,00%. Temuan tersebut menunjukkan bahwa mahasiswa relatif

lebih siap menerapkan diferensiasi konten dan proses, tetapi masih membutuhkan penguatan dalam pemetaan kebutuhan belajar, asesmen diagnostik, diferensiasi produk, dan refleksi. Penelitian ini memberikan kontribusi empiris berupa pemetaan kompetensi pedagogik mahasiswa PGMI dalam implementasi pembelajaran berdiferensiasi serta menunjukkan aspek kompetensi yang relatif berkembang dan aspek yang masih memerlukan penguatan. Temuan ini menjadi dasar bagi penguatan pengalaman praktik, asesmen diagnostik, perencanaan pembelajaran, microteaching, dan refleksi dalam pendidikan calon guru PGMI.

Kata Kunci: *Kompetensi Pedagogik, Mahasiswa PGMI, Pembelajaran Berdiferensiasi, Calon Guru Madrasah Ibtidaiyah.*

Pendahuluan

Primary madrasahs have pupils with diverse characteristics, in terms of their prior knowledge, readiness to learn, interests, experiences and learning profiles. This diversity requires teachers to develop teaching that is responsive to pupils' needs, as the use of standardised materials, activities and strategies may not necessarily accommodate all learning needs optimally. Therefore, the ability to understand pupils' characteristics and needs forms an important foundation for trainee teachers in making adaptive teaching decisions that are appropriate to classroom conditions.

Pedagogical competence is one of the key competencies that prospective teachers must possess. This competence encompasses the ability to understand the characteristics of learners, to design and deliver lessons, to carry out assessments, and to develop learners' potential (Sintasari, 2024). Regulation of the Minister of National Education No. 16 of 2007 also emphasises that pedagogical competence encompasses an understanding of learners' characteristics, mastery of learning theories, curriculum development, the delivery of educational teaching and learning, effective communication, assessment, and the development of learners' potential (Permendiknas, 2007). In the context of diverse learning environments, these competences relate not only to the mastery of pedagogical knowledge but also to the ability to translate that knowledge into instructional decisions that are appropriate to learners' needs.

One approach relevant to this situation is differentiated learning. Differentiated learning is an approach that adapts the learning process to learners' readiness, interests and learning profiles, whilst maintaining the learning objectives to be achieved (Tomlinson, 2014). Differentiation can be achieved by adapting the content, process, products and learning environment. A number of studies indicate that differentiated learning can have a positive impact on learning when it is based on pupils' needs and supported by appropriate planning (Am dkk., 2023; Deunk dkk., 2018). However, its implementation requires pedagogical competence, as teachers need to identify pupils' needs, determine appropriate strategies, provide a variety of activities, and assess both the learning process and outcomes.

Challenges in implementing differentiated learning are also encountered by trainee teachers. Research indicates that trainee teachers have begun to take learners' needs into account during their

teaching placements; however, the implementation of such approaches remains inconsistent, and there is still a tendency to employ homogeneous teaching methods (Obrovská dkk., 2024). Research in Indonesia also indicates that trainee teachers have employed strategies such as scaffolding, flexible grouping and varied assessment methods, but still face challenges in time management, meeting the diverse needs of pupils, product-based assessment, resource constraints and pupil engagement (Farida & Mulyani, 2024). Meanwhile, the development of differentiation skills in pre-service teacher education requires a combination of active learning, collaboration, reflection, and the continuous development of knowledge and skills (Langelaan dkk., 2024). These findings suggest that conceptual understanding of differentiation does not always translate into pedagogical skills that can be consistently applied in practice.

Although previous research has examined pre-service teachers' understanding, perceptions, experiences and practices in differentiated learning, studies that specifically examine pedagogical competence as the basis for implementing differentiation still need to be strengthened. Previous research has tended to examine the application of differentiation strategies or trainee teachers' experiences within specific contexts, whilst the interrelationship between an understanding of learners' characteristics, lesson planning, differentiation of content, process and products, assessment, classroom management, and reflection as an integrated set of pedagogical competences has not yet been comprehensively explained. This gap is significant because the ability to implement differentiated learning is determined not only by the use of specific strategies, but also by the pedagogical skills underpinning every learning decision.

