

SEARCHING FOR THE THEORETICAL FOUNDATIONS OF PERSONALISED LEARNING AND THE STRATEGY TO ITS SCALING

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Abstract

Personalised learning (PL) has become an increasing trend of modern education in which a student is regarded to be at the heart of the learning-teaching process. The considerable interest of policy makers, educational innovators, school leaders, and teachers in building a personalised educational develops various ways for its implementation. In this connection, lots of viewpoints on how to construct the learning personalised might be identified which gives rise to many approaches to its realisation. The other reason for the ambiguity occurring today is related to the issue of conceptualisation of PL at the theoretical level. In other words, there is no agreed definition of personalisation in education; therefore, it lacks the strategy for implementation and further scaling.

The primary aim of this article is to investigate the phenomenon of PL. The conceptualisation will involve the analysis of the related theories i.e. humanistic and constructivist approaches. The other key objective of the article is to present the formulated theoretic scale model of PL. The model views PL as an innovation that might be scaled by people (teachers at the level of individual characteristics and organisation at the environmental level) and by digital technology. Consequently, the elements include teacher's belief and practice, school environment and technology for methodology integration into the education process. In conclusion, the paper examines the theoretical nature of personalisation in education, its distinguishing features, the existing PL frameworks and presents the model for its scaling. The points discussed in the article will help to devise a coherent strategy for personalisation of the learning-teaching process.

Keywords: personalised learning, personalisation, e-personalisation, innovation, digital technology, model.

1 INTRODUCTION

Today personalised learning has received much attention from stakeholders in education, innovators, researchers and policy-makers. The reason for this considerable interest is related to the assumption that the current educational model does not fit all students; therefore, PL has the potential to make the education system better. Although the approach has recently emerged as a growing trend, it has deep historical roots.

In essence, there are instances from the past identifying the premises of personalised learning. Maria Montessori developed a well-known method, the Montessori Method, which includes learning at one's own pace with little interference from a teacher. Also, the method involves the key principles similar to PL: taking necessary time to master the content, having a choice in order to make the learning relevant and engaging. Furthermore, John Dewey formulated a multi-faceted philosophy of education based on ideas of democracy. His works proposed for learning by doing instead of learning as the process of receiving only theory; taking into account background knowledge of students to make the material meaningful so that learners make sense of new content. In this connection, the learning is adjusted to student's individual characteristics, thus, also reflects the concept of personalisation. Based on the ideas of Montessori and Dewey, Helen Parkhurst devised the Dalton plan (1914), relevant to personalised learning e.g. tailoring each student's program to one's needs, abilities and interests, developing learner autonomy [1]. Finally, Personalised System of Instruction, the PSI model (1968), developed by Fred Keller, has defining characteristics of student self-pacing, mastery of skills before proceeding to new material [2]. In accordance with historical overview, personalised learning had a long journey to come to the forefront and be taken into consideration at a state level. As a matter of fact, the education policy of a number of countries regards PL as a strategic direction.

2 PERSONALISED LEARNING POLICY REVIEW

In order to ascertain the fact that personalisation at school level is adopted by the governments, the national educational standards of such countries as the UK, the USA, Australia and the Russian Federation will be reviewed.

The first country in the list is the United Kingdom as PL has been a part of the UK political discourse for many years. The UK Department for Education and Skills (DfES) in 2004 developed the model with five components of PL to integrate into the learning process [3]. As stated in the document, the PL policy originated from shifts in the drivers of the national economy [4] and the rationale for its implementation is tailoring education to “individual need, interest and aptitude so as to fulfil every young person’s potential” [5]. More recently the prevalence of this education policy has grown in other education systems, particularly Organisation for Economic Cooperation and Development (OECD) [6]. Although having gained popularity in the UK political discourse, PL as an initial concept came from the United States [7].

In the USA each state has its own education policy and strategy. However, similar directions might be found across the country. Firstly, Clarke claims that “the National Association of Secondary School Principals (NASSP) publicised the need for high school personalisation” [8]. Secondly, one of the PL ideas is to focus on students’ individual learning needs while incorporating interests and preferences has been “a longstanding practice in the U.S. K-12 education” [9].

