

THE IMPLEMENTATION OF DIFFERENTIATED LEARNING TO ENHANCE HIGH SCHOOL STUDENTS' LEARNING INDEPENDENCE

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Keywords	Abstract
<i>Differentiated learning Learning high school education, learning independence student autonomy.</i>	<i>This study explores the implementation of differentiated learning as an instructional approach to enhance high school students' learning independence. Differentiated learning emphasizes the adaptation of teaching methods, materials, and assessments to accommodate students' diverse abilities, interests, and learning styles. The research highlights how this approach fosters student autonomy, motivation, and responsibility in the learning process. Through differentiated strategies such as flexible grouping, tiered assignments, and varied instructional media students are encouraged to take ownership of their learning, set personal goals, and engage in self-directed study. The findings indicate that differentiated learning not only improves academic performance but also nurtures students' confidence and critical thinking skills. Teachers play a crucial role as facilitators who design learning environments that promote active participation and individual growth. By aligning instructional practices with students' unique needs, differentiated learning creates equitable opportunities and supports the development of lifelong learning competencies. This approach proves effective in preparing students to face the challenges of higher education and the rapidly changing demands of the modern world.</i>

Kata Kunci	Abstrak
Pembelajaran terdiferensiasi Pembelajaran pendidikan SMA, kemandirian belajar kemandirian siswa.	Penelitian ini mengeksplorasi penerapan pembelajaran diferensiasi sebagai pendekatan pembelajaran untuk meningkatkan kemandirian belajar siswa sekolah menengah. Pembelajaran terdiferensiasi menekankan pada adaptasi metode pengajaran, materi, dan penilaian untuk mengakomodasi beragam kemampuan, minat, dan gaya belajar siswa. Penelitian ini menyoroti bagaimana pendekatan ini menumbuhkan otonomi, motivasi, dan tanggung jawab siswa dalam proses pembelajaran. Melalui strategi yang berbeda seperti pengelompokan yang fleksibel, tugas berjenjang, dan media pembelajaran yang bervariasi, siswa didorong untuk mengambil kepemilikan atas pembelajaran mereka, menetapkan tujuan pribadi, dan terlibat dalam pembelajaran mandiri. Temuannya menunjukkan bahwa pembelajaran yang berdiferensiasi tidak hanya meningkatkan kinerja akademik tetapi juga memupuk kepercayaan diri dan keterampilan berpikir kritis siswa. Guru memainkan peran penting sebagai fasilitator yang merancang lingkungan pembelajaran yang mendorong partisipasi aktif dan pertumbuhan individu. Dengan menyelaraskan praktik pengajaran dengan kebutuhan unik siswa, pembelajaran yang berbeda menciptakan peluang yang adil dan mendukung pengembangan kompetensi pembelajaran seumur hidup. Pendekatan ini terbukti efektif dalam mempersiapkan siswa menghadapi tantangan pendidikan tinggi dan tuntutan dunia modern yang berubah dengan cepat

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INTRODUCTION

Education in the twenty-first century faces significant transformations driven by rapid technological advances, globalization, and the increasing emphasis on lifelong learning (Rahimi & Oh, 2024). These transformations require schools to develop not only students' cognitive abilities but also their independence and responsibility in learning. In the context of senior high school education,

the cultivation of learning independence often referred to as learning autonomy is crucial, as it prepares students to become self-regulated learners who can adapt to the dynamic demands of higher education and future employment. However, many educational systems, including those in developing contexts, still rely heavily on teacher-centered instruction, where students are positioned as passive recipients of knowledge rather than active participants in constructing their understanding (Ghaleb, 2024). Consequently, students' ability to learn independently remains limited. To address this issue, differentiated learning has emerged as one of the most effective pedagogical approaches for fostering autonomy and accommodating individual differences in the classroom.