In light of this gap, this study aims to analyse the pedagogical competencies of students on the Madrasah Ibtidaiyah Teacher Education (PGMI) programme in implementing differentiated learning across eight aspects, namely understanding learners' characteristics, lesson planning, content differentiation, process differentiation, product differentiation, assessment, classroom management, and reflection. This study is expected to provide an empirical overview of the aspects of competence that have developed and those that still require strengthening. These findings can serve as a basis for the development of pedagogical learning, microteaching, and teaching practice for PGMI students so that prospective teachers not only understand the concept of differentiated learning but are also able to apply it in a way that is responsive to the diversity of pupils.

Method

This study employed a mixed-methods approach with an explanatory sequential design, conducted in two stages (Creswell & Clark, 2007; Ivankova dkk., 2006). The first stage involved the collection and analysis of quantitative data via a questionnaire to obtain an initial picture of the students' pedagogical competences. The second stage involved the collection of qualitative data using microteaching observations, interviews and documentation to explore and explain the

quantitative findings in greater depth. The results of the quantitative analysis were used as a basis for determining the aspects that needed to be explored in greater depth during the qualitative stage. This design was chosen because quantitative data can provide an overview of the level of pedagogical competence, but do not sufficiently explain how these competences are applied in teaching practice, including the factors that support and hinder their application.

The research subjects comprised 23 students on the Primary Madrasah Teacher Education Programme (PGMI) at STIT Muhammadiyah Bojonegoro in their sixth or seventh semester who had taken or were currently taking courses related to lesson planning, teaching strategies, learning assessment, and microteaching/practical teaching placement. All students meeting these criteria were included as research subjects using total sampling. The research instruments comprised a pedagogical competence questionnaire, an observation guide, an interview guide, and documentation. The questionnaire was used to obtain an overview of pedagogical competence based on the eight aspects under investigation, whilst microteaching observations were used to examine the application of these competences in teaching practice. Interviews were used to explore the students' experiences, as well as the factors supporting and hindering the implementation of differentiated learning, whilst documentation was used as supporting data in the form of teaching materials or documents.

Quantitative data were analysed descriptively using scores and percentages to describe the categories of student competence across the eight aspects of pedagogical competence. Qualitative data were analysed using thematic analysis through a process of coding, grouping codes, and identifying themes relevant to the research focus (Braun & Clarke, 2006). The results of the quantitative analysis were used to determine the areas for in-depth exploration in the qualitative stage. Subsequently, findings from questionnaires, observations, interviews and documentation were compared and interpreted in an integrated manner to explain students' pedagogical competencies in the implementation of differentiated learning. The validity of the qualitative data was examined through triangulation of methods by comparing information obtained through observations, interviews and documentation.

Research Findings and Discussion

Results

Students' Pedagogical Competence

The results of a descriptive analysis of 23 PGMI students showed that their pedagogical competence in implementing differentiated learning was, overall, in the 'moderate' category, with an average score of 2.99. The results for each aspect revealed variations in the students' levels of competence. Content differentiation achieved the highest average score of 3.43 and fell into the high category, followed by process differentiation at 3.35, which also fell into the high category.

Meanwhile, product differentiation achieved the lowest average score of 2.42 and fell into the low category.

Table 1. Descriptive statistics on the pedagogical competence of PGMI students

Aspect	Mean	Category
Learner characteristics	2,68	Moderate
Planning	3,02	Moderate
Content differentiation	3,43	High
Process differentiation	3,35	High
Product differentiation	2,42	Low
Assessment	3,01	Moderate
Classroom management	3,08	Moderate
Reflection 2.96 Moderate	2,96	Moderate
Average pedagogical competence	2,99	Moderate

The findings indicate that students are relatively stronger in the areas of content and process differentiation than in other areas. In terms of content differentiation, students demonstrated an ability to adapt learning materials, media and resources to learning needs. Regarding process differentiation, students utilised a variety of learning activities and strategies. Conversely, product differentiation was the aspect that received the lowest score. The aspects of understanding learner characteristics, planning, assessment, classroom management and reflection were classified as moderate.