Regarding Australia, the first steps to acknowledge PL were made in 1999 when Australian state, territory and Commonwealth ministers of education endorsed the Adelaide Declaration on National Goals for Schooling in the Twenty-First Century. It provided a basis for Australian education systems to accept PL [10]. In a further national development, Keamy et al in 2007 presented the report “Personalising education: From research to policy and practice” that involves evidence of PL success around the world (North America, United Kingdom, New Zealand) [11]. As key drivers of an education reform, Keamy et al proposed the following four tenets of PL: learners as central, information and communications technology, lifelong learning, communities of collaboration. Next step of PL development in the country was the Gonski report “Through Growth to Achievement” in 2018 that suggests moving from a standardised approach of curriculum and assessment to a more personalised strategy, centred on the learning progress [12]. Therefore, nowadays the Australian curriculum involves four steps to personalise learning called “CASE” which stands for Content, Abilities, Standards and Evaluation [13].

Presumably, the aforementioned countries are incorporating PL into schooling more actively than others. Yet, such countries as New Zealand, Finland, and Germany are making initial steps towards personalisation of education as well. Regarding the Russian Federation, the Federal State National Standard does not explicitly involve the notion of PL yet, but outlines the prerequisites for personalisation. In particular, it pays close attention to promoting personal self-development and self-determination in learners, also, favours student’s individual characteristics, abilities and interests to take into account in order to build individual educational trajectories [14].

However, the terms “personalised learning,” “personalisation” in education tend to vary not only from state to state, but also even within one country. In other words, the concept is viewed differently by stakeholders in education, which leads to certain ambiguities. To take for instance, having conducted interviews, I. Courcier revealed that teachers do not have a clear idea and understanding of PL, and this “could be dangerous, promoting potentially divisive approaches to teaching” [15]. In this connection, it is essential to investigate how widely-known associations and communities conceptualise personalised learning; consequently, introduce the definition of PL that will be used in this article.

3 DEFINING PERSONALISED LEARNING

The following part will review the definitions of trustworthy organisations in education such as United Nations Educational, Scientific and Cultural Organisation International Bureau of Education (UNESCO-IBE), Organisation for Economic Cooperation and Development (OECD), Bill & Melinda Gates Foundation (RAND), International Association for K-12 Online Learning (iNACOL) and Stanford Research Institute (SRI). The objective of this section is to build a matrix of definitions, identifying the core elements of PL.

UNESCO-IBE in the document dated back to 2017 provides a clear vision on personalisation in education as well as formulating the strategies to enable PL. The organisation regards the concept as [16]:

teaching and learning that is focused on the background, needs, potential and perception of the learner. It is learner-centred education. <...> Personalised learning is a powerful statement that has as goal the student taking ownership of the learning process to become a lifelong learner.

In the second place, published in 2006 the OECD report “Schooling for Tomorrow. Personalising Education” might be known as one of the first international documents that investigates the phenomenon from the perspective of a government, school, teacher and learner. In addition, the OECD report acknowledges the contribution of DfES mentioned before. It defines PL as “holistic, person-centred approach to learner development” and expresses the following viewpoint [6]:

First, a personalised offer in education depends on really knowing the strengths and weaknesses of individual students <...> Second, it demands that we develop the competence and confidence of each learner through teaching and learning strategies that build on individual needs <...> Third, curriculum choice engages and respects students <...> Fourth, it demands a radical approach to school organisation <...> Fifth, it means the community, local institutions and social services supporting schools to drive forward progress in the classroom.

Another perspective is provided by RAND Corporation that has become a prime mover to popularise the adoption of personalisation. In essence, RAND has been conducting research to examine the effectiveness of personalised learning at school and investigating the development of technology-enhanced personalised learning models in schools and districts. The organisation states [9], [17]:

Personalised learning prioritises a clear understanding of the needs and goals of each individual student and the tailoring of instruction to address those needs and goals.

