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DIFFERENTIATED LEARNING FOR DEVELOPING SELF-DEVELOPMENT AND ACADEMIC ABILITIES OF CHILDREN WITH INTELLECTUAL DISABILITIES: A LITERATURE REVIEW

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ABSTRACT

Children with intellectual barriers in inclusive elementary schools have two interrelated needs: the development of academic abilities and self-care skills as provisions for independent living. This study was conducted to examine how Differentiated Instruction (DI) and Universal Design for Learning (UDL) can serve as a framework that bridges the two needs, rather than handling them separately, as often happens in the field. The author traces and synthesizes several relevant national and international journal articles, ranging from the basic principles of DI and UDL, operational techniques for self-development development such as task analysis, prompting, chaining, and modeling, to various implementation challenges faced by teachers in the field, both in terms of competencies, infrastructure, and systemic support. From this search, it can be seen that DI and UDL actually complement each other: UDL plays a role in the design stage, making the curriculum flexible and accessible to many students from the beginning, while DI plays a role when learning is in progress, adjusting the content, processes, products, and learning environment according to the needs of each child. When these two frameworks are combined with systematic behavioral intervention techniques, the self-developmental ability and academic achievement of children with intellectual barriers have the potential to grow together rather than in tandem. The study concludes with several recommendations: strengthening teacher training, closer collaboration between regular and special education teachers, and a curriculum designed from the outset to accommodate academic and self-development goals.

Keywords: differentiated, self-development, academic disabilities, disabilities

INTRODUCTION

Inclusive education upholds the right of every child, including those with intellectual disabilities, to receive quality education without discrimination (Yunita & Subagya, 2025). However, in elementary school, the learning needs of children with intellectual barriers actually do not stop at academic affairs. There is one other domain that is equally important, namely self-care skills: basic skills for independent living such as eating, dressing, maintaining personal hygiene, and daily functional social skills (Wulandari et al., 2019; Pesau et al., 2020).

Unfortunately, these two domains, academic and self-coaching, are still often addressed separately in everyday learning practices in inclusive primary schools. In fact, considering the limited cognitive capacity of children with intellectual disabilities, an approach is needed that can efficiently design both at once within a single curriculum (Astriani & Mufidah, 2022).

This is where Differentiated Instruction (DI) comes into play. DI is a student-centered approach in which teachers adjust the content, processes, products, and learning environment based on each child's readiness, interests, and learning profile (Nketsia et al., 2024; Goyibova et al., 2025). With this approach, teachers can adapt teaching methods according to the

characteristics and needs of children, so that the development of self-development and academics can go hand in hand, not shift each other (Rapisa et al., 2026).

As a complement to DI, Universal Design for Learning (UDL) offers a more upstream way of thinking: designing a learning environment that is accessible to as many students as possible from the outset, thereby reducing the need for individual modifications in the future (Griful-Freixenet et al., 2020). UDL and DI are basically mutually reinforcing, just working on different levels. UDL prepares a structurally flexible learning environment from the outset of planning, whereas DI serves as a more responsive and personalized adjustment strategy during learning (Griful-Freixenet et al., 2020; Smith & Lowrey, 2017).

Although the potential of combining DI and UDL has been widely discussed in the international literature, its application to the development of self-development skills for children with intellectual disabilities in elementary schools, especially in the Indonesian context, remains underexplored. Various implementation challenges persist in the field, ranging from limited teacher training to inadequate infrastructure and systemic support (Yunita & Subagya, 2025; Daşçıoğlu & Bümen, 2025; Langelaan et al., 2024).

On that basis, this study was prepared with four objectives: first, to review the basic concepts and principles of DI and UDL in the context of education of children with intellectual barriers; second, to identify operational techniques that can be used to develop self-development as well as academics at the same time; third, to look at the challenges faced in implementing DI and UDL in inclusive elementary schools; and fourth, formulating an integrative framework that connects DI, UDL, and the dual needs of children with these intellectual barriers.

LITERATURE REVIEW

Children with Intellectual Disabilities and Their Educational Needs

Children with intellectual disabilities (ID) experience significant limitations in intellectual functioning and adaptive behavior, affecting conceptual, social, and practical skills required for everyday life. These limitations often affect both academic achievement and the development of self-care skills, including personal hygiene, communication, social interaction, self-management, and independent living. Consequently, educational programs for students with intellectual disabilities should address not only academic competencies but also adaptive skills that support lifelong independence and social participation (Schalock et al., 2021).

Within inclusive elementary schools, students with intellectual disabilities are expected to learn alongside their peers in general education settings. However, differences in cognitive abilities, learning pace, and support needs require teachers to employ flexible instructional

approaches. Traditional one-size-fits-all instruction often fails to accommodate learner diversity, leading to reduced participation and limited learning outcomes. Therefore, educational approaches that recognize individual differences and provide appropriate accommodations are essential for promoting inclusive and equitable learning opportunities (Tomlinson, 2017).

Differentiated Learning: Concept and Principles

Differentiated Learning, also known as Differentiated Instruction (DI), is a student-centered approach that adapts teaching practices according to learners' readiness levels, interests, learning profiles, and abilities. The fundamental principle of DI is that students learn in different ways and therefore require different pathways to achieve learning objectives (Tomlinson, 2017).