Results of Teaching Practice Observations

The results of observations of the teaching practices of 23 students showed that overall pedagogical competence scored 2,630 out of a maximum of 3,680 or 71.47 % and fell into the 'moderate' category. The pattern of the observation results showed a trend that was relatively similar to the questionnaire results, particularly in the aspects of content and process differentiation, which achieved the highest scores, whilst product differentiation was the aspect with the lowest score.

Table 2. Results of observations of students' teaching practice

Aspects Assessed	Maximum Score	Score Achieved	Percentage	Category
Understanding the characteristics of learners	460	306	66,52%	Moderate
Lesson planning	460	322	70,00%	Moderate

Content differentiation	460	386	83,91%	High
Process differentiation	460	378	82,17%	High
Product differentiation	460	276	60,00%	Moderate
Learning assessment	460	315	68,48%	Moderate
Classroom management	460	329	71,52%	Moderate
Reflection on learning	460	318	69,13%	Moderate
Overall	3.680	2.630	71,47%	Moderate

In terms of content differentiation, students achieved a score of 83.91 %, placing them in the 'high' category. Observations revealed that students had utilised a variety of materials, teaching resources, media and learning resources in the learning process. Examples of these included the use of images, videos, text, concrete objects and digital resources.

Process differentiation achieved a score of 82.17 % and was also classified as 'high'. In their teaching practice, students employed a variety of activities, such as group discussions, individual work, question-and-answer sessions, practical exercises, educational games and collaborative activities. In some sessions, students also grouped learners and provided additional support to those experiencing difficulties.

Product differentiation achieved a percentage of 60.00 % and was the aspect with the lowest achievement in the observation results, although based on the criteria used, it still fell within the moderate category. Observations showed that the majority of students still used the same type of assignment or product for all pupils. A variety of products such as posters, presentations, written work, models, projects, or demonstrations were not widely observed.

Understanding of learners' characteristics scored 66.52 % and fell into the 'moderate' category. Students have taken into account differences in learners' abilities during the learning process; however, the mapping of learners' readiness, interests and learning profiles has not been consistently evident across all teaching practices. Lesson planning scored 70.00 %, whilst learning assessment scored 68.48 %. The observation results indicate that students have developed learning materials and carried out assessments, but the link between initial assessment and decisions on differentiation has not yet been consistently evident.

Classroom management scored 71.52 % and fell into the 'moderate' category. Students were able to manage both individual and group activities, but in some teaching practice sessions,

difficulties were still observed in managing time, giving instructions to different groups, and monitoring several activities simultaneously.

Learning reflection scored 69.13 % and was classified as moderate. Students had engaged in reflection following the learning session, but the reflections observed were predominantly related to the success of the methods, learner engagement, or the general conduct of the lesson. Reflections specifically evaluating the effectiveness of differentiation in terms of content, process and product were not consistently observed.

Discussion

The Pedagogical Competence of PGMI Students in Understanding the Character of Their Pupils

The pedagogical competence of PGMI students in understanding the characteristics of learners is a vital foundation for the implementation of differentiated learning. This competence encompasses the ability to recognise differences in learners' prior knowledge, readiness to learn, interests, learning experiences, social-emotional traits and learning profiles. This understanding is necessary to ensure that trainee teachers do not apply a one-size-fits-all approach to teaching, but rather use information about their pupils as the basis for determining learning objectives, strategies, learning resources, activities and assessment. In the practice of differentiated learning, an understanding of pupils' readiness, interests and learning profiles is a vital basis for teachers in determining how to adapt their teaching (Gheysens dkk., 2022; Tomlinson, 2014).

In theory, pedagogical competence refers to a teacher's ability to manage learner-centred learning. This competence encompasses an understanding of learners' characteristics, mastery of learning theories, curriculum development, the delivery of lessons, the use of technology, communication, assessment, and the development of learners' potential (Pertiwi dkk., 2025). Therefore, understanding learners does not stop at the stage of recognising their characteristics, but forms the basis for making various pedagogical decisions. In the context of differentiated learning, this is important because teaching must take into account learners' readiness, interests and learning profiles (Tomlinson, 2014). Empirical studies also show that the practice of differentiation is linked to teachers' ability to adapt teaching to differences in pupils' readiness, interests and learning profiles (Gheysens dkk., 2022).