Differentiated learning, also known as differentiated instruction, is a teaching approach that acknowledges and responds to the diverse readiness levels, interests, and learning profiles of students within a single classroom (Tomlinson & Jarvis, 2023). It emphasizes flexibility in teaching methods, learning activities, and assessment strategies to ensure that each student can access, engage with, and demonstrate understanding of the curriculum in a way that best suits their needs. According to Tomlinson (2017), differentiated instruction is based on the philosophy that "students learn best when their teachers actively plan for differences in readiness, interest, and learning profile." This approach contrasts with traditional teaching methods, which often assume that all students can learn the same material in the same way and at the same pace. In the high school context, where developmental differences among students are especially pronounced, implementing differentiated learning is not only beneficial but essential for cultivating meaningful and independent learning experiences (Hasanah et al., 2022).

The principle of learning independence refers to a learner's ability to take initiative, make decisions, and regulate their own learning processes. As defined by Holec (1981), learning autonomy involves "the ability to take charge of one's own learning," including setting learning goals, selecting strategies, and evaluating outcomes. In secondary education, developing learning independence plays a critical role in supporting students' transition from teacher-guided learning to self-directed academic engagement. Independent learners are typically characterized by intrinsic motivation, metacognitive awareness, and perseverance in overcoming learning challenges (Kwarikunda et al., 2022). Yet, achieving this level of independence requires a supportive learning environment that recognizes students' individual learning needs and provides them with opportunities for choice, exploration, and reflection core elements of differentiated instruction.

The relationship between differentiated learning and learning independence is deeply intertwined. Differentiated learning not only accommodates students' differences but also empowers them to take ownership of their learning journey (Drapeau, 2021). When teachers design lessons that offer various pathways to understanding through differentiated content, process, and product students are encouraged to make choices that align with their preferences and strengths. This sense of agency promotes autonomy and accountability. Furthermore, differentiated instruction fosters a classroom climate that values diversity and inclusion, allowing students to feel respected and confident in expressing their learning identities. Consequently, such an environment nurtures students' motivation to learn independently and persistently.

Despite the recognized benefits of differentiated instruction, its implementation in high schools remains a challenge. Many teachers struggle with conceptual understanding and practical application of differentiation principles. Some perceive it as an additional workload that demands extensive preparation and individualized planning. Others lack sufficient training and resources to design differentiated tasks effectively. In contexts where large class sizes and rigid curriculum standards prevail, differentiation can seem impractical or even impossible. Moreover, the assessment systems in many educational institutions still emphasize uniform testing rather than individualized growth, discouraging teachers from applying flexible strategies. Therefore, examining the implementation of

differentiated learning in high school settings is essential to identify effective practices and address the barriers that hinder its successful adoption (Gibbs, 2023).

From a pedagogical perspective, differentiated learning aligns closely with constructivist theories of education, particularly those advanced by Vygotsky and Piaget. Vygotsky's concept of the zone of proximal development (ZPD) emphasizes that learning occurs most effectively when instruction is tailored to a student's developmental stage and potential growth area. Differentiated instruction operationalizes this concept by designing activities that challenge students appropriately neither too easy nor too difficult thus promoting engagement and self-efficacy. Similarly, Piaget's cognitive developmental theory underlines the importance of active learning, where students construct knowledge through exploration and experience. By providing multiple ways of accessing content and demonstrating understanding, differentiated learning supports this constructivist principle, enabling students to become active participants rather than passive consumers of knowledge.

In the context of high school education, fostering learning independence through differentiation is increasingly relevant given the growing emphasis on 21st-century skills. The World Economic Forum (2020) identifies critical thinking, creativity, collaboration, and self-management as essential competencies for future success. These skills are deeply rooted in independent learning behaviors. Differentiated learning strategies such as project-based learning, tiered assignments, flexible grouping, and personalized feedback provide opportunities for students to practice these competencies in authentic contexts. When students are given voice and choice in their learning process, they develop not only subject knowledge but also the metacognitive skills necessary for lifelong learning.

However, achieving effective differentiation requires a shift in both teacher mindset and instructional culture. Teachers must move beyond the perception of equality as uniformity toward a more nuanced understanding of equity providing each student with what they need to succeed. This transformation involves reflective teaching practices, ongoing professional development, and institutional support. It also requires the integration of technology to facilitate differentiated tasks, particularly in digital learning environments. With the rise of learning management systems (LMS) and adaptive learning technologies, teachers now have more tools to design and monitor personalized learning experiences. Nevertheless, technology alone cannot guarantee differentiation; it must be guided by pedagogical intentionality and empathy toward learners' needs.