Differentiation may occur through modifications of content, process, product, and learning environment. Content differentiation involves adjusting what students learn; process differentiation focuses on how students engage with learning activities; product differentiation concerns how students demonstrate understanding; and environmental differentiation refers to creating supportive learning conditions. Through these adaptations, students with intellectual disabilities can access the curriculum more effectively while participating meaningfully in classroom activities (Yunaini et al., 2024).

Research indicates that differentiated instruction improves student engagement, participation, and academic achievement in inclusive classrooms. By providing individualized supports, flexible grouping, scaffolded tasks, and varied assessment methods, teachers can better accommodate the diverse needs of students with intellectual disabilities and foster positive learning experiences (Angreni et al., 2026).

Self-Development Skills among Children with Intellectual Disabilities

Self-development skills refer to adaptive behaviors that enable individuals to function independently and participate successfully in daily life. For children with intellectual disabilities, these skills include self-care, communication, social interaction, emotional regulation, decision-making, and daily living competencies. The development of such skills is considered a primary educational goal because adaptive functioning strongly influences long-term quality of life and community participation (Schalock et al., 2021).

The literature highlights several instructional strategies that are particularly effective in teaching self-development skills to children with intellectual disabilities. These include task analysis, prompting, chaining, modeling, and visual supports. Task analysis breaks complex activities into manageable steps; prompting provides cues to support task completion; chaining

teaches behavioral sequences systematically; modeling allows students to learn through observation; and visual supports enhance understanding through visual representations (AlRawi & AlKahtani, 2021).

These instructional techniques align closely with the principles of differentiated learning because they allow teachers to tailor instruction according to individual student needs. Consequently, self-development instruction becomes more accessible and meaningful for learners with varying levels of intellectual functioning.

Universal Design for Learning as a Complementary Framework

Universal Design for Learning (UDL) is an educational framework designed to reduce barriers to learning by proactively creating flexible and accessible learning environments. UDL is based on the premise that learner variability is the norm rather than the exception. Therefore, instructional planning should anticipate differences among learners from the outset rather than making adjustments only after difficulties arise (CAST, 2018).

The UDL framework consists of three core principles: multiple means of engagement, multiple means of representation, and multiple means of action and expression. These principles encourage educators to provide diverse ways for students to access information, participate in learning, and demonstrate understanding. For students with intellectual disabilities, UDL can enhance accessibility through visual materials, multimedia resources, assistive technologies, structured learning supports, and alternative assessment formats (AlRawi & AlKahtani, 2021).

Studies have shown that UDL-based interventions contribute positively to academic performance, communication skills, social interaction, and behavioral outcomes among students with intellectual disabilities. As a result, UDL is increasingly recognized as a valuable framework for supporting inclusive education practices (Rao et al., 2019).

Integrating Differentiated Learning for Academic and Self-Development Skills

The literature suggests that Differentiated Learning can function as an integrative framework that simultaneously promotes academic achievement and self-development skills. Rather than separating functional and academic instruction, differentiated learning enables teachers to connect academic content to authentic life experiences meaningful to students with intellectual disabilities.

For example, literacy instruction can incorporate communication and daily functional reading activities, while mathematics instruction may involve practical applications such as money management, shopping, and time management. These integrated learning experiences

help students apply academic knowledge in real-world contexts while strengthening adaptive and independent living skills (Yunaini et al., 2024).

Furthermore, differentiated learning allows educators to establish individualized learning goals while maintaining access to the general curriculum. Through flexible instructional pathways, students can progress according to their abilities while developing both academic competencies and adaptive behaviors. When combined with UDL principles, differentiated learning creates inclusive learning environments that support participation, engagement, and holistic development.

Challenges in Implementing Differentiated Learning

Despite its potential benefits, implementing differentiated learning in inclusive elementary schools presents several challenges. Teachers often encounter difficulties related to large class sizes, limited instructional time, insufficient professional training, and inadequate educational resources. Effective differentiation requires continuous assessment, careful instructional planning, and the ability to manage diverse learner needs within a single classroom (Tomlinson, 2017).

The literature also emphasizes the importance of collaboration among teachers, school leaders, parents, and support professionals. Professional development programs play a critical role in enhancing teachers' knowledge and skills related to differentiated instruction and inclusive education. Institutional support and access to appropriate resources further contribute to successful implementation (Angreni et al., 2026)

METHODOLOGY

This study employed a narrative-thematic literature review approach. Literature was collected from national and international peer-reviewed journal articles published between 2017 and 2026 via databases including Google Scholar, Scopus, ERIC, and ScienceDirect. The inclusion criteria focused on studies discussing Differentiated Instruction (DI), Universal Design for Learning (UDL), intellectual disabilities, self-development skills, academic development, and inclusive elementary education. The selected literature was analyzed using thematic analysis, including coding, categorization, and synthesis of key findings. Four major themes emerged: (1) concepts and principles of DI and UDL; (2) operational strategies for self-development instruction; (3) integration of DI and UDL in academic and self-development learning; and (4) challenges and supporting factors in implementation. The thematic synthesis was used to construct an integrative framework explaining the contribution of DI and UDL to

the development of self-development and academic abilities among children with intellectual disabilities in elementary schools.

RESULT AND DISCUSSION

Differentiated Learning Concept

Differentiated Learning shifts the role of the teacher from a single source of information to a coordinator of time, space, materials, and learning activities. At the same time, students become more active participants in the process (Nketsia et al., 2024). Goyibova et al. (2025) define differentiation in education as an effort to adjust instruction, content, and assessments to suit students' diverse learning needs, with the hope that engagement and learning achievement will also increase.