Personalised learning refers to a collection of instructional practices and school conditions that enable the creation of individual learning experiences and pathways for students.

iNACOL is an organisation focused on research to develop policy for student-centred education ensuring equity and integrating online, blended, and competency-based education. iNACOL looks at personalised learning through the lenses of [18]:

tailoring learning for each student’s strengths, needs and interests including enabling student voice and choice in what, how, when and where they learn – to provide flexibility and supports to ensure mastery of the highest standards possible.

The last community to mention is SRI, which researches innovations and delivers solutions for the world’s challenges. It defines personalised learning as [19]:

Personalised learning refers to instruction in which the objectives, pathways, and pace of learning experiences are optimised for each individual learner’s needs, interests, and ongoing performance.

We assume that PL cannot be regarded as an “instruction” found in some definitions as the original meaning of the word is “a direction,” “an order” (in accordance with Oxford Online Dictionary) and as a verb “instruct” is “tell or order someone to do something” (ibid). Consequently, referring a concept to the instruction (of practices) suggests little or no choice of a student who tends to follow the directions from a teacher; thus, contradicts the methodology of personalised learning.

Having analysed the definitions of PL expressed by different organisations in education, the following constitutional elements are found: (1) student-centred learning that provides a student with choice and voice in the education process, (2) learning that takes into account individual interests, needs and abilities to inform the teaching-learning process, and (3) learning that occurs in flexible learning environment. Yet, each element is discussed in the international policy differently. Consequently, the next part of the article will review the components not through the lenses of policy and definitions of organisations, but through the perspective of learning theories, mainly constructivist and humanistic approaches, laid behind each element.

4 THEORETICAL UNDERPINNINGS OF KEY PL ELEMENTS

4.1 Personalised learning is student-centred learning that provides a student with choice and voice in the education process

J. Kaufman et al define student-centred learning (SCL) as “students’ deep engagement in learning opportunities that are designed to address their goals and interests while at the same time providing appropriate supports and challenge according to their learning needs” [20]. Therefore, SCL share with PL similar features. It is assumed that personalisation is centred on a learner, putting a student into the heart of the education process. In addition, such student-centred practice takes place not only at the classroom, where teaching is adjusted to personal characteristics, but also at the organisation level, that is, developing learner trajectories, providing curriculum choice, creating favourable conditions for learning. It is necessary to add that some researchers are also convinced that personalisation is truly student-centred [18], [21]; thus, PL is found within the SCL paradigm.

O’Neill and McMahon [22] relate the student-centred approach to Carl Rogers, the founder of the humanistic approach. Rogers [23] described this phenomenon in the book “Freedom to Learn” as the shift in power from an expert teacher to a learner, driven by a need for a change in the traditional environment where “students become passive, apathetic and bored.” Although the publication dates back to 80s, the issue is still critical for modern education in which a teacher is frequently regarded as a “sage on the stage.” On the other hand, SCL might be connected with the constructivist view of learning that places emphasis on activity (active learning), discovery (e.g. inquiry-based learning) and independent learning [24]. What is more, Rogers [25] identified the important prerequisite for SCL as the need for: “a leader or person who is perceived as an authority figure in the situation, is sufficiently secure within herself (himself) and in her (his) relationship to others that she (he) experiences an essential trust in the capacity of others to think for themselves, to learn for themselves.” Consequently, a teacher in the SCL paradigm should give control over one’s own learning to a student, thus, share responsibilities. In SCL as well as in PL, student’s ownership is vital for the education process.

Regarding choice and voice, this sub-element of PL is interpreted differently by aforementioned organisations, for example, “student ownership,” “curriculum choice” and “student choice and voice” also it reflects the concept of student agency in education. In the Russian pedagogical tradition it is frequently explained through the term “subjectivity,” which means that a learner is no longer the object of the instructions but is a part of the learning-teaching process. We suppose that the aforementioned notions convey the same meaning: student is a co-constructor of the education process, who has a choice and voice and is able to contribute to his/her own learning experience. In essence, this element is one of the most crucial to distinguish PL from other similar concepts.