The research findings indicate that the pedagogical competence of PGMI students at STIT Muhammadiyah Bojonegoro is, on the whole, in the 'moderate' category. These findings suggest that students are aware of the diversity of their learners, but this awareness has not yet fully developed into consistent pedagogical practice. The questionnaire results were corroborated by observations, interviews and documentation. Observations showed that students had attempted to adapt learning activities to pupils' circumstances, but the identification of learning needs had not

yet been carried out systematically. Interviews revealed that some students obtained information regarding pupils' readiness, interests and characteristics through general observation and informal communication with their supervising teachers. Meanwhile, documentation of teaching materials showed that some students had included forms of differentiation, but the basis for determining such differentiation was not always explicitly evident.

These findings indicate a gap between conceptual understanding and practical application. Students recognise that learners have diverse characteristics and needs, but are not yet fully able to use this information as a basis for pedagogical decision-making. This situation is consistent with the view (Tomlinson, 2014) that differentiated learning must take into account readiness, interest and learning profiles. However, this study shows that a conceptual understanding of these three aspects does not automatically enable students to apply them in lesson planning. Research (Darmawan dkk., 2026) However, this study shows that a conceptual understanding of these three aspects does not automatically enable students to apply them in lesson planning. Research (Darmawan et al., 2026) also indicates that teachers' principles and attitudes towards differentiation are linked to their practices of adapting teaching in the classroom. Thus, the findings of this study demonstrate that conceptual mastery needs to be translated through practical experience in order to result in consistent teaching decisions.

In this context, initial assessment plays a vital role in linking an understanding of learners' characteristics to instructional decisions. Recent research on differentiation practices identifies diagnostic assessment as a crucial stage for identifying readiness, interests and learning profiles before teachers determine differentiation in terms of content, process and products (Dorji & Nima, 2024). If information regarding readiness, interests and learning needs is obtained in an unstructured manner, decisions regarding differentiation are more likely to rely on the student's perceptions. Research findings indicate that some students still rely on initial observations and informal communication with their supervising teachers. This situation suggests that students' ability to gather and utilise information about learners as a basis for differentiation still needs to be developed.

Students' Competence in Designing Differentiated Learning

Lesson planning is a systematic process of determining learning objectives, content, activities, learning resources, assessment and teaching strategies. In differentiated learning, planning must also take into account the diversity of learners as a basis for decision-making. Differentiation does not mean that teachers must create different lesson plans for each learner, but rather that they should design flexible lessons so that learners can follow different learning pathways to achieve the same learning objectives (Trisnani dkk., 2024).

Research (Hasanah & Sukartono, 2024) indicates that the implementation of differentiated learning in primary schools can begin with the mapping of pupils' learning needs and be followed by the development of teaching materials that incorporate differentiation in content, process and products. The findings of this study reveal a pattern that is partly consistent with that research. Document analysis reveals that some students have integrated the principles of differentiation into their lesson plans and teaching modules through the use of varied methods, the formation of groups based on initial ability, and the provision of additional materials for pupils who grasp the subject matter more quickly.

However, the use of diagnostic assessments as a basis for planning has not been consistent. Of the 23 students, only 10 carried out systematic initial assessments using simple tests or interest questionnaires prior to teaching. The other students relied more on initial observations and informal communication with their supervising teachers. These findings indicate that, although the students were able to incorporate elements of differentiation into their teaching materials, the relationship between the results of learner identification and the forms of differentiation designed was not always clearly evident. This finding is consistent with studies on differentiation practices that position ongoing assessment as the basis for determining forms of differentiation appropriate to learners' needs (Febrianti dkk., 2025). Thus, the challenge of planning lies not only in the technical ability to develop teaching materials, but also in the ability to use data about learners as the basis for pedagogical decisions.

