

# The Learner In Digital Age: Personalized Learning In Higher Education

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## **Abstract:**

*Personalized learning is becoming more and more popular in place of rigid standards in education, thanks to the 4.0 industrial revolution and the current digital transformation trend. In an effort to shed additional light on the topic of individualized learning, this study will compile and evaluate pertinent material as well as critical elements required for its successful implementation in a university setting. The study's conclusions demonstrate that the necessity to address educational issues in novel contexts is what's driving the trend toward individualized learning. The study not only gives administrators a theoretical framework for integrating digital platforms into personalized learning models at universities, but it also advances the understanding of educational scholars.*

**Keyword:** *Personalized learning, Educational technology, University education, Digital technology*

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## I. Introduction

In a world where competition is escalating, the notion that "one size fits all" has become outdated. Organizations must adapt their services to match the unique needs of their clients by doing research and making necessary adjustments. Simultaneously, these clients expect that organizations will play a key role in assisting them in achieving objectives that align with their interests and personal beliefs. Education professionals have argued in recent years that personalized learning is a method that reflects the best use of system resources and can help students realize their full potential. Even in significant and difficult courses, personalization can aid in closing the achievement gaps between pupils. Even though there weren't any instruments available in the past, technology may play a significant role in introducing personalization in education nowadays. There is still a lot of contentious research in the analysis of customization in educational policy.

## II. Literature Review

### **Personalized**

As defined by Webster's Dictionary, personalize means "to make something personal, namely "marking the property of a particular person"<sup>1</sup>. This definition implies that the goal is to first perceive needs and then satisfy them effectively. Gartner believes that personalization is "a process that creates a relevant, individualized interaction between two parties designed to enhance the experience of the recipient"<sup>2</sup>.

The theoretical basis and origin of individuation are often considered to be theories of multiple intelligences (Gardner, 2011), and self-determination theory (Ryan & Deci, 2000). Multiple intelligence theory proposes that individuals can connect instructional content to eight different "intelligences" rather than the most dominant intelligences, language and math. Humans have multiple, largely autonomous intelligences that are difficult to measure quantitatively. However, each person has a unique "intelligence profile." Therefore, every student is smart in his or her own way, so everyone deserves to receive an education that suits their skills and tendencies. Many educators rely on the theory of personalized learning to develop ways to detect students' intellectual characteristics, organize educational content, and design materials suitable for different types of students. Self-determination theory, a humanistic approach, represents a framework of human motivation and personality that is based on the psychological needs for autonomy, competence, and relatedness (Ryan & Deci, 2000). Two theories have been identified that directly relate to teaching methods for effectively implementing individualized, personalized learning. The combination of the two provides a complementary perspective on data-driven decision-making to create a personal development layer with individual vision and assessment.

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<sup>1</sup> Merriam-Webster's Collegiate Dictionary. 11th ed. Springfield: Merriam-Webster; 2003. Available from: <https://www.merriam-webster.com/dictionary/personalize>

<sup>2</sup> <https://www.gartner.com/en/marketing/glossary/personalization>

Maximizing student and faculty enthusiasm, initiative, and innovation is the goal of personalization in higher education. Special needs education involves teaching and learning through activities, including putting customized education plans into place, creating specialized learning objectives and strategies, and lastly, attending to each student's unique requirements (Awofala, 2016).

### ***Personalization and awareness***

Personalization in education refers to adapting teaching strategies to meet the cognitive level of individual learners. It involves adjusting the content and pace of instruction to optimize learning outcomes for each student. To enhance learners' learning motivation, pay attention to students' interests, goals, and previous knowledge (Awofala, 2016). When learners are actively interested and motivated to learn, the process of acquiring knowledge will become easier and more effective. Each student has a unique way of learning, follows different methods, has different interests, and has different ways of receiving and processing information (Dorça et al., 2016). By tailoring teaching methods to each student's learning and cognitive style, personalized education can optimize cognitive processing and improve retention and understanding. information. Furthermore, personalization also empowers students to take ownership of their own learning process (Cunningham et al., 2015). When learners have choice and control over their educational experiences, they develop autonomous learning skills. Learners proactively adjust their learning plans and goals to suit themselves. Enhance cognition by promoting self-awareness, strategic thinking, and adaptive learning. By allowing learners to focus on individual areas of improvement, personalized education promotes deeper understanding and professional development .

