

Personalised Education: A study on the relationship between student assessment methods and student development

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Abstract. Although the conflict between traditional assessment methods and personalised education has gained wide attention, significant gaps remain in understanding their reconciliation, especially concerning their contribution to the students' further academic achievements. Aiming at revealing a more effective and adaptive one under the current educational setting, this paper analysed the characteristics and limitations of traditional assessment methods and compared them with the needs and potential benefits of personalised education. The analysis indicates that conventional methods, while effective in standardising and benchmarking student performance, neglect creativity and critical thinking as key developmental techniques, creating obstacles to the comprehensive development of students. On the contrary, personalised education emphasises individual learning needs and continuing feedback, fostering a more inclusive and supportive learning environment. Based on these findings, it is suggested that a diversified and dynamic assessment system should be adopted, aligning more closely with personalised education principles. Specifically, the paper recommends the utilisation of formative and differentiated assessments and the inclusion of self and peer evaluation. These strategies can improve student engagement, motivation, and overall academic success. Importantly, policy support and resource allocation are crucial for effective implementation.

1 Introduction

In contemporary educational settings, the diversification of students' needs has become increasingly prominent. As equity is placed at the centre of educational values and classrooms grow more heterogeneous, educators are faced with the challenge of accommodating a wide range of backgrounds and experiences into their teaching practices. This diversity encompasses various dimensions, including ethnicity, social class, gender, and other socio-cultural factors. Difficulties are particularly evident in assessing students. Hedges and Webber in their study stated the significant impact of evaluation results on students' future learning outcomes. They claimed that students may not be able to adapt to the way the examination is conducted, resulting in grades that are not in line with the actual level of

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performance, which may deprive students of the opportunity to learn about their level of competence and to improve further. Moreover, the lack of motivation due to lower-than-expected accomplishments will result in the disengagement of students [1].

Having learned about the diversity of students and the potential negative influence of assessment results on them, choosing an appropriate evaluation method has become a major difficulty for educators. Therefore, this paper will focus on the differences between assessment methods under personalized education and traditional assessment methods, identifying their advantages and drawbacks in different settings. Additionally, it will describe the current implementation rate of customized education, difficulties encountered during such a process, and the efforts needed for the future.

2 Characteristics of current assessment methods and the contradictions of personalised education

To begin with, to identify the contradictions between the two, it is necessary to understand the characteristics of traditional assessment methods and recognise the advantages and drawbacks they encompass within the current educational context.

2.1 Features of conventional assessment techniques

For a long time, the traditional assessment approach has held sway in education, primarily aimed at evaluating students' learning outcomes in a standardized and consistent manner. This method provides a clear benchmark for student performance and facilitates comparison among students. Exams with multiple-choice questions, quizzes, and essays are prevalent elements of this approach, emphasizing the recall of factual knowledge and making the marking process straightforward and objective. However, despite these advantages, critics have raised concerns about certain characteristics inherent to this approach [2].

One of the key criticisms is that traditional assessments, while effective in gauging memorization and foundational knowledge, provide limited informative feedback that could help students identify their mistakes and learn from them. This focus on cognitive abilities, including memory, comprehension, and analytical skills, often leads to the neglect of other significant characteristics such as being creative and thinking critically. Such narrowness can be detrimental to the comprehensive development of students, as it does not encourage the exploration of diverse talents and competencies [2]. Additionally, traditional assessments are typically summative, being used primarily to evaluate students at the end of each learning cycle. This summative nature, combined with the high weight these assessments carry, indicates their significant impact on students' final academic progression. These high-stakes exams can lead to considerable pressure among students and create an anxious atmosphere, potentially lowering their academic performances and overall learning experience. The stress associated with high-stakes testing can also detract from the intrinsic motivation to learn, as students may become more focused on achieving high grades rather than truly understanding the material. Another characteristic of traditional assessments is their teacher-centered nature. Teachers being the main designers and evaluators of assessments, are required to be responsible for designing, administering, and grading the tests. While this ensures consistency and fairness in evaluating student performance across different classrooms or schools, it limits student autonomy and creativity in demonstrating their understanding of the material. This can stifle students' ability to think independently and apply their knowledge in innovative ways [3].

2.2 Characteristics and needs of personalised education

Although traditional assessments have been the norm for evaluating student performance, the growing recognition of their limitations has led to the exploration of alternative methods. One such approach gaining traction is personalized education which customizes the educational experience to the unique needs, interests, abilities, and learning styles of each student, aiming to provide a more effective learning experience by addressing the distinct requirements of every learner [4].