From the perspective of learning theories, the concept of choice in learning is stressed by Burnard, who echoes Rogers’ ideas of SCL: “students might not only choose what to study, but how and why that topic might be an interesting one to study” [26]. Following the ideas of humanism in education, the proponents of self-determination theory, Deci and Ryan, believe that student autonomy and agency over their learning might result in increasing motivation [27]. Due to these assumptions, learners should be supported to make choices about their own learning, promoting a sense of ownership and, as a result, take responsibility over their own development.

4.2 Personalised learning is learning that takes into account individual interests, needs and abilities to inform the teaching-learning process

Personalisation respects the uniqueness of each learner. In order to build a meaningful learning experience the data on each student’s interests, abilities, needs, should be gathered and analysed. This information is an essential source for developing individual learning trajectories (personal plans). Each student has a unique learning profile, for this reason it is crucial to have information on how they learn best [28] and what goals, in accordance with individual peculiarities, are set.

Piaget’s constructivist approach to learning pays attention to the personal experience that is a basis for producing knowledge and creating meaning [29]. In relation to Piaget, Jonassen and Grabowski state that individual experience does vary, that is why learning should be adjusted continuously to individual readiness, background knowledge and skill level [28]. Therefore, a teacher’s role is to facilitate learning through a variety of experiences at the learner’s individual level. Regarding goal orientation, goal-setting theory hypothesises that goals direct attention and action; consequently, increase motivation and effort; secondly, reaching the goals can lead to satisfaction and further motivation; and, on the contrary, not

accomplishing the aims will result in frustration and lack of motivation [30]. On that account, setting meaningful goals due to the interests, needs and abilities leads to the motivation in the education process and a feeling of success. However, in order to build the education process on the basis of the data from individual characteristics it is necessary to create a favourable learning environment.

4.3 Personalised learning is learning that occurs in flexible learning environment

Flexible learning environment, firstly, is creating an opportunity to learn inside as well as outside the classroom, going beyond school walls. In other words, a student should have a possibility to gain knowledge and skills at different time and place: when and where to learn. In a traditional schooling this component might be complex to realise in practice; as a result, the technological advances, centred on a learner, may provide a certain degree of flexibility: learning that takes place anywhere and at anytime. Secondly, a favourable environment is aligned with different ways of mastering the content. In connection with the individual characteristics of each student in a class, the material presentation, practice and assessment should take various forms as each learner may benefit from a particular way(s) of working with the learning content. This assumption is underpinned by Howard Gardner's Theory of Multiple Intelligences [31] – people have different types of intelligence and learn better if the process is constructed due to one's characteristic traits.

In accordance with the definitions brought from organisations in education, there are outlined three key elements of PL. However, having conducted literature review, especially the report of OECD [6], we believe that it is necessary to add the fourth component that takes roots in socio-constructivism theory by L. Vygotsky [32].

4.4 Personalised learning is learning that involves student collaboration.

Due to the outlook of OECD [6], preparing learners for a successful participation in socially organised activities has become one of the requirements of the society. Furthermore, teaching-learning process should pay attention to new learning environments, where students work as team members and share their opinions and thoughts. The basic assumption for incorporating this element is that learning opportunities should include a social community which reflects real-world situations; hence students should learn via interaction with peers, testing skills in the community and transforming the knowledge from cultural knowledge to individual knowledge.

Regarding theoretical implication, O'Neill and McMahon propose that SCL has connections with the social constructivist viewpoint of learning [22]; consequently, the theory is applicable to PL. The importance of collaboration in learning is also underpinned by Sharan & Sharan [33] and Cohen [34], who assert that activated by collaboration motivation is a driver of achievement, empowered by the cohesiveness of the group and desire to take care of one another. Similar viewpoint is expressed by Slavin [35], group goals and processes increase motivation to learn and/or motivation to support other's learning. In this connection, collaboration is a powerful tool that may both generate and increase student's motivation. Finally, learning with peers may create the sense of belonging; as a result, fulfil a fundamental human need [36] and give the opportunities to proceed to higher levels of the pyramid (hierarchy) of needs.