### ***Personalized learning***

Personalized learning refers to teaching and learning that focuses on the learner's background, needs, potential, and perceptions. It is a student-centered education. Student-centeredness means recognizing that the teacher's role is not to impart information, but to work closely with students to ensure that they have understood and can continue their learning to the next stage. next paragraph (West & Vosloo, 2013).

The official definition of personalized learning given by the US Department of Education in the 2017 National Educational Technology Plan is: Personalized learning refers to instruction in which the pace of learning exercises and teaching methods are optimized for each learner's needs . Learning objectives, teaching methods, and teaching content (and their sequence) can all vary according to the needs of the learner. Additionally, learning activities are meaningful and relevant to learners, motivated by their interests, and often self-initiated (U.S. Department of Education, 2017). The Rand Report (2017), sponsored by Bill and Melinda Gates, defined personalized learning as “practices that adjust the pace and focus of instruction to simultaneously address needs and goals”.

Definitions of personalized learning vary depending on the author's framework; however, it is common to describe personalized learning as a learner-centered approach, learner autonomy, flexible learning, and demonstrating mastery of competencies(DeMonte, 2017).

Personalized learning helps learners realize their capabilities and expect to gain expertise in different fields by choosing appropriate learning methods. Personalized learning empowers students, encourages responsibility, and allows them to take ownership of their learning to align with their personal interests and goals. For personalization to be successful, students must regularly receive real-time feedback to promote learning and develop independent learning skills.

### ***Elements of personalized learning***

We may extract key components of customized learning from its definitions and concepts in the following ways (Çullhaj, 2017):

1. Learner characteristics: In a personalized learning environment, emphasis is placed on understanding each student. Grasping "each student's strengths, weaknesses, needs, and goals" in order to provide students with the best learning paths and learning methods suitable for each student.
2. Personalized learning roadmap: Using this roadmap, every student will have a unique learning route created to fit their requirements, objectives, and rate of learning.
3. Measuring progress based on competencies: evaluating the learning outcomes of the students as they are being taught. The advancement of every pupil toward their objectives is precisely specified and regularly evaluated. ensuring that, through their education, pupils gain new abilities and competencies.
4. Flexible learning environment: Students are guaranteed to meet their objectives at their own speed, in accordance with their needs and interests, thanks to the student learning process. With this goal in mind, the adaptive platform guarantees a flexible approach customized for students via a mobile system that offers relevant materials and evaluations. Teachers are allowed to modify their lesson plans to suit the needs of each individual student.

Additionally, students must collaborate with teachers to build their own learning process and have the freedom to determine how their learning is demonstrated through performance-based evaluations in order to maximize the effectiveness of learning.

### ***Characteristics of personalized learning***

The characteristics of individualized learning can be inferred from the aforementioned observations. Personalized learning prioritizes individualization in education, catering to the distinct requirements of each student, establishing an environment conducive to adaptable learning, and promoting effective engagement between educators and learners.

**Aim:** Concentrate on maximizing the learning process for every individual, catering to their specific requirements, and fostering distinct skills, capabilities, and interests in learners.

**Teaching methods:** Establish an adaptable and varied learning setting by employing instructional strategies and resources that cater to the individual needs of every learner. Lecturers fulfill the function of providing guidance, advice, and direction to learners.

**Interactivity:** Centers on the dynamic between the instructor and the student. Lecturers possess a comprehensive comprehension of the learning process, including the strengths and limitations of learners, and are adept at adapting the teaching process accordingly. The learning process greatly values the contact between teachers and learners.