There are four elements that teachers usually adjust in DI, namely content, process, product, and learning environment, based on three characteristics of students: readiness, interest, and learning profile (Nketsia et al., 2024; Helms-Lorenz, 2023). For children with intellectual barriers, these four elements can be translated concretely. Content is simplified and presented with visual representations or real objects; processes are made more flexible through small groups or individual instruction; products take the form of variations of assessment forms adjusted to students' capacity. Meanwhile, the learning environment is arranged so that the routine is structured and easy to predict.

Several studies provide a more concrete picture of this matter. Mendoza and Heymann (2024) found that adjustments to materials and teaching methods can improve academic outcomes for students with learning barriers, especially when combined with individual and small-group instruction rather than large-group instruction alone. In line with that, Bi, Struyven, and Zhu (2023) see that flexible grouping of students is one of the keys to the success of DI practice, as it provides space for teachers to adjust the methods according to the needs of each child.

The scale of DI implementation does not stop in the classroom. Wang and Tian (2023) show that the practice of teacher DI is also related to distributed leadership in schools, through the roles of teacher leadership and inclusive education professionals' competence as a link. This means that DI is not just an individual teaching technique, but also depends on the support of the school's leadership and culture as a whole. At the grade level, Yunaini et al. (2024) provide a concrete example through a case study of differentiated science learning for students with intellectual barriers in inclusive elementary schools: when the content, processes, and products of science learning are adapted, students can participate more actively and their understanding

of concepts improves, although they still need additional support in the form of concrete and visual representations.

On a broader level, Lindner and Schwab (2025), through a systematic review and narrative synthesis, mapped the various differentiation and individualization methods that teachers use to tailor learning to each student's unique needs. These two approaches, according to them, are important for developing academic and self-development skills while also improving student engagement and learning outcomes in primary schools.

Universal Design for Learning as a Proactive Framework

Universal Design for Learning (UDL) encourages educators to design curricula and learning environments that are accessible to the widest possible range of students from the planning stage, thereby minimizing learning barriers from the outset (Griful-Freixenet et al., 2020). The way it works is different from the reactive approach, which involves making changes only after difficulties arise. UDL is proactive: student diversity is anticipated from the outset by providing different ways to convey material (representation), different ways for students to express their understanding, and different ways to keep them engaged.

The extent to which UDL can be implemented depends largely on policy and system support. Alfawzan (2025), from the perspective of teachers of students with intellectual barriers, found that the availability of adequate training and resources greatly influences the implementation of UDL in the field. Alessandro (2020) added that UDL provides the right framework to overcome two types of barriers at once for children with intellectual disabilities in inclusive schools: conceptual (academic) and practical (self-development).

Smith and Lowrey (2017) even emphasized that the application of UDL for individuals with intellectual barriers urgently needs to be implemented widely, so that learning can truly adapt to the uniqueness of each student, both academically and in self-development. A more recent study by Guo and Wang (2025) reinforces this urgency by showing that the higher the fidelity of UDL implementation, the better students' learning achievement, engagement, and sense of belonging in inclusive classrooms.

Lombardi (2019) highlights a starting point that is often overlooked: understanding students' intellectual functioning and adaptive behavior is a foundation that must be in place before teachers determine a teaching strategy. From that point, UDL, with the principles of multiple means of representation, action and expression, and engagement, opens access for children with intellectual barriers to the general curriculum. However, Lombardi reminded that teachers still need to presuppose the competence of each student and give appropriate

challenges, so that their abilities, both in self-development and academics, are not underestimated.

Integrative Relationship between DI and UDL

DI and UDL are often considered two sides of the same framework, even though they operate at different levels. Griful-Freixenet et al. (2020) explain it this way: UDL builds a structurally flexible learning environment from the moment the curriculum is designed, whereas DI serves as an individualized adjustment strategy implemented in response to learning as it progresses. The two reinforce each other. UDL reduces the need for modifications through an inclusive initial design. At the same time, DI fills the space for further adjustments for students who still need additional support, including children with intellectual disabilities.

Translated into a self-building and academic context, this relationship roughly goes like this. At the curriculum level, teachers design UDL-based materials and activities, for example, providing a variety of representations (visual, concrete, manipulative) for academic concepts such as mathematics, while inserting elements of self-development into these activities. At the implementation level, teachers use DI strategies to adjust the level of difficulty, speed, and type of support for each student according to their abilities and needs.

Practices like this are not only relevant for core subjects. Rosmi and Jauhari (2023), from the perspective of physical education teachers in inclusion schools, show that the principle of adaptability in UDL can also be applied to physical activities that combine motor elements and independence. So the integration of DI and UDL can be extended far beyond core academic subjects, to activities that directly touch the development of self-development. However, all of this depends on the teacher's readiness. Rusconi and Squillaci (2023), in their systematic review, found that UDL training significantly improves teachers' ability to value learning diversity and to support all students, regardless of the training duration or delivery method. However, its impact on interprofessional collaboration still needs further study.