In the end, personalised learning brings a number of interrelated concepts together, having its roots particularly in constructivist theories of learning (including Piaget's constructivist approach, Vygotsky's social-constructivist theory) and humanistic approach (Rogers' ideas, Deci and Ryan's implications to self-determination theory).

Identifying the key elements of personalised learning, we regard the PL as:

- *Student-centred learning that provides a student with choice and voice in the education process;*
- *Learning that takes into account individual interests, needs and abilities to inform the teaching-learning process;*
- *Learning that occurs in flexible learning environment;*
- *Learning that involves student collaboration.*

Personalised learning has distinguishing features vital for the education process; therefore, devising the strategy how to put each element, the whole methodology into practice and then scale it is the next step of our investigation.

5 PERSONALISED LEARNING INTEGRATION AND SCALING

Personalised learning is currently widely integrated at schools across the world, for example, in the USA RAND Corporation implements the methodology in K-12, Summit Public Schools, Lindsay Unified School District has become one of the pioneers to make learning personalised. In the Russian Federation PL is spread with the help of the digital platform of personalised model of learning “SberClass” that also introduces to schools the concept of personalisation enhanced with the technological advances. The process of PL integration and scaling does not seem seamless and, due to the literature review, is likely to face difficulties when introduced at a school.

5.1 Two strategies on scaling PL: digital and cultural

From our perspective, scaling the methodology might be viewed from two angles: (1) scaling by digit and (2) scaling by people. Regarding the first approach, information technologies (IT), including digital platforms and learning management systems, are creating the potential for customised and truly personalised content for each student. Today there are many proponents for exploiting digit for PL, for example, Boninger et al are convinced that technological advances are “the logical modern means of providing personalised learning” [37], and Abbott et al view IT as a means to “bring personalised learning to scale” [38]. In practice digital resources including online give the opportunity to make the learning flexible, in particular, blended learning will make the process happen anywhere and anytime. Finally, the advances in technology free up teachers to provide support for each student in the class.

Scaling by people refers to PL implementation at individual and organisational levels. Individuals are mainly teaching staff and organisational level is related to administrators who are the drivers of a change in the school environment. In this connection, when adopting new concepts, teachers, school leaders and often learners themselves have to go on a journey of culture change [39]. By cultural change we mean seeding new mindsets, norms, behaviours that are necessary to adapt new learning approaches. We hypothesise that such methodology as personalisation, first of all, requires clear understanding at theoretical and practical levels, secondly, needs relevant to PL teacher and leader beliefs in learning (will be discussed further) and favourable environment, that is organisational culture, for integration and further scaling. Referring to IT, Beresford claims “we must recognise the limitations of scale by platform and instead reiterate the necessity of scale by people” [39]. Furthermore, Robinson and Sebba conducted the research on the use of technology to personalise learning and have found that the implementation of IT tools continues to find gaps in the ways in which it is used to personalise learning [40]. Consequently, in order to spread PL a school (organisation) should start with teaching staff and the environment to adapt for methodology rather than with a digit. However, it does not mean that the potential of IT is underestimated. Digital technology is a powerful tool that aids PL that firstly should be tackled from people and culture angle.

5.2 Integrating personalised learning through the lens of innovation

Another significant aspect is how to interpret PL while implementing it in the education process. In accordance with the aforementioned elements of PL, personalisation is student-centred learning which has considerable potential for education system, yet might be challenging to implement at schools [20], [36]. Consequently, PL requires introducing changes into the learning design at individual and organisational levels in order to adopt a new, non-traditional, methodology. Kaufman et al [20] regards SCL as “innovative instructional reforms,” and as well as Beresford connects personalisation with innovation [39]. OECD defines innovation as “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations” [41]. In this vein, we assume that personalisation might be viewed as an improved concept of the education system that is attempted to be implemented in schooling, therefore, regarded as *innovation*.