The study schedule and venue are subject to flexible adjustments based on the learner's availability. The learning design is adaptable and well-suited to individual needs, without relying on other participants.

**Assess outcomes:** Assess outcomes by considering the personal advancement and growth of each individual. Assessment is conducted by measuring the extent to which individual goals are accomplished, rather than by comparing them to another group.

## **III. Research Methods**

This study employs descriptive statistics to analyze the collected data. We acquire data sources by reviewing a diverse range of online and offline sources, such as scholarly publications, books, and reliable news outlets. The research employs observational methodologies and document analysis to synthesize, analyze, discuss, and derive research results.

## **IV. Result And Discussion**

Personalized learning is a significant and current trend in contemporary education. The findings indicate that the movement towards personalized learning must be considered in conjunction with elements such as educational technology, instructional techniques, student accomplishment evaluation, and the role of teachers.

### ***Personalized learning and educational technology***

Personalized learning, supported by educational technology, is transforming the educational landscape by tailoring learning experiences to individual student needs, preferences, and competencies (Maheswara & Rifai, 2023). Personalized learning, which involves the use of technological devices such as computers, mobile phones, and tablets, is a contemporary phenomenon that is attracting worldwide interest. It provides novel methods for education. Novel techniques enable the learning process to improve and advance. Nevertheless, there are still worries regarding accessibility, security, affordability, teacher competency, and student proficiency in utilizing technological equipment. These technological gadgets prevent larger groups from restraining or abandoning students. This approach has shown significant promise in enhancing learner autonomy, flexibility, and adaptability, which are crucial for meeting the dynamic demands of today's labor market.

Currently, due to their exceptional portability, mobile gadgets have become an indispensable component of daily existence. The ownership of mobile devices by the majority of students has significantly enhanced the possibilities and effectiveness of personalized learning. Mobile and personalized learning offers numerous benefits, including the use of mobile phones and tablets to access applications that enable learners to choose texts of varying difficulty levels for reading assignments based on their individual skills and prior knowledge. It might be stated that the use of personal mobile technology in education will replace standardized educational paradigms. Thus far, the emphasis has been on the advancement of technology rather than the learner, which is the main concern. Every individual possesses their own unique learning style, and disregarding device-related problems can result in an unstable or inefficient online learning solution.

Mobile and personalized learning offer numerous benefits, significantly enhancing the educational experience by providing flexibility, accessibility, and tailored content to meet individual learners needs. Mobile-based learning allows learners to access educational content anytime and anywhere, supporting various media

formats and improving access speed, which is essential for a personalized learning experience (Radhakrishnan & Akila, 2021). Learners can utilize mobile phones and tablets to access applications that allow them to select texts with different levels of difficulty for their reading assignments, taking into account their unique abilities and existing knowledge. It can be affirmed that the application of personal mobile technology in learning “will replace one-size-fits-all educational models”(West & Vosloo, 2013). Up to this point, the focus has primarily been on the progress of technology rather than the individual who is learning, which is the primary concern. Each person has their own distinct learning style, and failing to address device-related issues might lead to an unstable or ineffective online learning solution.

### ***Personalization and assessment of education***

The current trend towards decentralization and increased school autonomy has indeed spurred the adoption of personalized evaluation methods. Personalized assessment is crucial in education as it caters to the diverse learning needs and abilities of students, which traditional evaluation methods often fail to address. For instance, personalized learning evaluation methods can provide tailored feedback and support services, enhancing the quality of both online and offline teaching activities.

Personalization in educational evaluation seeks to offer teaching methods that are pertinent to individual student attributes. A student's strengths or limits will be evaluated by an individual instructor to determine their specific needs. The instructor examines the findings and subsequently provides suggestions based on the assessment. The current trend towards decentralization and increased school autonomy has indeed spurred the adoption of personalized evaluation methods. Personalized assessment is crucial in education as it caters to the diverse learning needs and abilities of students, which traditional evaluation methods often fail to address. For instance, personalized learning evaluation methods can provide tailored feedback and support services, enhancing the quality of both online and offline teaching activities(Kan et al., 2023). Personalized learning strategies in universities, particularly in Canada and the USA, emphasize self-assessment, peer learning, and self-directed activities, which are crucial for fostering learner autonomy and lifelong learning (Lavrysh & Lytovchenko, 2022).

