

PERSONALIZED LEARNING: A NEW ICT-ENABLED EDUCATION APPROACH

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CONTEXT AND OUTLINE OF THE PROBLEM

We live at the time of a fundamental social and economic shift from an era of mass-production to a new period characterized by the personalization and customization of products and services [1]. In order to survive in a changing world, the advanced economies need to adapt to this new reality not only in the domain of business but also in other ones including education.

Most contemporary public education systems are still based on the 'one size fits all', full-time classroom-based model. It is believed to effectively serve all learners, or at least to provide them with the best education our society is able to offer in current economic and social circumstances. However, this single-model approach does not allow many students to achieve their best possible learning results.

This situation can be dramatically improved by transition to a new education paradigm characterized by greater flexibility and choice options for each individual student. So, the idea of personalization in education in general is very simple: to enable teachers to match what is taught and how it is taught with the needs of each individual schoolchild, student or adult learner.

While the idea of personalization is not new and is widely accepted as an important trend in education, it is not easy to make it work in practice. There are several contradictions education professionals face while implementing it:

- The desire to encourage talented learners vs. the necessity to tackle poor performance in the same class.
- Teachers' heavy workload vs. the necessity to spend more time with each student to achieve better education results.
- The limits of physical classroom space and the fact that teachers are responsible for the whole groups of learners vs. the desire to implement some more personalized approach to each individual student.
- A rather conservative attitude of teachers and education administrators to the organization of the learning process vs. the need to challenge the classical step-by-step progression almost every learner undertakes nowadays.
- The unsophisticated use of technology by teachers vs. the fact that new education methods cannot be implemented without the active usage of the latest advances in information technologies.

Education professionals have tried for decades to address these challenges. But the latest innovations, especially in information technologies and digital content development and delivery, allow us to resolve them and make a personalized approach to every learner's education process a reality.

WHAT IS PERSONALIZED LEARNING?

The idea of personalization of education can be traced back to the XIX century, when Helen Parkhurst created the Dalton Plan stating that each student can program his or her curriculum in order to meet his or her needs, interests and abilities; to promote both independence and dependability; to enhance the student's social skills and sense of responsibility toward others. The idea of customization and personalization of education has evolved ever since. In the 1970s, Victor García Hoz was the first to coin the term of 'personalization' in the context of educational science.

Unfortunately, up to this date there is no single definition of this concept. In order to explain what is usually meant by 'personalized learning,' let's have a look at extracts from several documents defining the term at the national or provincial level in different countries.

National College for School Leadership, UK: "Personalized learning is a highly structured and responsive approach to learning for each individual child and young person. It creates an ethos in which all pupils are able to progress, achieve and participate. It strengthens the link between learning and teaching by engaging pupils and their parents as partners" [2].

The Personalized Learning Foundation, California, USA: “Personalized Learning is a blended approach to learning that combines the delivery of education both within and beyond the traditional classroom environment. The Personalized Learning model fosters a collaborative partnership between the teacher, parent, student and school that designs a tailored learning program for each student according to the needs and interests of each individual student. Personalized Learning is truly a 21st century approach to education that, in practice, through flexibility and choice, honors and recognizes the unique gifts, skills, passions, and attributes of each child, as well as each child’s challenges and obstacles to learning. The key attributes that comprise the Personalized Learning model are based upon a solid foundation of the latest educational research findings as to how students learn most successfully. These attributes include a strong emphasis on parental involvement, smaller class sizes, more one-on-one teacher and student interaction, attention to differences in learning styles, student-driven participation in developing the learning process, technology access, varied learning environments, teacher and parent development programs, and choices in curriculum programs. No other educational model offered in today’s public education system has integrated these proven educational research results in such an in-depth and comprehensive manner to serve the diverse needs of today’s public education students” [3].

Calgary Board of Education, Alberta, Canada: “Key components of personalization have been identified as integrating and differentiating curriculum, development of learner profiles, flexible program delivery, technology infusion, social construction, and individual student learning plans” [4].

British Columbia Ministry of Education, Canada: “Personalized learning for each student in British Columbia means a shift from delivery of a set of broad, uniform learning outcomes and courses throughout the Pre-K to 12 Education Program, to learning that is increasingly student-initiated, self-directed, and interdisciplinary and that is facilitated by the teacher and co-planned with students, parents and teachers. Rigorous learning requirements will continue to be the core of the education program; the amount and nature of required core learning will change as students progress through the program... Personalized learning provides individual learners with the differentiated instruction and support they need to gain the required knowledge, skills and competencies and also provides them with the flexibility and choice they need to develop their individual interests and passions” [5].