Personalized education emphasizes a student-centric approach, focusing on individual differences and needs to maximize each student's potential and promote comprehensive development [4]. This method relies on a flexible curriculum that adapts to student progress and feedback, accommodating diverse learning styles and paces to ensure that every student is both supported and challenged appropriately [5]. Moreover, Technology is crucial in this model, enabling customized learning materials to be created and offering interactive, engaging educational experiences. Additionally, technology facilitates continuous assessment and real-time feedback, essential components of a personalized learning journey [6].

To effectively implement personalized education, there is a need for detailed individual learning plans that outline specific goals, strategies, and assessment methods customized to each student. These plans must be dynamic, and regularly updated to reflect the student's evolving needs and progress [6]. Furthermore, teacher training is vital. Educators must be equipped to recognize and address the diverse requirements proposed by their students. Thus, professional development programs for educators should focus on providing the skills necessary to create and implement personalized learning strategies [5]. Parental involvement is another necessity, as engaging parents in the educational process ensures a supportive learning environment at both school and home. Parents should be informed and involved in the development and monitoring of their child's learning plan. By addressing these needs, personalized education can be effectively implemented, creating a more inclusive and supportive learning environment that caters to the unique requirements of each student [6].

2.3 The conflict between assessment methods and personalised education

Traditional assessments, which measure all students against a single standard, often fail to account for individual learning styles, paces, and interests, lacking the individual adaptation necessary to effectively evaluate each student's unique strengths and weaknesses [2]. Personalized assessments, on the other hand, address this issue by customizing evaluations to individual learners, providing a more accurate reflection of their abilities [6]. Adopting a diverse evaluation system also promotes equity in education by acknowledging and accommodating the varied learning styles and backgrounds of students. Traditional evaluation methods often disadvantage students who may not perform well on standardized tests due to cultural, linguistic, or socio-economic factors. Moreover, incorporating a variety of assessment types allows educators to provide all students with the chance to showcase their knowledge and skills in ways that align with their unique abilities and contexts. This approach helps to level the playing field and provides a more equitable assessment of student performance [6]. Moreover, traditional methods are often perceived by students as less engaging and unfair. In contrast, personalized assessments, such as project work and portfolios, involve active participation and are seen as more effective and equitable, as they better reflect individual effort and progress [4].

The shift to personalized learning, however, places new demands on teachers, requiring them to adopt multifaceted roles as assessors, empowerers, and facilitators. This can lead to internal conflict and an increased workload, as managing dynamic and complex forms of

assessment becomes more challenging. Despite these challenges, research indicates that personalised assessment methods can significantly improve learning outcomes. Adaptive and formative assessments, which continuously measure and support student progress, are more effective than traditional, one-time summative assessments [6].

Technological integration further enhances personalised learning by enabling adaptive assessments and providing personalised feedback. Unfortunately, these technologies are often underutilised in traditional assessment methods, which rely heavily on static, paper-based testing [6]. Embracing these technologies and personalized approaches can lead to more engaging, fair, and effective educational experiences, ultimately supporting better learning outcomes for all students.

3 Current situation of personalised education

3.1 Personalised education and mainstream educational objectives

However, the above discussion only demonstrates the difference between personalized education and traditional assessment, and does not prove that either is better or worse than the other; nevertheless, it is possible to choose assessment methods that are more appropriate for today's educational environment by comparing them with mainstream educational objectives. Darling-Hammond et al. pointed out that mainstream educational objectives focus on developing students' academic knowledge, critical thinking skills, and social-emotional competencies. They aim to prepare students for success in a rapidly evolving world by equipping them with the ability to think analytically, solve problems, and adapt to new challenges. Additionally, these objectives emphasize the importance of fostering interpersonal skills, resilience, and a lifelong love of learning [7]. Therefore, it is personalized education that aligns with mainstream educational objectives because it focuses on customizing the learning experience to individual student needs, thereby enhancing engagement, motivation, and overall academic success. Personalized education supports these goals mentioned above by recognizing and addressing the unique strengths, weaknesses, and interests of each student, fostering a more inclusive and effective learning environment [6].

One key aspect of personalized education is its potential to improve student engagement. Research indicates that students who feel their individual learning needs are being met are more likely to be engaged in their studies [8]. This heightened engagement can lead to improved academic outcomes and prolonged interest in learning, which are primary objectives of mainstream education. Additionally, personalized education promotes the development of critical thinking and problem-solving skills. By providing students with learning experiences individualized to their interests and abilities, personalized education encourages deeper understanding and application of knowledge [2]. These skills are essential for success in a rapidly changing world, aligning with the mainstream educational goal of preparing students for future challenges.

3.2 The implementation status of personalised learning

Despite the enthusiasm surrounding personalized education, its implementation globally has been far from ideal. Although a few pioneering examples exist, most countries struggle to integrate personalized learning into their mainstream education systems effectively.