Operational Techniques for Self-Construction Ability Development

In addition to the conceptual frameworks of DI and UDL, several behavior-modification-based operational techniques have been shown to help develop children's self-developmental abilities in the face of intellectual barriers. These techniques can be incorporated into the DI strategy as adjustments to the learning process. Qotrunnajah and Nadhirah (2024), from direct observation of the learning process of children with disabilities in extraordinary schools, noted that the success of these techniques is highly dependent on the patience of teachers, repetition

of instruction, and adjustment of learning speed to the abilities of each student, which is basically a concrete form of process differentiation.

1. Task Analysis (Analisis Tugas)

Task analysis is a way to break down a complex skill into small, sequential steps so that students can learn it in sequence (Sam & Afirm Team, 2024). For the development of self-development skills such as dressing, eating, or maintaining personal hygiene, this technique is very helpful because it allows teachers to simplify both academic and self-coaching tasks into learning units aligned with students' intellectual capacity.

2. Prompting and Fading

Prompting is a behavior modification technique that helps elicit the desired behavior, especially when students are unable to do so themselves (Srimardayeti & Rahmahtrisilvia, 2022). One of the procedures, the System of Least Prompts (SLP), provides support in stages, from the minimum to the most intensive assistance, and then gradually reduces (fades) as students' independence increases (Ibtihal & Asyibli, 2026; Masitoh et al., 2025; Shepley et al., 2019). Marhani, Mz, and Syarif (2023) show that combining chaining and prompting is quite effective in improving the adaptive skills of children with intellectual disabilities.

3. Modeling

Providing examples of behaviors for students to imitate, or modeling, has been shown to increase self-care independence in children with disabilities (Astriani & Mufidah, 2022; Widya et al., 2024). This technique can be combined with video modeling or hands-on demonstrations by teachers, as part of process differentiation for students with visual learning profiles.

4. Visual Support

Visual supports, such as pictorial schedules or sequences of activities presented as pictures, help students with executive function barriers understand and follow routines for both academic and self-development activities (Irvan et al., 2023). The study did focus on children with autism spectrum disorders, but the principles of visual support were highly relevant and often overlapped with the needs of children with intellectual disabilities.

The Context of Inclusive Education in Indonesia

In Indonesia, the implementation of DI and UDL still faces several structural obstacles. Yunita and Subagya (2025), in a survey of 156 schools, found that at the elementary school level, many schools still lack infrastructure for inclusive education, both resource spaces and learning media. Susanti and Ramadhani (2025) also highlighted the importance of self-development programs integrated with special education services for children with disabilities in inclusive elementary schools.

Kontesa et al. (2026) find that innovative learning strategies, including differentiated learning, can improve learning outcomes, motivation, and independence among children with intellectual barriers in inclusive elementary schools. However, the success of this kind of strategy is highly dependent on the availability of differentiated or specialized curricula, as also emphasized in studies on non-academic educational services for children with intellectual disabilities (Wulandari et al., 2019; Pesau et al., 2020).

In the context of the Independent Curriculum, Ferrary et al. (2024) underline the importance of teachers understanding students' characteristics as a starting point for student-centered learning, including readiness, interests, learning profiles, socio-cultural backgrounds, and special needs. This kind of understanding is the starting capital for elementary school teachers to design differentiated learning, including for children with intellectual barriers.

Challenges of Implementing DI and UDL in Inclusive Primary Schools

The challenges of implementing DI and UDL are cross-contextual, not only in Indonesia. Daşçıoğlu and Bümen (2025) found that in Turkey, the pressure to complete a dense curriculum and high-standardized exams makes it difficult for teachers to truly attend to the individual needs of students, including children with special needs. Langelaan et al. (2024) add to this list of bottlenecks: time constraints, less supportive school cultures, and a curriculum that is too standardized-oriented.

On the teacher's side, psychological factors come into play. Porta and Todd (2024) found that labeling students as having learning difficulties can affect teachers' confidence in implementing DI. Rapisa, Hermanto, and Suparno (2026), in their systematic review, emphasized that teachers' core competencies, professional knowledge, classroom management, and ability to implement differentiated learning significantly determine the effectiveness of inclusive education. Teachers' positive attitudes towards inclusion and self-efficacy also determine the success of inclusive practices for children with intellectual disabilities.

However, implementing DI is not without cost to teachers. Pozas, Letzel-Alt, and Schwab (2023) note that although DI has a positive impact on student achievement and motivation, its implementation can also increase teachers' work pressure, so it is necessary to identify appropriate training needs to prepare teachers better. Bjerke et al. (2025) add an interesting context. Amid the pressures of performative accountability, teachers continue to rely on their own professional knowledge and pedagogical values to tailor instruction, including in developing students' self-development skills, particularly for students with special needs.

Support from outside the school also has a role. Andrikos, Smith, and Ciccarelli (2024) highlight the role of caregivers in developing the self-regulation skills of children with

intellectual barriers through responsive co-regulatory interactions, so educators need to build capacity to support this process. However, not all forms of support are uniformly effective. Jacob, George, and Pillay (2023), for example, found that scaffolding did not significantly alter the self-help skills of children with intellectual barriers in their study, suggesting that teachers need to choose strategies according to students' characteristics and context, rather than applying a one-size-fits-all approach.

Interestingly, the findings of Jacob et al. (2023) are different from the results of Manuel (2025), who actually found scaffolding, through guided practice, visual aids, questioning techniques, and giving hints and cues, as the most frequently used technique for teachers and effective in increasing involvement, skill development, confidence, and academic achievement of students with barriers to learning in inclusive classrooms. This difference shows that the effectiveness of scaffolding as part of process differentiation is highly dependent on context, the type of student needs, and the consistency of implementation, so individual assessments still need to be carried out before teachers decide on the strategy to use.