Though the idea of personalization is widely applied in e-learning, in this paper we will focus on its implementation in the classroom. Thus, for the purpose of this Policy Brief we will use the following definition: personalized learning is a methodology, according to which teaching and learning are focused on the needs and abilities of individual learners within classroom groups supervised by the teacher.

ELEMENTS OF PERSONALIZED LEARNING

According to the former United Kingdom Minister of State for School Standards, David Miliband [6, 7], there are five components to personalized learning. They are outlined below.

Assessment for learning

In order to create personalized learning targets for each student, plan lessons and choose appropriate learning strategies we need to understand his or her individual strengths, weaknesses, interests and learning needs. This can be done through a range of assessment techniques, with an emphasis on formative assessment that engages the learner. Progress monitoring should be consistent throughout the whole learning process.

Effective teaching and learning

Teachers should choose the most effective teaching and learning strategies to engage students in the education process, help them unlock their potential and ensure that they can take ownership and responsibility for their own learning.

Curriculum entitlement and choice

Personalized learning implies the ability of students to participate in the selection of curriculum content as well as in the development of individually tailored learning programs. At the same time, to achieve the desired results students must be presented with clear pathways through the system, gaining high standards in the basics allied to opportunities for enrichment and creativity.

Radical approach to the organization of educational institutions

Personalized learning means that the starting point for class organization is student progress. This implies a new approach to teaching and learning resources allocation, and calls for redesigning the traditional classrooms in order to create a positive, safe and secure environment, as well as for higher standards for on-site services, such as catering and social areas.

Beyond the classroom

The education activity must be taken beyond the classroom. Building partnerships with community, local institutions and social services can become a key to create a successful personalized learning program.

HOW ICTs ENABLE PERSONALIZED LEARNING

The advancement of information and communication technologies (ICTs) and digital content development tools made personalized learning available to wider audiences.

Based on research and practical evidence there are several advantages of ICTs in learning:

- ICTs can present content in an engaging and attractive form.
- ICTs help teachers to record and constantly monitor the progress of each student.
- ICTs allow customized delivery of relevant education material to each individual learner.
- ICTs can build virtual social communities among different educational institutions, teams of students or teachers.
- ICTs facilitate learning-to-learn skills.
- The latest innovations in ICTs (mobile tools, cloud solutions, etc.) allow to implement continuous learning processes in different learning contexts and provide on-demand support to students.

Let's see how ICTs enable the implementation of the abovementioned components of personalized learning in the classroom.

Using ICTs for assessment of learning

Assessment in a classic educational institution is usually limited to several examinations at the end of a learning unit. It is usually accompanied by grading and its primary goal is to compare students' achievements with standards. More detailed assessment of students' needs, abilities and progress has been too difficult to perform.

Recent advances in the learning management systems (LMS) made an automated assessment occurring throughout the learning process a reality.

The complete data on students' progress including multiple-choice tests results, portfolios, works in progress, results of one-to-one conversations, etc. can be collected at the desired rate. Teachers can use this information to make data-driven decisions regarding the adjustment of instruction of each individual student.

Using ICTs for effective teaching and learning

Even the most advanced teachers have to use the universal teaching strategies to deliver course material to students in the traditional classroom. Thus, the 'one size fits all' approach is a coercive measure to keep classes going.

Information technologies make personalized instruction possible through the adjustment of learning strategies and content to each individual student. This approach has become highly popular in e-Learning, but it can also be implemented in the classroom, when selective delivery of digital content becomes a part of personalized instruction.

Using ICTs for curriculum personalization

Students within a group in the typical classroom environment have to follow the same learning program at a pace that allows even poor achievers to master the material. This undermines the progress of talented students.

With the use of computers and mobile devices not only learning paths, but also curricula can be personalized for every student. Each person in the classroom can be presented with the material he or she needs. A learning management system will keep track of the advancements of every student in the class, ensuring that the core material will be covered by everyone, but also giving the best achievers an opportunity for in-depth intensive teaching.

How the use of IT changes the organization of educational institutions

The emergence of information technologies hasn't changed educational institutions as such. In most of them, computers are still primarily used as tools for teaching information technologies and don't change the way students learn other subjects.