Although programs like AltSchool and Summit Learning in the US show some promise, they are not widely adopted and frequently encounter major obstacles. Traditional teaching methods are still widely used in many schools, and the shift to a more individualized approach

is uneven and takes time [9]. The discrepancy between potential and practice in the American educational context is highlighted by this limited adoption. The situation is similar in Europe. While Finland and Sweden are often highlighted for their innovative educational practices, personalized education remains a peripheral rather than central element of their systems [10].

In the UK, the Department for Education's EdTech Strategy advocates for the use of technology to support personalised learning, but actual implementation in schools is sporadic. Many educators are not yet equipped to effectively utilise these new tools, leading to inconsistent application and benefits [11]. In Asia, despite Singapore and South Korea's technological advancements, the integration of personalized learning into everyday classrooms is not yet widespread. Singapore's Ministry of Education has ambitious plans, but these are still in the early stages and have not reached all schools [12]. Similarly, South Korea's focus on ICT in education has not fully translated into comprehensive personalized learning experiences across the board.

Overall, the global implementation of personalised education is fragmented and inconsistent. While there are pockets of success, widespread adoption remains elusive. The disparity between the theoretical benefits of personalised education and its practical application highlights significant challenges that need to be addressed.

3.3 Difficulties in implementing personalised learning

Delving into the obstacles to implementing personalized education, one of the primary difficulties is the lack of adequate funding. Many schools, particularly in developing nations, cannot afford the significant investments in infrastructure, technology, and teacher training that personalized education frequently necessitates. This financial barrier exacerbates educational inequality by widening the gap between affluent and underprivileged schools. The impact of a shortage in technology is especially devastating, both within and across nations. Access to essential technology, such as computers, dependable internet, and instructional software, is unevenly distributed, and the availability of individualized learning resources is restricted in rural and low-income communities due to their unique disadvantages. The capacity of every student to equally benefit from individualized instruction is hampered by this discrepancy [13].

Another big barrier is teacher preparation. Too many teachers are unconfident and lack the necessary abilities to incorporate customised learning tools into their lessons. Many educational systems now do not have the time or resources to devote to training teachers in the use of new technologies and approaches [14]. Insufficient assistance might lead educators to reject or improperly apply individualised learning approaches. Concerning data privacy and security, personalised education relies heavily on collecting and analysing student data to tailor learning experiences. Ensuring this data is handled securely and ethically is crucial, yet many institutions lack robust policies and technologies to protect student information [15]. This issue raises concerns among parents and educators, potentially slowing down the adoption of personalised approaches.

4 Recommendations: strategies for implementing personalised assessment

Acknowledging the benefits brought by personalised learning and the obstacles it encountered, the following section will focus on suggestions and guidance to successfully implement personalised learning in educational institutions.

4.1 Construction of a diversified assessment system

To construct a robust framework to support personalized education, the adoption of a diversified evaluation system should be considered. A key component of a diversified evaluation system is the utilisation of multidimensional assessment strategies. These approaches assess various aspects of a student's abilities and development rather than relying on a single metric. For example, diagnostic classification models in educational assessments can provide detailed insights into students' specific skills and areas for improvement. Wang et al. demonstrated this in the context of spatial skills, highlighting how such models can pinpoint precise areas where students need support [16].

To effectively build up this framework, it is essential to diversify the tools used in assessments. This includes employing digital platforms and applications that provide personalised, measurement-based feedback. For instance, in the context of youth mental health services, Iorfino et al. highlighted how such digital tools can offer tailored care based on continuous assessment data [17]. Additionally, the deployment of computerized dynamic assessments (C-DA) represents an effective strategy for providing real-time feedback and personalised learning trajectories. Mehri Kamrood et al. illustrated how C-DA evaluates both current and potential student performance, allowing educators to tailor their teaching strategies to meet individual needs effectively [18].

To further enhance the diversified evaluation system, dynamic assessment methods should be adopted, which allow the framework to adapt to the learner's development continuously. Unlike traditional assessments that provide a static snapshot of student abilities, dynamic assessments evaluate both fully internalised skills and those in the process of being internalised. This approach provides a comprehensive view of student growth, reflecting real-time changes in capabilities. Mehri Kamrood et al. emphasized the benefits of dynamic assessment in fostering a deeper understanding of student learning trajectories [18]. Moreover, Eva-Flore Msika et al. explored the use of dynamic and multimodal tools to evaluate social cognition, demonstrating the importance of adapting assessments to capture the evolving nature of student skills and abilities [19].

4.2 Specific implementation strategies for personalised assessment

Specifying this to the classroom context, the framework introduces several feasible elements, including formative assessment, differentiated evaluation, and self and peer review.