There have been suggestions (Nevo, 2001) to expand the Psychology Admissions Test, which is known for its high level of standardization, by include new sections. These additional sections would aim to assess various aptitudes and intelligences of students, including emotional intellect and creative capacity.

Both self-evaluation and tests utilize online assessment, which can either substitute for or supplement conventional approaches to evaluating student learning outcomes (Nevo, 2002). Online examinations require summative feedback, which promptly informs students of their performance upon completion of the evaluation. The goal of evaluation is to provide students with individualized feedback that is very relevant and valuable to their specific needs.

### ***Personalization and student achievement***

Personalization is linked to significant and valuable accomplishments for learners in both academic achievement and emotional development (Vasilyeva et al., 2007). Theoretical frameworks suggest that context personalization, which aligns instructional content with students' interests, can elicit positive affective reactions and foster connections to prior knowledge, thereby enhancing motivation and achievement (Pane et al., 2017).

Research on personalization and academic accomplishment indicates that students exhibit improved performance over time during tailored learning (Tseng et al., 2008). Miller and Kulhavy (Miller & Kulhavy, 1991) proposed that personalization could enhance memory by strengthening the connection between individualized content and students' preexisting talents. The researchers discovered that incorporating individualized representations throughout the process of encoding led to a much higher level of remembering. Personalizing the backdrop of a job can enhance its significance, enabling pupils to empathize with the issue and comprehend it effortlessly.

### ***Personalization and the role of teacher***

The process of personalizing learning has dramatically changed the role of instructors. The lecturer is no longer the main source of knowledge, but rather the moderator and guide for learning (Day & Gu, 2007). Teachers' attitudes towards this type of change and their willingness to be active partners are considered determinants of success.

Faculty are the backbone of personalization. School improvement and school turnaround efforts largely fall on the shoulders of faculty because these are the individuals who can bring about immediate change in students. As a result, their school's environment and culture are affected. The first is that legal authority is given to faculty, allowing them to make decisions that affect their students. Only experts in their field can teach and impart specialized knowledge to students. The third is the capacity for charisma; that is, their power stems from their character and investment in their work. Fourth is the power of rewards, which is based on the

faculty's ability to reward good behavior, excellence, and appreciation. Fifth is the authority to punish, i.e., the teacher's authority to punish students according to school rules. In personalized learning, teachers organize a multitude of potential content into an orderly and clear curriculum, explicitly teaching new concepts and skills specific to students, expanding the scope of students' personal interests, and promoting logical thinking through questioning and concrete interactions(Bishop et al., 2020).

Personalization in education fundamentally transforms the role of the teacher from a traditional instructor to a facilitator and guide who supports individualized learning paths. This approach emphasizes the co-construction of learning opportunities, where teachers and students collaboratively design the educational experience to meet individual needs and interests (Bishop et al., 2020).

The teacher's role extends to managing personalized learning environments, which include integrating technology to adapt instructional methods and content delivery, ensuring that each student's progress is continuously monitored and supported (Shuyu, 2022).

The multifaceted role of faculty: Bishop et al.(Bishop et al., 2020) examined the role of instructors in personalized learning environments involving hard rules about individualized learning plans, flexible educational pathways, and proficiency-based assessment. Research has shown that faculty perceptions of their role include four components: (a) empowerment, (b) guidance, (c) support, and (d) evaluation. The effectiveness of personalized learning is also evident in distance learning environments, where individualized approaches have led to higher academic achievement compared to traditional method (Duckett, 2010). The capacity to attain success is not static, but rather evolves over time, thereby enhancing students' motivation to learn and enabling teachers to better address students' educational requirements.