Hornby and Kauffman (2024) offer a critical note on the full-inclusion discourse regarding students with intellectual barriers. Although inclusion has broad policy support, students with intellectual disabilities have special needs in developing social, vocational, and independent life skills, which are essential for the transition to adulthood. If placement in the regular classroom is not accompanied by adequate differentiation and support for self-development, this need is at risk of not being met. This note reinforces the need for the integrative framework of DI and UDL to include self-development goals, not just explicit academic adjustments.

Tupiño et al. (2023), through a scoping review of differentiated methodological strategies, emphasized that personalized approaches such as co-teaching, group work, peer collaboration, collaborative learning, and play activities can expand learning opportunities for students with diverse characteristics and needs, including students with special needs. Kapcia (2024) adds the practical side: collaboration between teachers, parents, support staff, and external institutions, plus professional development and continuous reflection by teachers, is key to improving inclusive practices and creating a learning environment that empowers all students, including in self-development development.

The context of multi-grade classrooms in rural areas also provides lessons of their own. Peltonen and Kilpeläinen (2025) found that teachers in Finnish rural schools value teaching freedom, close cooperation with parents, and a deep understanding of each student's needs, which allows learning to be tailored to individual needs, including those of children with intellectual barriers. Unfortunately, specialized teacher training for multi-grade classrooms and

inclusive practices remains very limited, so teacher education needs to be enriched with materials on differentiation and inclusion. On a more global scale, Herrera-Seda and Walton (2025), through a scoping review of Global South studies, emphasized that teacher education for effective inclusion must have conceptual depth and contextual relevance, including pedagogical and curricular knowledge of differentiation, cooperative learning, individualized education plan development, and classroom management.

The Role of Technology in Supporting DI and UDL Integration

Navas-Bonilla et al. (2025), in their systematic review, show that adaptive and multimedia technologies can personalize learning for students with cognitive barriers, facilitate active participation, and support more effective self-development and academics. Multimedia content that combines images, video, and audio allows for customization to a variety of student learning styles, in line with the principle of multiple means of representation in UDL.

Sgambelluri and Placanica (2025) added that assistive technology, combined with UDL strategies, can increase the confidence and motivation of children with intellectual barriers, thereby encouraging them to take an active role in learning. However, Oswal et al. (2025) remind us that, in the field, the use of assistive technology is still often hampered by limited infrastructure and training for both teachers and students. This means that systemic support remains an important prerequisite for the integration of technology within the DI and UDL frameworks to work truly.

Integrative Framework: Connecting DI, UDL, Self-Coaching, and Academics

From the above findings, one integrative framework can be formulated to link DI, UDL, and children's self- and academic development to intellectual barriers in elementary school. This framework can be divided into three interconnected layers.

The first layer is the design of the UDL-based curriculum. In this layer, teachers design learning materials by providing various ways of representation (visual, concrete, manipulative), various ways of expression (oral, written, performance), and various ways of involvement (choice of activities, relevance to daily life). As a result, academic activities inherently contain elements of self-development, for example, learning mathematical concepts about money, which, at the same time, trains shopping skills as part of that development (Pesau et al., 2020).

The second layer is DI-based instructional adjustments. Here, teachers adjust the content, processes, products, and learning environment based on each student's ability level, for example, through flexible grouping, individual or small group instruction, and a variety of assessment

forms that accommodate children's cognitive limitations with intellectual disabilities (Bi et al., 2023; Mendoza & Heymann, 2024).

The third layer is operational intervention techniques, namely task analysis, prompting and fading, chaining, modeling, and visual support, which are concrete tools to translate DI and UDL adjustments to daily practice, both for academic and self-development purposes (Shepley et al., 2019; Widya et al., 2024; Irvan et al., 2023).

These three layers cannot run on their own. All of them need systemic support in the form of teacher competence and attitudes, collaboration between regular and special education teachers, adequate infrastructure, and support for families and school environments (Rapisa et al., 2026; Yunita & Subagya, 2025; Andrikos et al., 2024). Without this support, the integrative implementation of DI and UDL risks being unsustainable, as seen from the implementation challenges discussed earlier.

CONCLUSION

This study shows that Differentiated Learning (DI) and Universal Design for Learning (UDL) can be integrative frameworks that bridge the academic development and self-development needs of children with intellectual barriers in inclusive elementary schools. UDL provides a proactive and flexible curriculum design framework from the start, while DI provides instructional customization strategies that are responsive to individual student needs. These two frameworks are strengthened by behavior modification-based operational intervention techniques, such as task analysis, prompting, chaining, and modeling, which have been proven effective in developing self-development skills and supporting academic achievement.

However, the success of this integrative framework is highly dependent on systemic factors, especially teacher competence and attitudes, collaboration between regular teachers and special education teachers, the availability of infrastructure, and family support. The various implementation challenges identified, both in the international context and in inclusive education in Indonesia, show that these supporting aspects require serious attention to ensure that differentiated learning and UDL can be implemented sustainably.