When used for personalized teaching and learning, computers and mobile devices transform the respective processes and also change the organization of educational institutions. The classroom layout is redesigned to reflect the shift of attention from the teacher to students. Instead of typical rows of tables, classroom setup can be organized in such a way that students – equipped with individual computers or tablets – will be facing each other and the teacher. Class schedule changes and corresponding resource allocation adjustment due to the necessity to provide a wider curriculum choice can be mediated through LMS.

How new technologies allow to take education beyond the classroom

In a world without information technologies, the involvement of parents, community enthusiasts and industry professionals in the education process requires their physical presence in the classroom.

Nowadays, learning content can be produced by experts in digital form and then used repeatedly for teaching students. Using Web 2.0 tools and social networks, learners can interact with each other beyond the classroom. Their parents can monitor their progress online. Mobile devices and Internet connection allow students to continue their studies in a familiar learning environment wherever they are.

NEW ROLE OF TEACHER

Most teachers can encounter some transitional problems when implementing the personalized learning approach. And this is not surprising. Similar problems can be encountered by their students when they move from conventional learning programs to this new, open and customizable learning environment.

To adapt themselves to the new teaching model and to smooth their students' transition to this model, teachers need to develop new pedagogical approaches. Their role shifts from instruction to mentoring, advising and consulting. Teachers should acquire some new skills in the effective use of information technologies, mentoring learning, mediating values and encouraging self-motivation. They should also systematically evaluate their students' activities.

Teachers are key to the successful implementation of personalized learning. To understand and apply the new learning methodology, teachers themselves need extensive learning opportunities. This implies that the professional development of teachers should be viewed by policy-makers as a top priority.

WHAT COULD PERSONALIZED LEARNING LOOK LIKE? A PRACTICAL EXAMPLE

In Russia, the personalized learning model is used to teach information technologies to children and adults and is known as 'mentored learning' or 'personal learning'. It's been adopted by several IT-training centers in different countries, including New Horizons and Academy of Networking, as well as by universities and schools.

This method is used to teach students in the classroom. Although they attend classes in groups, each student is taught according to his or her individual curriculum and a specially designed learning path that better suits his or her needs and abilities. In addition, each student gets ten times more one-on-one mentoring from the teacher.

A special learning system helps the teacher to organize studies. An initial assessment in the form of a formal test coupled with an interview helps to create a draft of personal learning objectives and a learning path for each student and to choose the most effective teaching strategies.

During the class each student stays in the classroom. But the theoretical part of the class is not delivered in the form of a traditional lecture. Instead, students watch pre-recorded video fragments served to each of them individually by LMS, according to their chosen learning paths. These videos are alternated by short quizzes or practical exercises. The results of all activities are diligently recorded by the learning management system and presented to the teacher in the same classroom in the form of easily readable reports.

From the students' perspective, this structure of study materials allows to adapt the learning path to individual needs, abilities, preferred study pace, etc.

These pre-recorded videos affect the teacher's role in the classroom. Instead of lecturing, he or she can spend time to mentor each student individually. As mentioned earlier, average time spent on one-on-one instruction increases ten times. This allows the teacher to constantly monitor the progress of the class participants, readjust their learning paths and suggest new learning strategies for each student. Extensive data collected throughout the learning process contributes to well-informed decision-making and timely corrective actions.

For this methodology to be effective, students need to stay focused on the learning material. To achieve this, video fragments should be professionally produced. When making such videos, film producers and lecturers should take into account the latest advancements in psychology. The less expensive approaches of screencasts and 'talking heads' have proved to be ineffective.

We believe that this approach can help resolve the contradictions mentioned in the introduction to this Policy Brief.

- Talented learners are offered more challenging learning paths, consisting of in-depth videos, advanced exercises and more sophisticated assignments while their lower performing peers study the core material in the same classroom.
- The teacher's standard workload is reduced thanks to the delivery of lectures by LMS. Now the teacher can spend more time for mentoring each student individually, adapting his or her learning paths according to the data collected during the course.
- Now, in the same classroom, teachers not only can instruct each student individually, but also can teach several subjects.
- To adapt this new approach, the organization of educational institutions should be changed. These changes will affect the classroom set-up and the schedule of classes. Even catering facilities should be reorganized to better serve the new teaching method, because breaks between classes occur at less regular intervals.
- All this is made possible thanks to sophisticated information technologies. And though at the beginning teachers may feel somewhat uncomfortable with these innovations, it doesn't usually take them too long to adopt the new methodology, especially if teachers are given an opportunity to attend relevant professional development courses.