Students' Ability to Apply Differentiated Learning

During the implementation phase, students tend to apply differentiation in terms of content and process. Content differentiation relates to what learners study, including variations in teaching materials, learning resources, media, the level of complexity of the material, and the way in which information is presented (Tomlinson, 2014). The findings of the observation indicate that students have been using a variety of learning materials, media and resources. However, this variety is not always based on the needs of specific learners. In some teaching sessions, the variety employed still consists of variations in the methods or media provided to all learners.

This situation indicates that students are still in a transitional phase, moving from simply providing variety in learning towards differentiation that is genuinely based on learners' needs. Students are relatively capable of identifying various learning activities, but are not always able to explain the pedagogical reasons why a particular activity is appropriate for the needs of specific learners. These findings are consistent with research (Rahmah dkk., 2022) which indicates that differentiation in practice relates to teachers' ability to adapt to learners' differences, rather than merely to the existence of variation in learning. Consequently, creativity in designing learning

activities must be accompanied by diagnostic skills to determine the pedagogical rationale behind the choice of activities.

Process differentiation relates to how learners experience and process their learning experiences. This differentiation can be achieved through variations in methods, activities, grouping, levels of support, media, and forms of interaction. Research findings indicate that PGMI students at STIT Muhammadiyah Bojonegoro utilise group discussions, individual work, experiments, educational games, projects, demonstrations, guided reading, and digital media. Some students also organised learners into groups and provided additional support to those experiencing difficulties. However, these variations were not always based on the learners' readiness, interests or learning profiles. These findings suggest that students still require further practice in linking learners' characteristics to grouping, the provision of support and the selection of activities.

The finding that content and process differentiation are applied more frequently than product differentiation is also consistent with empirical studies showing that differentiation practices in the classroom more often focus on content and process, whilst the comprehensive implementation of differentiation remains a challenge (Zahra & Muttaqin, 2025). This reinforces the research finding that students' ability to vary materials and activities develops more rapidly than their ability to demonstrate flexibility in presenting learning outcomes.

Unlike content and process, product differentiation is still relatively rarely applied. Product differentiation provides learners with the opportunity to demonstrate their understanding through a variety of output formats, such as written work, posters, presentations, models, projects, concept maps, reports or demonstrations. Observations indicate that the majority of lecturers still assign the same type of task to all students. This situation suggests that the implementation of differentiation by lecturers remains limited and focuses more on variations in the process than on flexibility in demonstrating learning outcomes.

Findings regarding product differentiation were also corroborated by the interviews. Students took into account the complexity of assessment when offering a range of product options. This indicates that product differentiation requires not only creativity in providing a variety of task options, but also the ability to design authentic assessments and rubrics that can be applied to various forms of products whilst still measuring the same competences. Studies on differentiation practices also emphasise the importance of clear assessment criteria when learners are given a choice of ways to demonstrate their mastery of competences (Adisaputro & Solechan, 2025; Ni'mah, 2025). Thus, the low level of product differentiation in this study can be understood as an issue relating to the connection between product choices, learning objectives and assessment.

These findings can be understood through a constructivist perspective, which holds that learners enter the learning process bringing with them prior knowledge and experience. Therefore,

learners' initial circumstances need to be identified before teachers determine learning activities. If initial assessment is not carried out systematically, decisions regarding differentiation tend to be based on observation and estimation, and may therefore not necessarily align with learners' needs. From the perspective of pedagogical competence development, this situation highlights the importance of practical experience that enables trainee teachers to carry out a series of diagnostic assessments, map learners' characteristics, plan and implement differentiation, evaluate, and reflect on these processes on an ongoing basis.

The practical environment also plays a significant role in the implementation of differentiated learning. Research findings indicate that time constraints, relatively large class sizes, limited resources, the pressure to cover the curriculum, and the complexity of classroom management are factors that hinder students from implementing differentiation optimally. These findings are consistent with research (Prakoso & Ulia, 2025) on pre-service teacher education, which highlights the importance of developing knowledge, practical experience, collaboration and reflection to build sustainable differentiation skills. These conditions indicate that a theoretical understanding alone is not sufficient to ensure that students are able to apply differentiation consistently in the classroom.