Several things can be suggested from the results of this study. First, there needs to be a continuous training program for inclusive elementary school teachers that focuses on strengthening DI and UDL competencies in an integrated manner with self-development development techniques. Second, collaboration between regular and special education teachers needs to be more closely encouraged in designing and implementing a curriculum that integrates academic and self-development goals. Third, schools and policymakers need to pay attention to

the availability of infrastructure, adaptive learning media, and assistive technology as prerequisites for implementing DI and UDL. Fourth, further empirical research is still needed to test the effectiveness of these integrative DI and UDL frameworks in improving the self-development and academic abilities of children with intellectual barriers simultaneously, particularly in the context of inclusive primary schools in Indonesia.

REFERENCES

Alessandro, F. (2020). Universal Design for Learning and Intellectual Disabilities. *Global Journal of Intellectual & Developmental Disabilities*, *6*(5), 80–85. https://doi.org/10.19080/gjidd.2020.06.555696

Alfawzan, S. K. (2025). Perspectives of teachers of students with intellectual disabilities on the role of educational policies and systems in using Universal Design for Learning: A qualitative study. *PLoS One*, *20*(9), 1–16. https://doi.org/10.1371/journal.pone.0333432

AlRawi, J. M., & AlKahtani, M. A. (2021). Universal design for learning for educating students with intellectual disabilities: A systematic review. *International Journal of Developmental Disabilities, 68*(6), 800–808. https://doi.org/10.1080/20473869.2021.1900505

Andrikos, G. P., Smith, C. A., & Ciccarelli, M. (2024). Supporting Co-Regulation and Development of Self-Regulation Skills in Students With Intellectual Disabilities: A Scoping Review. *Australasian Journal of Special and Inclusive Education*, *48*(2), 90–106. https://doi.org/10.1017/jsi.2024.3

Angreni, S., Sari, R. T., Hamda, F., & Zainul, R. (2026). Differentiated learning in elementary schools: A systematic literature review from an inclusive education perspective. *International Conference on Special and Inclusive Education Research (ICSAR)*, 10(1), 148–163.

Ardenlid, F., Lundqvist, J., & Sund, L. (2025). A scoping review and thematic analysis of differentiated instruction practices: How teachers foster inclusive classrooms for all students, including gifted students. *International Journal of Educational Research Open*, *8*, 100439. https://doi.org/10.1016/j.ijedro.2025.100439

Astriani, D., & Mufidah, A. C. (2022). Modeling to Increase Self-Care Independence of Children with Intellectual Disability. *Proceedings of the International Seminar on Business, Education and Science*, *1*, 60–65. https://doi.org/10.29407/int.v1i1.2509

Bi, M., Liu, X., Wang, Z., & Zhu, C. (2026). A serial mediation model of the impact of teachers' collaboration on their attitudes: The roles of differentiated instruction and self-efficacy. *Acta Psychologica*, *267*, 107098. https://doi.org/10.1016/j.actpsy.2026.107098

Bi, M., Struyven, K., & Zhu, C. (2023). Variables that influence teachers' practice of differentiated instruction in Chinese classrooms: A study from teachers' perspectives. *Frontiers in Psychology*, *14*, 1–13. https://doi.org/10.3389/fpsyg.2023.1124259

Birot-Gautron, K., Kohout-Diaz, M., & Deyrich, M. C. (2025). Inclusive professional practices of primary school teachers in multigrade classes in France catering for pupils with special educational needs. *International Journal of Educational Research*, *131*. https://doi.org/10.1016/j.ijer.2025.102598

Bjerke, A. H., Dalland, C., Mausethagen, S., & Knudsmoen, H. (2025). Negotiating performative and professional accountability in inclusive mathematics education in Norway. *International Journal of Educational Research*, *129*. https://doi.org/10.1016/j.ijer.2024.102518

CAST. (2018). *Universal Design for Learning Guidelines Version 2.2*. CAST.

Daşçıoğlu, H. Ş., & Bümen, N. T. (2025). Differentiated instruction in Turkish classrooms: Practices, teacher experiences and barriers. *Studies in Educational Evaluation*, *86*. https://doi.org/10.1016/j.stueduc.2025.101491

Ferrary, C. H., Kurniawan, A., Safitri, Y. R., Hikmah, U. N., Krismawati, B. M., Rahmawati, K., & Darmawan, I. (2024). Urgensi Memahami Karakteristik Peserta Didik dalam Pembelajaran Kurikulum Merdeka. *Jurnal Basicedu*, *8*(5), 3985–3997.

Goyibova, N., Muslimov, N., Sabirova, G., Kadirova, N., & Samatova, B. (2025). Differentiation approach in education: Tailoring instruction for diverse learner needs. *MethodsX*, *14*, 103163. https://doi.org/10.1016/j.mex.2025.103163

Griful-Freixenet, J., Struyven, K., Vantieghem, W., & Gheyssens, E. (2020). Exploring the interrelationship between Universal Design for Learning (UDL) and Differentiated Instruction (DI): A systematic review. *Educational Research Review*, *29*, 100306. https://doi.org/10.1016/j.edurev.2019.100306

Guo, P., & Wang, Z. (2025). Implementation fidelity of universal design for learning and effects on student achievement, engagement, and belonging. *Scientific Reports*, *15*(1), 1–23. https://doi.org/10.1038/s41598-025-30079-1

Helms-Lorenz, M. (2023). *Effective Teaching Around the World*. https://doi.org/10.1007/978-3-031-31678-4

Herrera-Seda, C., & Walton, E. (2025). Teacher education for inclusive education: a scoping review of Global South scholarship. *Journal of Education for Teaching*, *51*(4), 651–665. https://doi.org/10.1080/02607476.2025.2520792