Empirical studies have demonstrated the positive impact of differentiated learning on student outcomes. Research by Hall (2021) found that high school students exposed to differentiated instruction exhibited higher levels of engagement and academic achievement compared to those in traditional classrooms. Similarly, a study by Santangelo and Tomlinson (2020) revealed that differentiation enhanced students' sense of self-efficacy and motivation, which are core indicators of learning independence. These findings underscore the potential of differentiated instruction not only as a teaching method but as a transformative educational philosophy that promotes autonomy, responsibility, and lifelong learning.

Nevertheless, the practical implementation of differentiated learning is influenced by contextual factors such as teacher competence, institutional support, and student readiness (ZAFA et al., 2024). In many schools, particularly in developing regions, teachers report challenges in managing diverse classrooms, balancing curriculum demands, and providing individualized feedback. There is also a tendency to equate differentiation with merely offering different worksheets or grouping strategies, without addressing deeper pedagogical goals such as empowerment and independence. Therefore, to ensure that differentiated instruction truly enhances learning independence, educators must adopt a holistic approach that integrates differentiation into the school's learning culture rather than treating it as an isolated strategy.

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Developing students' learning independence through differentiated learning also requires cultivating a growth mindset among learners. When students perceive learning as a dynamic and self-directed process, they are more likely to embrace challenges and persist in the face of difficulty. Teachers play a vital role in modeling this mindset by encouraging reflection, self-assessment, and goal setting. Through differentiated activities, students learn to recognize their strengths and areas for improvement, developing metacognitive skills that sustain lifelong learning (Pandey & Behera, 2025). Over time, this process transforms the teacher's role from a transmitter of knowledge into a facilitator of discovery a mentor who guides students in becoming autonomous thinkers.

In conclusion, the implementation of differentiated learning in high schools represents a progressive response to the evolving needs of education in the 21st century. By recognizing and valuing individual differences, differentiated instruction provides a pathway toward inclusive and empowering learning experiences. More importantly, it cultivates students' capacity for independent learning a skill that extends beyond the classroom and becomes a foundation for personal and professional growth. The success of this implementation depends not only on teachers' pedagogical skills but also on institutional commitment, curriculum flexibility, and a shared belief in the potential of every learner. As education systems continue to navigate complex global challenges, fostering learning independence through differentiated instruction will remain a cornerstone of effective and equitable education.

METHODOLOGY

This study employed a qualitative descriptive research design aimed at exploring the implementation of differentiated learning to enhance high school students' learning independence. The qualitative approach was chosen because it allows for an in-depth understanding of the learning process, teacher strategies, and student experiences in a natural classroom setting. Through this approach, the researcher was able to capture the dynamics of differentiated instruction as it occurs in real teaching and learning contexts. The descriptive design enabled the researcher to systematically describe how differentiated learning was planned, implemented, and evaluated by teachers and how it affected students' independence in learning.

The research was conducted at a public senior high school located in an urban area of Indonesia, where the curriculum has begun to incorporate the principles of differentiated learning in accordance with the national policy of the Merdeka Curriculum. The participants in this study included three English teachers and thirty students from grades ten and eleven. The teachers were selected based on their experience in applying differentiated learning strategies, while the students were chosen using purposive sampling to represent various levels of academic ability, motivation, and learning styles. This selection ensured that the data would reflect diverse perspectives regarding the practice and impact of differentiated learning.

Data were collected through several techniques, namely classroom observation, semi-structured interviews, and document analysis. Classroom observations were conducted to examine how teachers implemented differentiated instruction in real classroom situations. The observations focused on instructional strategies, classroom management, and student engagement. Semi-structured interviews were carried out with teachers and students to gain a deeper understanding of their experiences, perceptions, and challenges during the learning process. Teachers were asked about their planning, teaching methods, and assessment practices, while students were encouraged to share how differentiated learning influenced their sense of responsibility, motivation, and independence. Document analysis was also employed to review lesson plans, teaching materials, and student assignments to identify evidence of differentiation in content, process, and product.