The implementation of this method leads to some impressive results. A comparative analysis of traditional teaching in the classroom vs. the new personalized education approach demonstrates a clear advantage of the latter. According to the analysis, the average test pass rate is almost 10% higher and the subjective evaluation of the education program is almost 84% higher for personalized learning.

The learning method described above can be supplemented by various teaching strategies, such as small group lecturing, project collaboration, joint virtual and offline discussions, etc. A creative approach to teaching can help achieve even more impressive results.

BENEFITS AND RISKS OF PERSONALIZED LEARNING

Though the personalized learning approach has many advantages for teachers, students, parents, educational institutions, there are also some risks and possible drawbacks associated with this approach.

Some educators believe that personalized learning could diminish the relational and ethical dimensions of education. To avoid this, personalization should not be taken to the extremes, when it becomes similar to self-learning. The teacher using personalized learning in the classroom should combine it with other teaching techniques (teaching in small groups, mentoring, etc.).

Another common argument is that personalized learning is more and more equated to technology-augmented learning. This negative effect can be reduced by showing teachers how to use information technologies to improve their in-class personal interaction with students.

One more drawback indicated by some critics is the diminishing role of social interaction in personalized education. Though this may be the case in short-term trainings, in long-term education programs the effect is opposite: virtual social communities (of different educational institutions, teams of students or teachers) tend to enhance the learning experience.

POLICY IMPLICATIONS

Policy-makers should understand that more and more people believe that learning will be a key ingredient of a successful post-industrial society. Educational institutions are already in flux, and the expectations and practices of teachers, students and parents are also moving fast. The old standardized approach to every learner is getting out-of-date and the idea of personalization of education is gaining more and more recognition. The latest advances in information technologies and digital content creation allow all students to benefit from the personalized learning approach.

At the level of schools, universities and adult training centers, personalized learning allows tailoring of education to ensure that every learner achieves the highest result possible. At the level of regions and nations, it is an important step to create a highly educated workforce for a new economy, in which personalization and customization are vital features of products and services.

It's increasingly important for societies to cater to the education needs of every young person, not just to those of traditional academic high-fliers. The price of not doing so could well be increased social inequality and slower economic growth [1].

Personalization in education can be achieved through continuous assessment to diagnose every student's learning needs and abilities; teaching and learning strategies that build on individual aptitudes and demands; engaging learning pathways customized for each learner; a radical approach to school organization; community institutions and social services supporting schools to drive forward progress in the classroom.

The development of the personalized learning agenda is not about quick fixes, but about building the capacity of the educational system to meet the learning needs of all learners of any age. As professor Andy Hargreaves [8] notes, it is about moving education from "the 19th century educational imagery to one for the 21st century".

REFERENCES

1. Keeley, B. 2007. *Human Capital: How What You Know Shapes Your Life*. Paris, OECD.
2. Department for Education and Skills (DfES) Great Britain. 2006. *2020 Vision: Report of the Teaching and Learning in 2020 Review Group*. Nottingham, DfES Publications, p. 6.
3. Personalized Learning Foundation (PLF). 2012. *What Is Personalized Learning?* <http://personalizedlearningfoundation.org/id3.html> (Accessed 1 June 2012)
4. Calgary board of Education (CBE). 2009. *Three-Year Education Plan 2009–2012*, p. 5.
5. B.C. Ministry of Education. 2011. *Personalized learning in BC. Interactive discussion guide*. British Columbia. <http://www.personalizedlearningbc.ca> (Accessed 1 June 2012), pp. 9, 10, 28.
6. Association of Professionals in Education and Children’s Trusts (ASPECT). 2006. *Personalized Learning: From Blueprint to Practice*. Wakefield, UK, Aspect.
7. Miliband, D. 2006. Choice and voice in personalized learning. *Personalizing Education*. OECD, pp. 21–30.
8. Hargreaves, A. and Shirley, D. 2009. *The Fourth Way: The Inspiring Future for Educational Change*. Thousand Oaks, Calif., Corwin.
9. Leadbeater, C. 2009. *We-Think: Mass Innovation, Not Mass Production*. London, Profile Books.

Personalized learning becomes increasingly prominent in policy discussions on the future of education. This interest has emerged from understanding that the 'one size fits all' approach to acquiring knowledge in today's educational institutions does not successfully meet the needs of individuals of a knowledge society. The latest developments in information technologies and digital content creation are revolutionizing education. They make the benefits of personalized learning available for mass adoption in schools, universities and adult training institutions.

The Policy Brief highlights the advantages of personalized learning and offers possible ways of implementing it in educational institutions.

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