Hornby, G., & Kauffman, J. M. (2024). Inclusive Education, Intellectual Disabilities and the Demise of Full Inclusion. *Journal of Intelligence*, *12*(2). https://doi.org/10.3390/jintelligence12020020

Ibtihal, A. A., & Asyibli, B. (2026). Deep Learning berbasis AI dalam pengajaran bahasa Inggris untuk meningkatkan literasi awal siswa SDIT Nur El-Qolam. *Jurnal Pendidikan Dasar Flobamorata*, *7*(2), 381–392. https://doi.org/10.51494/jpdf.v7i2.3150

Irvan, M., Jauhari, M. N., Wasesa, A. J. A. W., & Rosmi, Y. F. (2023). Literature Study: Visual Support Design as Assistive Technology for Children with Autism Spectrum Disorder. *Journal of ICSAR*, *7*(2), 223. https://doi.org/10.17977/um005v7i22023p223

Jacob, U. S., George, A. I., & Pillay, J. (2023). A Quasi-Experiment of the Effect of Scaffolding and Gender on Self-Help Skills of Pupils with Intellectual Disability. *International Journal of Innovative Research and Scientific Studies*, *34*, 3156–3172.

Kapcia, S. (2024). Enabling access: Reflecting on inclusive education practice. *Support for Learning*, *39*(4), 203–207. https://doi.org/10.1111/1467-9604.12506

Kontesa, K., Putri, N. A., Adli, M. D., Damaraini, A., & Lestari, E. P. (2026). Strategi Pembelajaran Inovatif untuk Meningkatkan Kemampuan Akademik Peserta Didik dengan Disabilitas Intelektual di Sekolah Inklusif. *Jurnal Penelitian Nusantara*, *2*(1), 420–424.

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

Lindner, K. T., & Schwab, S. (2025). Differentiation and individualization in inclusive education: a systematic review and narrative synthesis. *International Journal of Inclusive Education*, *29*(12), 2199–2219. https://doi.org/10.1080/13603116.2020.1813450

Lombardi, P. (2019). *Understanding and Supporting Learners with Disabilities*. University of New Hampshire.

Manuel, M. C. M. (2025). Utilization of Scaffolding Strategies in Enhancing Academic Success for Students with Learning Disabilities in an Inclusive Classroom: Basis for a Strategic Plan. *International Journal of Research and Innovation in Social Science*, *9*(6), 2454–6186.

Marhani, I., Mz, I., & Syarif, D. F. T. (2023). Chaining and Prompting Technique of Behavior Modification to Improve Adaptive Skills in a Child with Intellectual Disability. *International Journal of Universal Education*, *1*(1), 24–29. https://doi.org/10.33084/ijue.v1i1.5777

Masitoh, I. S., Putra, Y. P., & Nadia, Ai. (2025). Farmers' Motivation to Fund Children's Education Amidst Income Uncertainty in Rural Environments. *Journal of Future Education*, *3*(1), 17–24.

Mendoza, M., & Heymann, J. (2024). Implementation of Inclusive Education: A Systematic Review of Studies of Inclusive Education Interventions in Low- and Lower-Middle-Income Countries. *International Journal of Disability, Development and Education*, *71*(3), 299–316. https://doi.org/10.1080/1034912X.2022.2095359

Navas-Bonilla, C. del R., Guerra-Arango, J. A., Oviedo-Guado, D. A., & Murillo-Noriega, D. E. (2025). Inclusive education through technology: a systematic review of types, tools and characteristics. *Frontiers in Education*, *10*, 1–22. https://doi.org/10.3389/feduc.2025.1527851

Nketsia, W., Opoku, M. P., Amponteng, M., & Mprah, W. K. (2024). Exploring the perceived knowledge of teacher educators and pre-service teachers on the differentiated instruction practices of teacher educators. *Frontiers in Education*, *9*, 1–12. https://doi.org/10.3389/feduc.2024.1356675

Oswal, N., Al-Kilani, M. H., Faisal, R., & Fteiha, M. (2025). A Systematic Review of Inclusive Education Strategies for Students of Determination in Higher Education Institutions: Current Challenges and Future Directions. *Education Sciences*, *15*(5), 1–16. https://doi.org/10.3390/educsci15050518

Peltonen, T., & Kilpeläinen, R. (2025). Training of village school teachers in Finland: Multi-grade teaching and inclusion. *International Journal of Educational Research*, *133*, 1–9. https://doi.org/10.1016/j.ijer.2025.102685

Pesau, H. G., Widyorini, E., & Sumijati, S. (2020). Self-Care Skills of Children with Moderate Intellectual Disability. *Journal of Health Promotion and Behavior*, *5*(1), 43–49. https://doi.org/10.26911/thejhpb.2020.05.01.06

Porta, T., & Todd, N. (2024). The impact of labeling students as having learning difficulties on teachers' self-efficacy in differentiated instruction. *Journal of Research in Special Educational Needs*, *24*(1), 108–122. https://doi.org/10.1111/1471-3802.12619

Pozas, M., Letzel-Alt, V., & Schwab, S. (2023). The effects of differentiated instruction on teachers' stress and job satisfaction. *Teaching and Teacher Education*, *122*, 103962. https://doi.org/10.1016/j.tate.2022.103962

Qotrunnajah, N., & Nadhirah, Y. F. (2024). Proses Pembelajaran Anak Berkebutuhan Khusus Tuna Grahita Di Sekolah Luar Biasa Negeri 01 Pembina Pandeglang. *Didaktik: Jurnal Ilmiah PGSD FKIP Universitas Mandiri*, *10*(4), 367–379.