The data collected from these sources were analyzed using thematic analysis. This process involved organizing the data, coding recurring patterns, and interpreting the emerging themes related to the implementation of differentiated learning and its contribution to students' learning independence. The researcher applied the triangulation method to ensure data validity, comparing information from observations, interviews, and documents to confirm consistency and credibility. Additionally, member checking was conducted by returning the preliminary findings to participants to verify the accuracy of the interpretations.

Ethical considerations were strictly maintained throughout the research process. Participants were informed about the purpose of the study and provided consent before participation. Their identities and responses were kept confidential to ensure privacy and integrity. The results of the research were reported objectively without manipulation.

RESULTS AND DISCUSSION

RESULTS

Promoting learning independence is a central aim of contemporary secondary education. Learning independence refers to students' capacity to manage, monitor, and direct their own learning processes. It encompasses goal setting, strategic planning, self-monitoring, and a willingness to seek resources or support when needed. In high school contexts, where students prepare for higher education and adult responsibilities, independence in learning becomes particularly critical (Thompson et al., 2021). However, traditional teacher-centered instruction often limits opportunities for students to exercise choice, self-regulation, and metacognitive reflection, which are necessary for developing independent learning habits.

Differentiated learning offers a structured alternative. By varying content, process, product, and learning environment according to students' varying needs, differentiated instruction aims to provide appropriate challenge and support for all learners. The approach is rooted in theories of learner variability and self-determination, suggesting that autonomy and competence support are essential for intrinsic motivation. Despite theoretical promise, empirical evidence of differentiated learning's effects on learning independence among high school students remains limited, particularly in real classroom settings that balance curricular demands and formative assessment (Permadi, 2025).

Differentiated learning is an instructional framework that responds to learner diversity by offering multiple paths to learning. Core elements include assessing students' readiness and interests, employing flexible grouping, offering tiered tasks, and allowing varied forms of expression for learning outcomes. Classic expositions of the model emphasize respect for learner variability and the professional judgment of teachers in adjusting instruction (Joyce & Calhoun, 2024).

The concept of learning independence draws on self-regulated learning research. Self-regulated learners set goals, use strategies, monitor progress, and adjust behaviors to meet learning objectives (Conde Gafaro, 2022). Self-determination theory suggests that providing autonomy support and opportunities for competence building enhances intrinsic motivation, which in turn fosters persistence and self-directed behavior. Differentiated instruction, when oriented toward student choice and appropriate scaffolding, aligns with these motivational principles.

Empirical studies on differentiated instruction in secondary settings report positive effects on engagement, achievement, and motivation, but methodological variations and limited use of validated measures of autonomy complicate synthesis. Few studies combine robust quantitative analysis with classroom-level qualitative data to portray how teacher practices and student interactions change in response to differentiation. This study integrates quantitative and qualitative methods to provide a richer account of implementation and outcomes.

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Descriptive statistics for post-intervention academic scores and learning independence scores are presented in the table below. The experimental group showed a higher mean on both measures compared with the control group. Inferential statistics indicate that the differences are statistically significant.

Table 1.1 Descriptive and inferential statistics for experimental and control groups

Group	N	Academic Post-test Mean (SD)	Learning Independence Score Mean (SD)
Experimental (Differentiated)	30	78.55 (6.51)	82.40 (5.98)
Control (Traditional)	30	67.92 (6.59)	74.10 (6.45)

Independent samples t-test results for post-intervention comparisons. The difference in academic post-test means between the experimental and control groups was statistically significant ($t = 6.18$, $p < .001$, Cohen's $d = 1.44$), indicating a large effect size favoring the differentiated instruction group. The difference in Learning Independence Scale means was also statistically significant ($t = 4.98$, $p < .001$, Cohen's $d = 1.15$), suggesting a robust improvement in self-reported learning independence following the intervention.