Secondly, the question that should be addressed is what innovation is PL? In order to answer it, the aforementioned roots of personalisation should be echoed. One of PL theoretical foundations is humanistic psychology, a humanistic approach to education; therefore, PL is centred on a student, a person and a human to realise and develop the potential and uniqueness of each and every learner, reaching self-actualisation of a personality. Consequently, the human factor is of paramount significance. Furthermore, the KnowledgeWorks foundation [42] and the GettingSmart organisation [43] relate PL to human-centred learning and human-centred design, the concepts of which are similar to SCL. Ingram from the perspective of management in education introduces the term “human-centric innovation” that refers to “designing innovations to serve human requirements first, and the burgeoning

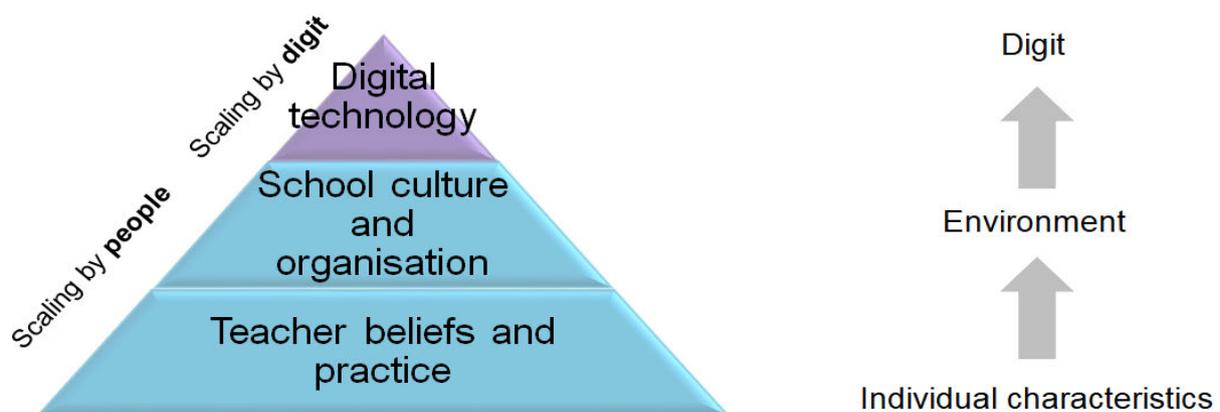
demand for transparency and accountability in pursuit of positive, sustainable economic development” [44]. The mentioned definition is applicable to personalised learning that puts a human in the centre, gives a choice in learning and shares responsibilities of parties. In this regard, personalised learning might be viewed as a *human-centric innovation* in the process of integration and scaling.

5.3 Promising model for PL scaling

Integration of personalised learning into teaching involves particular aspects to take into account. The elements are interconnected rather than isolated from each other. In result, the PL integration as an innovation includes an ecosystem approach to its scaling. Adner states that the innovation strategy should be matched according to the innovation ecosystem and, from a human-centric perspective, regards innovation ecosystems as networks that convert products or services into ‘coherent’ customer-centric solutions [45]. OECD views the following components of the ecosystem: individual, organisation, government and society, whereas Ingram investigates human-centric innovation ecosystems through individual and environment levels [44]. However, in Ingram’s interpretations the environmental levels include three other (sub) elements: micro-environment – developing skills (trust, communication, organisational and institutional culture to innovation), meso-environment – institutional (internal and external organisation environment, resources, technology and infrastructure) and macro-environment – socio-economic (general development considering the factors, actors of the ecosystem and funding to support it strategically). In alignment to OECD, micro- and meso-environment are connected with the organisation, whereas macro-environment refers to government and society. What is more, Ingram argues that innovation is highly dependent on individuals that are able to generate knowledge and skills applicable to society and organisations at large. Therefore, human factors are stated to be in the core of the innovation ecosystem, in close relation with environment and technological capabilities [44].