Rao, K., Ok, M. W., & Bryant, B. R. (2019). A review of research on Universal Design Educational Models. *Remedial and Special Education, 35*(3), 153–166. https://doi.org/10.1177/0741932513518980

Rapisa, D. R., Hermanto, H., & Suparno, S. (2026). Teacher Competency in Practicing Inclusive Education: A Systematic Review. *Journal of Teaching and Learning*, *20*(2), 57–73. https://doi.org/10.22329/jtl.v19i3.9373

Rosmi, Y. F., & Jauhari, M. N. (2023). Universal Design for Learning: Perspektif Guru Pendidikan Jasmani di Sekolah Inklusi. *STAND: Journal Sports Teaching and Development*, *4*(2), 128–135. https://doi.org/10.36456/j-stand.v4i2.9605

Rusconi, L., & Squillaci, M. (2023). Effects of a Universal Design for Learning (UDL) Training Course on the Development of Teachers' Competences: A Systematic Review. *Education Sciences*, *13*(5). https://doi.org/10.3390/educsci13050466

Sam, A., & Afirm Team. (2024). *Autism Focused Intervention Resources & Modules*.

Schalock, R. L., Luckasson, R., & Tassé, M. J. (2021). *Intellectual Disability: Definition, Diagnosis, Classification, and Systems of Supports* (12th ed.). American Association on Intellectual and Developmental Disabilities (AAIDD).

Sgambelluri, R., & Placanica, F. (2025). Universal Design for Learning and Self-Determination: A Systematic Review on Educational Practices for Students With Disabilities. *International Journal of Educational Research Review*, *9*(1), 306–312.

Shepley, C., Lane, J. D., & Ault, M. J. (2019). A Review and Critical Examination of the System of Least Prompts. *Remedial and Special Education*, *40*(5), 313–327. https://doi.org/10.1177/0741932517751213

Smith, S. J., & Lowrey, K. A. (2017). Applying the Universal Design for Learning framework for individuals with intellectual disabilities: The future must be now. *Intellectual and Developmental Disabilities*, *55*(1), 48–51. https://doi.org/10.1352/1934-9556-55.1.48

Srimardayeti, N., & Rahmahtrisilvia. (2022). Meningkatkan Kemampuan Kontak Mata Anak dengan Gangguan Spektrum Autisme (GSA) Menggunakan Teknik Prompting. *MSI Transaction on Education*, *3*(2), 57–64.

Susanti, S. R., & Ramadhani, A. (2025). Pendidikan Anak Berkebutuhan Khusus pada Anak Tunagrahita di Sekolah Inklusif Jenjang Dasar. *PPSDP Undergraduate Journal of Educational Sciences*, *2*(1), 90–105.

Tomlinson, C. A. (2017). *How to Differentiate Instruction in Academically Diverse Classrooms* (3rd ed.). ASCD.

Tupiño, R. M. L., Carcausto-Calla, W., Nakiche, K. C., Gamarra, S. K. S., & Shigetomi, E. E. G. (2023). Differentiated Methodological Strategies for Inclusive Education in Basic Education: Scoping Review. *Journal of Educational and Social Research*, *13*(6), 56–68. https://doi.org/10.36941/jesr-2023-0147

Wang, T., & Tian, G. (2023). Linking Distributed Leadership with Differentiated Instruction in Inclusive Schools: The Mediating Roles of Teacher Leadership and Professional Competence. *Behavioral Sciences*, *13*(12). https://doi.org/10.3390/bs13120990

Widya, R., Rozana, S., Harahap, Y., & Panggabean, N. (2024). Penerapan Teknik Modelling dalam Pembinaan Diri untuk Meningkatkan Kemandirian Anak Tunagrahita di SLB C Muzdalifah Medan. *Jurnal Review Pendidikan dan Pengajaran*, *7*, 3420–3426.

Wulandari, L. M., Susilawati, S. Y., & Kustiawan, U. (2019). Pelaksanaan Program Bina Diri bagi Siswa Berkebutuhan Khusus di Sekolah Inklusi. *Jurnal Ortopedagogia*, *5*(1), 44–49. https://doi.org/10.17977/um031v4i12018p044

Yunaini, N., Mustadi, A., Mumpuniarti, Ishartiwi, & Hidayat, R. (2024). Differentiated instruction in science learning for intellectually disabled pupils at an inclusive primary school: A case study. *Journal of Turkish Science Education*, *21*(3), 467–483. https://doi.org/10.36681/tused.2024.025

Yunaini, N., Mustadi, A., Mumpuniarti, Ishartiwi, & Hidayat, R. (2024). Differentiated instruction in science learning for intellectually disabled pupils at an inclusive primary school: A case study. *Journal of Turkish Science Education,* *21*(3), 467–483. https://doi.org/10.36681/tused.2024.025

Yunita, V. M., & Subagya. (2025). Hambatan Implementasi Pendidikan Inklusif di Indonesia: Analisis Berbasis Survei pada 156 Sekolah. *Jurnal Basicedu*, *9*(5), 1549–1558.