The research findings are also consistent with those of (Firdausiyah dkk., 2026) regarding the importance of training for trainee teachers in meeting the demands of the Merdeka Curriculum. In the context of this study, capacity-building is not sufficient if it consists solely of conceptual understanding; rather, it must be directed towards practising diagnostic assessment, analysing assessment results, designing differentiated instruction, implementing teaching, and reflection. This is important because PGMI students are being prepared to teach at primary level, where pupils have diverse characteristics.

Factors Affecting the Implementation of Differentiated Learning

The research findings indicate that the successful implementation of differentiated learning is not only linked to students' individual competences, but is also influenced by the practical learning environment. The results of interviews and observations indicate that time constraints, relatively large class sizes, limited learning resources, the pressure to cover the syllabus, and the complexity of classroom management are factors that hinder the application of differentiation. Consequently, students who have understood the concept of differentiation still face difficulties when practical conditions do not allow sufficient scope for flexible assessment, planning and management of learning.

These findings reinforce the research (Roziman, 2025) regarding the difficulties faced by PGMI students in implementing differentiated learning due to limited understanding and practical experience. However, this study emphasises that the issue lies not only in conceptual

understanding, but also in the ability to link information about learners' characteristics to teaching decisions. Consequently, the development of pedagogical competences must take into account the relationship between students' readiness and the practical context in which these competences are applied.

Overall, the research findings indicate that the pedagogical competence of PGMI students at STIT Muhammadiyah Bojonegoro in implementing differentiated learning is still at a developing stage. Students have an understanding of learner diversity and are relatively more capable of applying differentiation in content and process; however, they are not yet fully consistent in mapping learning needs, using diagnostic assessment as a basis for planning, and developing differentiated products and assessments. This pattern is evident through the interrelationship between the results of questionnaires, observations, interviews and documentation.

These findings suggest that the main issue is not merely whether students understand the concept of differentiated learning, but the extent to which that understanding can be translated into pedagogical decisions that are appropriate to the learners' needs. These findings reinforce the view (Syafitri, 2006) that differentiation is a practice requiring a continuous process of assessment, decision-making and adaptation of learning, rather than merely the use of varied methods or media. Therefore, the development of PGMI students' competences needs to be directed towards practical experiences that form a complete pedagogical cycle, ranging from diagnostic assessment, mapping of learners' characteristics, planning for differentiation, implementation, assessment, reflection, to the improvement of learning.

This strengthening can be achieved through university-level learning, microteaching, field placements, supervision by mentor teachers, and evidence-based reflection. This approach will help students progress from conceptual understanding to practical pedagogical competence. Thus, the main contribution of this research lies in the assertion that the development of differentiated learning competences in prospective PGMI teachers needs to be directed not only towards the ability to create varied learning activities, but also towards the ability to use information about learners to make learning decisions that are responsive, well-planned, and aligned with learning objectives.

Conclusion

This study indicates that PGMI students' pedagogical competence in applying differentiated learning is at a moderate level. The students already possess a basic understanding and the ability to implement differentiated learning; however, this competence has not yet developed optimally or consistently across all aspects. There is a gap between conceptual understanding and its application in teaching practice. Students are relatively more capable of applying content and process differentiation, whilst product differentiation still requires further development. Furthermore,

understanding of learners' characteristics and the implementation of diagnostic assessment have not been carried out consistently as a basis for making teaching decisions.

These findings have implications for the PGMI Study Programme in terms of strengthening the education of trainee teachers through learning and teaching practice focused on diagnostic assessment, analysis of learners' characteristics, differentiated lesson planning, the provision of alternative learning outcomes, as well as supervision and reflection on teaching practice. Strengthening these aspects is necessary so that students' conceptual understanding can develop into pedagogical competences that are more consistent and applicable in teaching practice at madrasah ibtidaiyah. Thus, the contribution of this research lies in identifying aspects of pedagogical competence that have already developed, as well as those that still require strengthening, as a basis for developing PGMI pre-service teacher education that is more responsive to the diverse needs of pupils.