### V. Conclusion

Personalized learning presents significant prospects for expediting student learning. Personalized education increases engagement, motivation, learning style, and management by customizing the educational experience to suit the individual learner's requirements, interests, and cognitive processes. Cognitive load, self-regulated learning, mastery-based learning, and feedback have a substantial impact on cognitive growth and academic performance. Moreover, the utilization of technology devices for individualized learning is a contemporary and influential trend that holds the potential to introduce innovative approaches to improve and facilitate the learning process.

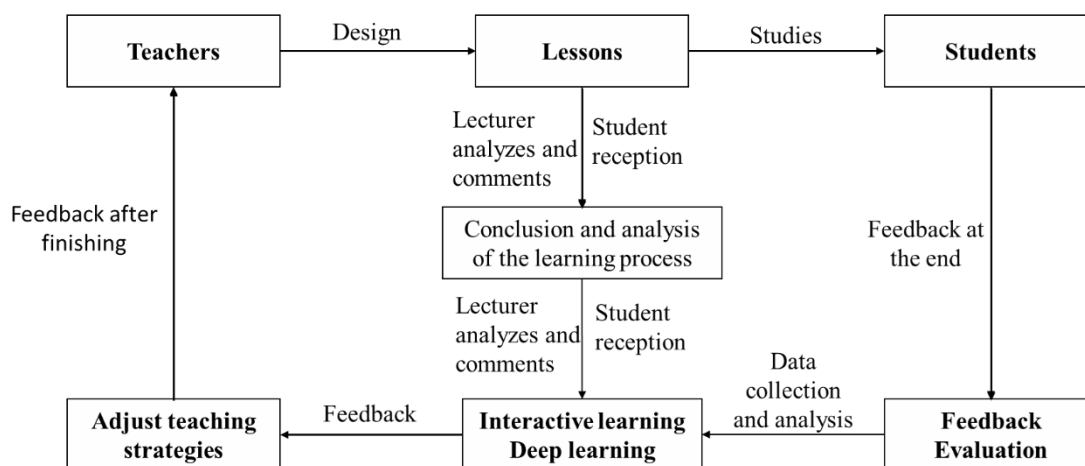


Figure 1: The personalized teaching system model

Nevertheless, the utilization of technologies without taking into account pedagogical ideas and models frequently results in complications. This paper presents an analysis of the potential advantages and necessary conditions for individualized education, as well as the difficulties that may arise when attempting to implement it in the future.

Implementing personalized interaction in higher education will bring many benefits, such as enhancing knowledge acquisition, encouraging learner participation, and improving learning quality. However, there are also challenges:

1. Flexibility: Every student has different needs and learning styles, necessitating a flexible system that can meet these diverse needs.
2. Data management system: Collecting data to understand students and create personalized experiences is a challenge. Therefore, there must be a synchronized data management system and an effective data collection process.

3. Data analysis: It can be challenging to process large amounts of data and transform them into useful information for the teaching process. To understand and use this data, we need powerful analytics tools and skilled staff.
4. Security: The security of students' personal information is a top priority. There must be strict measures to secure personal data.
5. Faculty self-support: In order to successfully implement individual programs, faculty support and commitment are required. To use technology and data effectively in their teaching, instructors need training and support.
6. Student engagement and support: Sometimes, students may not accept or be interested in personalized solutions. Therefore, interaction and support on their part are required to ensure the success of these programs.
7. Cost and resources: Implementing personalized solutions can require large investments in both resources and costs. We must allocate these resources effectively, ensuring long-term benefits.
8. Change: Personalization methods and technologies can evolve and change rapidly. Therefore, it is necessary to remain flexible and ready to adapt to new trends.

From the results and discussion, it shows that responding to individual needs and personalization in education not only facilitates better learning by using different strategies but also provides teachers with instructional needs in designing diverse teaching platforms. Below is a proposed model for a personalized teaching system.

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