Formative assessment plays a crucial role in personalised evaluation by providing ongoing feedback to students, which aids in identifying their strengths and weaknesses in real time. This approach allows for continuous adjustments to teaching strategies to better meet individual learning needs. Integrating formative assessments into the curriculum helps students engage more deeply with the material, fostering critical thinking and self-regulation. Studies have shown that formative assessments, when properly implemented, significantly enhance students' learning outcomes and motivation. Moreover, this method empowers students by involving them in the evaluation process, thus promoting a sense of responsibility for their own learning [20].

Differentiated assessment strategies are essential in addressing the diverse needs of students within a classroom. This approach involves tailoring assessment methods and criteria to match individual students' learning styles, abilities, and interests. Differentiated assessment can include a variety of tools such as quizzes, projects, and oral presentations, allowing students to demonstrate their understanding in ways that suit them best. Research indicates that differentiated assessments are effective in improving student engagement and achievement, particularly when teachers are well-versed in these practices and apply them consistently. This method not only accommodates different learning paces but also respects

the unique backgrounds and experiences of each student, thereby fostering an inclusive learning environment [21].

Incorporating self and peer assessments into the evaluation process can significantly enhance students' reflective and critical thinking skills. Self-assessment encourages students to reflect on their own learning and identify areas for improvement, which is critical for developing autonomous learning habits. Peer assessment, on the other hand, provides opportunities for students to engage with their peers' work, offering constructive feedback that can reinforce their understanding of the subject matter. Studies have shown that self and peer assessments are not only effective in improving academic performance but also in developing essential soft skills such as communication and collaboration [20].

By comprehensively integrating these elements into the evaluation process, personalised education could be further implemented. However, there are some prerequisites that are necessary for carrying it out.

4.3 Policy support and resource assurance

From a macro perspective, effective implementation of personalised assessment requires robust policy support from the government. This includes creating a conducive policy environment that encourages innovative assessment practices and provides clear guidelines and frameworks. Governments must prioritise funding for educational initiatives that support personalised assessment. Studies have shown that coordinated efforts between educational authorities and schools can enhance the adoption of new assessment policies. For example, in Queensland, Australia, a study highlighted the importance of structural, personal, and cultural resources in mediating teacher agency during assessment reform, emphasising the need for comprehensive policy frameworks to support these changes [22]. Resource assurance is also critical for the successful implementation of personalised assessment systems. Adequate funding should be allocated for the development and deployment of diverse assessment tools and technologies. Schools need access to digital platforms and resources that facilitate dynamic and differentiated assessments. The integration of context-aware and adaptive assessment systems, as suggested by Hadyaoui and Cheniti-Belcadhi, can greatly enhance the personalisation of learning assessments [23]. Additionally, ensuring that schools are equipped with necessary physical and digital infrastructure is paramount to the success of these initiatives.

Coming to the micro level, teacher training is fundamental to effectively implementing personalised assessments. Continuous professional development programs should be established to train teachers in new assessment techniques and tools. Training should focus on equipping teachers with skills to design and implement formative, differentiated, and peer assessments. Collaborative learning and co-teaching models have proven effective in enhancing teachers' abilities to manage personalised assessment strategies. A systematic review by García-Martínez et al. emphasised the significance of fostering collaborative environments among teachers to improve student outcomes and professional practices. Furthermore, experiential learning and peer collaboration can facilitate the development of innovative assessment practices, enhancing both teacher and student experiences [24].

5 Conclusion

In a nutshell, the paper highlights the pivotal role of personalised education in fostering comprehensive student development by addressing the limitations of traditional assessment methods. While conventional assessments offer standardisation and ease of benchmarking, they often fail to nurture creativity, critical thinking, and individualised learning. Personalised education aligns closely with mainstream educational objectives by promoting

critical thinking, problem-solving skills, and lifelong learning. Furthermore, with its focus on individual learning needs and continuous feedback, it provides a more inclusive and supportive learning environment, enhancing student engagement, motivation, and overall academic success.

To successfully implement personalised education, a diversified and dynamic assessment system should be adopted. This system should integrate formative assessments, differentiated evaluations, and self and peer reviews, which collectively cater to the diverse learning styles and paces of students. Additionally, robust policy support and resource allocation are crucial for the successful adoption of personalized education strategies.

However, global implementation of personalized education remains uneven, with successful examples being the exception rather than the norm. Countries like the US, UK, Finland, Sweden, Singapore, and South Korea show potential but face substantial hurdles in widespread adoption. The challenges mainly appear as financial constraints, inadequate teacher training, and inconsistent application of technology. Addressing these challenges requires a concerted effort from governments, educational institutions, and stakeholders to create an environment conducive to personalized learning. Thus, future support is necessary, including adequate funding, teacher training, and technological integration.

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