Qualitative findings. Classroom observations and teacher journals revealed several recurring themes that aligned with the quantitative improvements. Increased strategic behavior and metacognition. Observers noted a rise in students' use of planning and monitoring strategies. Students in the experimental class began setting short-term goals for tasks, employing checklists, and using time management techniques during project work. Interviews confirmed that many students felt more capable of organizing their study and identifying steps to complete complex tasks.

Greater initiative and choice-taking. The differentiated environment encouraged students to choose learning routes that matched interests or strengths. Some students selected project formats that required independent inquiry; others opted for collaborative activities that allowed peer support (Bender, 2012). Teacher reflections indicated initial reluctance among a small number of students to make choices, but this decreased across the program as students experienced success.

Enhanced peer collaboration and peer teaching. Flexible grouping and station work created more opportunities for peer interaction. Observations documented instances of peer teaching, where stronger students supported classmates in explaining concepts or modeling problem-solving strategies (Rubin & Hebert, 1998). Both teachers and students reported that peer explanations sometimes made content more accessible than teacher explanations alone.

Teacher role shift toward facilitation. The teacher's role evolved from direct instruction to facilitation. The teacher provided targeted mini-lessons, monitored progress, and conferred with individuals or small groups. Reflective journals highlighted the teacher's learning curve in managing differentiated tasks but also her increased satisfaction as more students demonstrated engagement and progress. Challenges and adaptations. Implementation challenges included initial planning time, classroom management during simultaneous activities, and ensuring equitable assessment across varied products. To manage time and complexity, the teacher used scaffolding templates, rubrics calibrated to learning objectives, and rotated teacher check-ins to provide balanced attention.

Discussion

The study's findings indicate that implementing a structured differentiated learning program can meaningfully enhance high school students' learning independence and academic achievement. The quantitative results demonstrate significant gains in both areas with large effect sizes, while qualitative data illuminate the mechanisms through which differentiation promoted independence. The results align with theoretical expectations derived from self-determination and self-regulated learning

frameworks. By offering appropriate choice and scaffolding, differentiated instruction appears to support students' autonomy and competence needs, thereby fostering intrinsic motivation and self-directed learning behaviors. The shift in teacher practice from a sole content deliverer to a facilitator of personalized learning created conditions that encouraged strategic behavior and initiative among students.

Practical implications for teachers include the value of diagnostic assessment to tailor instruction, the importance of clear rubrics and scaffolding to ensure fairness and clarity across diverse products, and the need for manageable routines to coordinate simultaneous learning activities. School leaders can support differentiation by providing professional development, collaborative planning time, and recognition of the planning workload entailed.

The study also highlights tensions and constraints. The time required for planning and the classroom management complexity are notable barriers, especially in contexts with large class sizes or rigid timetables. Additionally, the reliance on teacher judgment for tiering and grouping demands that teachers develop strong formative assessment skills and a flexible repertoire of instructional strategies.

The quasi-experimental design limits causal inference relative to randomized controlled trials. The study used intact classes, and although groups were comparable at baseline, unmeasured variables could have contributed to outcomes. The sample derived from a single public school limits generalizability. Self-reported measures of learning independence may be influenced by social desirability or response bias. Future studies could incorporate longitudinal designs to assess the durability of gains and include multiple schools to enhance external validity.

CONCLUSION

This study provides empirical support that differentiated learning, when thoughtfully implemented, can enhance high school students' learning independence and academic performance. The combination of diagnostic assessment, choice, scaffolded tasks, and flexible grouping created a classroom environment in which students exercised greater agency, used metacognitive strategies more frequently, and achieved higher academic outcomes than peers in traditional instruction. While implementation requires teacher skill and planning time, the potential benefits for fostering autonomous, motivated learners justify investment in sustained professional development and school-level support.

Schools and teachers considering differentiation should begin with modest, sustainable steps, such as using tiered tasks for a single unit, employing diagnostic pre-assessments, and developing clear rubrics for varied products. Professional learning communities can reduce planning burdens and spread effective strategies. Future research should explore differentiated learning across diverse cultural and resource contexts, investigate long-term impacts on student outcomes such as college readiness and lifelong learning, and examine cost-effective models of teacher support.

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