This study has limitations in terms of the relatively small number and characteristics of the participants, the research context being confined to a single institutional setting, and the still limited scope of observation of teaching practices. Therefore, it is recommended that future research involve a more diverse sample and encompass madrasah contexts as well as a broader range of pre-service teacher education programmes. Observation of teaching practices across various settings is also required to obtain a more comprehensive picture of pedagogical competence. Furthermore, future research could develop and test interventions specifically aimed at improving PGMI trainee teachers' diagnostic assessment skills, product differentiation, and reflective abilities.

Bibliography

- Adisaputro, S. E., & Solechan, S. (2025). Implementasi Staffing dalam Upaya Peningkatkan Mutu SDM di Madrasah. *At Tadbir: Islamic Education Management Journal*, 3(2), 184–200. <https://doi.org/10.54437/attadbir.v3i2.2504>
- Am, M. A., Hadi, S., Istiyono, E., & Retnawati, H. (2023). Does Differentiated Instruction Affect Learning Outcome? Systematic Review and Meta-Analysis. *Journal of Pedagogical Research*, 7(5), 18–33.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Creswell, J. W., & Clark, V. L. P. (2007). *Designing and Conducting Mixed Methods Research*. SAGE.
- Darmawan, D., Fitria, E. Z., Azzania, M., Mardikaningsih, R., & El-Yunusi, M. Y. M. (2026). Pengelolaan Kelas yang Responsif: Pendekatan Diferensiasi dalam Pembelajaran. *Jurnal IHSAN: Jurnal Pendidikan Islam*, 4(3), 809–825. <https://doi.org/10.61104/ihsan.v4i3.7693>

- Deunk, M. I., Smale-Jacobse, A. E., de Boer, H., Doolaard, S., & Bosker, R. J. (2018). Effective differentiation Practices: A systematic review and meta-analysis of studies on the cognitive effects of differentiation practices in primary education. *Educational Research Review*, 24, 31–54. <https://doi.org/10.1016/j.edurev.2018.02.002>
- Dorji, T., & Nima, P. (2024). Psychometric properties of an instrument to assess teachers' practice of differentiated instruction (IATPDI): A confirmatory factor analysis on Bhutanese teachers' data. *Frontiers in Education*, 9. <https://doi.org/10.3389/feduc.2024.1445865>
- Farida, N., & Mulyani, P. S. (2024). Kesiapan Mahasiswa Calon Guru PAUD Dalam Implementasi Pembelajaran Berdiferensiasi Pada Kegiatan Microteaching. *Yaa Bunayya : Jurnal Pendidikan Anak Usia Dini*, 8(2), 107–118. <https://doi.org/10.24853/yby.8.2.107-118>
- Febrianti, S., Damri, D., & Zulpiani, M. (2025). Strategi Pembelajaran Diferensiasi dalam Pendidikan Inklusif. *Sinar Dunia: Jurnal Riset Sosial Humaniora Dan Ilmu Pendidikan*, 4(4), 01–09. <https://doi.org/10.58192/sidu.v4i4.3934>
- Firdausiyah, L., Supit, D., Pattiasina, P. J., & Hafsa, N. A. (2026). Penguatan Kompetensi Guru dalam Merancang Pembelajaran Berdiferensiasi Berbasis Literasi Digital dan Asesmen Diagnostik. *Marsialapari: Jurnal Pengabdian Kepada Masyarakat*, 3(2), 133–150. <https://doi.org/10.63424/marsialapari.v3i2.670>
- Gheysens, E., Coubergs, C., Griful-Freixenet, J., Engels, N., & Struyven, K. (2022). Differentiated instruction: The diversity of teachers' philosophy and praxis to adapt teaching to students' interests, readiness and learning profiles. *International Journal of Inclusive Education*, 26(14), 1383–1400. <https://doi.org/10.1080/13603116.2020.1812739>
- Hasanah, O. N., & Sukartono. (2024). Penerapan Pembelajaran Berdiferensiasi Dalam Kurikulum Merdeka Pada Mata Pelajaran IPAS di Sekolah Dasar. *Else (Elementary School Education Journal): Jurnal Pendidikan dan Pembelajaran Sekolah Dasar*, 8(1). <https://doi.org/10.30651/else.v8i1.20798>
- Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using Mixed-Methods Sequential Explanatory Design: From Theory to Practice. *Field Methods*, 18(1), 3–20. <https://doi.org/10.1177/1525822X05282260>
- Langelaan, B. N., Gaikhorst, L., Smets, W., & Oostdam, R. J. (2024). Differentiating instruction: Understanding the key elements for successful teacher preparation and development. *Teaching and Teacher Education*, 140, 104464. <https://doi.org/10.1016/j.tate.2023.104464>
- Ni'mah, N. F. (2025). Peran Lembar Kerja Peserta Didik dalam Memfasilitasi Pembelajaran Diferensiasi di Sekolah Dasar. *JIMU: Jurnal Ilmiah Multidisipliner*, 3(04). <https://ojs.smkmerahputih.com/index.php/jimu/article/view/1524>