In accordance with the strategy of PL scaling (outlined in 5.1) and aforementioned perspectives on ecosystem elements, the model for PL considers scaling by people as a starting point of PL implementation: (a) teacher beliefs and practice (individual level), and (b) school culture and organisation (environment level). The further step is scaling by digit – digital technology integration for revealing the potential of a digit, thus, supporting personalised learning methodology. The discussed model is presented in Table 1.

Table 1. Model for personalised learning scaling



Teacher beliefs and practice. Lepik and Piper suggest that teacher beliefs are the conceptions, views, personal ideologies and values that shape the teaching practice [46], hence, they affect the decision that a teacher makes in the learning process. Since personalised learning originates in constructivism which suggests a more student-centred approach to teaching [47], educator’s beliefs can affect their choice of constructivist or transmissive teaching strategies. Hereafter, central is that teachers are not thought to be direct transmitters of knowledge, but rather facilitators of an active, self-directed construction of knowledge. In this connection, PL implementation favours teaching style that is related to constructivism rather than traditionalism and transmission. Another teacher belief necessary for PL might be found in Pupil control ideology by Willow et al [48]. It is conceptualised along a continuum from custodial at one extreme to humanism at the other. Teachers who adopt humanistic orientation tend to believe that students can learn to be responsible and self-regulating individuals. There exist other beliefs that might correlate with PL implementation (e.g. self-efficacy); however, we are not aimed at outlining all of them. The key message of this model element is teacher understanding of the methodology. We

assume that if a teacher does not have SCL and PL related beliefs, it will be quite difficult to integrate and scale personalisation. In this case, a school, administrators or other colleagues should introduce the particular concept to teachers, its theoretical foundations and practical implications and create a favourable environment.

School culture and organisation. This element of the PL model shapes the context and ground for methodology integration. Kools et al [49] outline the key elements for a learning organisation that create a favourable environment: shared vision on the learning of students; continuous learning opportunities for all staff; team learning and collaboration among all staff; and culture of inquiry, innovation and exploration. What is more, Bryk et al [47] argue that the working environment for teachers at school is strongly connected with school leadership and school climate. Therefore, shared vision on learning should be developed by administrators and school staff, providing an institutional perspective on innovation. In addition, collaboration among teachers, professional learning communities are crucial for PL integration as they are about “the will and the skills for change” [50]. Finally, school culture and organisation is significant for changing mindsets of individual teachers who have different from student-centred and personalised learning beliefs. In the other way, if a teacher expresses constructivist and humanistic views on education, but school organisation does not, it seems difficult to go beyond the boundaries of a classroom and scale PL at school.

Digital technology. Having fostered PL- and SCL-oriented teacher beliefs and created a favourable environment, the organisation may spread personalisation with the potential of a digital technology. It should be noted that not all IT will be appropriate for methodology realisation, yet only those instruments and services which would respond to PL features. They are aimed at a student at the centre of the learning process and giving an individual an opportunity to choose e.g. various forms of acquiring new content. Furthermore, digit may collect and analyse data on student’s learning to inform further steps and should create a flexible learning environment so that a student have an access to learning material anytime and anywhere. In the end, technology should involve collaboration in education. Digital technology is viewed as a tool that underpins teaching practice, it is especially significant at large class where a teacher may not have enough time to realise the aforementioned elements (for example, collecting data on student’s needs, interests, abilities and regularly update it is time-consuming but can be delegated to a digit). Yet, in order to fully reveal the potential of a digit for personalisation, the context of PL implementation is to be adapted at individual and environment levels.

4 CONCLUSIONS

Personalised learning is a promising concept for education system which has found its place in the education policy of a number of countries. PL is also extensively discussed among international organisations. However, the methodology of personalisation seems to be not fully clear for different stakeholders. The literature review has helped to conceptualise the methodology, identifying its core elements and the learning theory roots; consequently, making a step towards reducing ambiguities. Another implication for PL is analysing the process of methodology integration into schooling. The article has made an attempt to introduce the model for PL implementation and scaling in teaching-learning process that might have further development in the future.

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