- Obrovská, J., Svojanovský, P., Kratochvílová, J., Lojdová, K., Tůma, F., & Vlčková, K. (2024). Promises and challenges of differentiated instruction as pre-service teachers learn to address pupil diversity. *Journal of Education for Teaching*, 50(3), 403–420. <https://doi.org/10.1080/02607476.2023.2247356>
- Permendiknas. (2007). *Permendiknas No. 16 Tahun 2007 Tentang Standar Kualifikasi Akademik Dan Kompetensi Guru*. Database Peraturan Perundang-Undangan Indonesia - [Peraturan.Go.Id]. <https://peraturan.go.id/id/permendiknas-no-16-tahun-2007>
- Pertiwi, L. Z., Harahap, L. S., & Nasution, A. F. (2025). Peningkatan Kompetensi Pedagogik Guru Melalui Pengembangan Profesional Berkelanjutan. *Cemara Education and Science*, 3(3). <https://www.cemarajournal.com/journal/index.php/ces/article/view/165>
- Rahmah, S., Dalila, A. A., Liliawati, W., & Setiawan, A. (2022). Pendekatan Pembelajaran Diferensiasi dalam Model Inkuiri terhadap Kemampuan Numerasi Siswa. *Jurnal Ilmiah Pendidikan Dan Pembelajaran*, 6(2), 393–401. <https://doi.org/10.23887/jipp.v6i2.50838>
- Roziman, R. (2025). Penerapan Pembelajaran Berdiferensiasi oleh Mahasiswa PGMI di Madrasah Ibtidaiyah. *Jurnal Ilmiah El Makrifah PGMI*, 2(1), 109–121.
- Sintasari, B. (2024). Manajemen Pengembangan Kompetensi Tenaga Pendidik Di Madrasah. *At Tadbir: Islamic Education Management Journal*, 2(1), 36–45. <https://doi.org/10.54437/attadbir.v2i1.1586>
- Syafitri, N. (2006). *Profil Penggunaan Platform Pembelajaran Digital oleh Guru IPA SMP dan Dampaknya pada Pembelajaran Berdiferensiasi | JIIP - Jurnal Ilmiah Ilmu Pendidikan*. <https://jiip.stkipyapisdompou.ac.id/jiip/index.php/JIIP/article/view/10629>
- Tomlinson, C. A. (2014). *The Differentiated Classroom: Responding to the Needs of All Learners*, 2nd Edition. ASCD.
- Trisnani, N., Effendi, E., Zuriah, N., Kobi, W., Kaharuddin, A., Subakti, H., Utami, A., Anggraini, V., Farhana, H., Pitriyana, S., Watunglawar, B., Mutaqin, A., Farid, M. G., Juwita, A. R., Dianita, E. R., Tulak, T., & Yunefri, Y. (2024). Pembelajaran Berdiferensiasi dalam Kurikulum Merdeka. *Penerbit Mifandi Mandiri Digital*, 1(01). <https://jurnal.mifandimandiri.com/index.php/penerbitmmd/article/view/48>
- Zahra, D. R., & Muttaqin, M. F. (2025). Praktik Diferensiasi Pembelajaran Strategi Pendidikan Inklusi Di Sekolah Dasar. *Jurnal Ilmu Pendidikan Guru Sekolah Dasar Dan Usia Dini*, 2(3), 70–75. <https://doi.org/10.70134/pedasud.v2i3.1060>