DIGITAL REDESIGN IN TEACHER TRAINING – CONNECTED LEARNING

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ABSTRACT

The past few decades of educational thinking have maintained an unchallenged drive towards more effective forms of student learning: collaborative, experimental, inquiry-based, problem-based approaches that cite theories of constructionism and situated learning. We must contribute to the policy debates about learning technologies, because outside of the educational field the importance of technology and its capabilities are overplayed. The digitally native students may be able to use the technologies, but that does not mean they can learn from them. They need teachers. Education is about guiding the learning.

Teacher education programs primarily focus on preparing teachers to be successful in their own classroom. In the era of Connected Learning, however, it is critical for the teachers to strive to support students' interest-driven and academically oriented learning across different learning spaces, blurring the boundaries among these spaces.

INTRODUCTION

Information and communication technologies can support and enhance learning. With access to computers and the internet, students can search for information and acquire new knowledge beyond what is available through teachers and textbooks. Moreover, ICT provides students with new ways to practice their skills; prepare a multimedia presentation; program computers; talk and listen to native speakers when learning a second language; whether alone or as part of a remotely connected team. ICT devices bring together traditionally separated education (books, writing, audio recordings, video recordings, databases), thus approaching the range of time and places where learning can take place (*Livingstone, 2011*).

Digital competence has become one of the basic skills in Teacher Education. However, both teacher educators and teachers lack sufficient digital competence to fulfil these ambitious policy goals, and therefore this article suggests how a model of digital competence can bridge the gaps between the intentions in the policy documents and the teachers' / teacher trainers' practice.

More attention must be given to teaching practices, as well as to learning environments that lead to the development of relevant competencies. A focus on innovative pedagogies is needed as most of the competencies stressed cannot be developed through traditional pedagogies and learning environments. This draws our attention also to the question of teacher training.

At the same time, this article attempts to elaborate on our perception of the concept of digital competence in an educational discourse, and how one can define digital competence considering a Hungarian educational perspective. The research question of this article is: how has digital technology been used to improve or reshape interactions between teacher trainers, students, and education authorities? How can digital competence be defined and what are the basics of digital competence in teacher education and in schools, with regard to teacher training in Hungary?

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DIGITAL REDESIGN

The professional competences of teachers also includes digital competence, and in the next section, we will examine how information technology and educational methodology have gradually been implemented in teacher training and policy documents. This provides the backdrop for understanding. In Hungary, the concept of competence has occupied a strong position in educational policy documents since the late 1980s. Both in higher education and in schools, we can see that this concept has become more central than the concept of knowledge in policy documents. Other sectors of the economy that were shielded from international competition have been transformed by the rise of online services. And whatever their desired jobs are, when modern students leave school or university, they will most likely search and apply for jobs online. Therefore, a high level of familiarity with digital competencies among the workforce can be a competitive advantage for training. More specifically, education may prepare young people for working in the sectors where new jobs are expected to be created in the coming years. (OECD, 2013a).

The objectives of the instructional unit are set, and teachers must guide students to those objectives with creative, research-based strategies. Good teachers constantly reflect on their practice and use formative assessment to inform instruction (Schön, 1987). Through this, they use their creative skills and their instructional tool-belt to try and innovate in the classroom, all with the focus on engagement and student achievement. Teachers use their knowledge of best practices and of their students to create instructional environments and assessments that meet their needs. Great teachers allow for voice and choice in performance assessments and projects, as well as games and technology. Teachers view the classroom, whether virtual or physical, as a place for possibilities to engage all students.

TEACHER TRAINING GOING DIGITAL

The use of advanced digital technologies can fundamentally alter the way teacher training curricula are created, implemented and evaluated. This has already been happening in the education sector as well as in other sectors in many countries. This article is about the use of the most advanced digital technologies to improve teacher training and governance in education. It is striking that there is much more literature on the use of advanced digital technologies in education. Moreover, it refers surprisingly rarely to the use of these technologies for the improvement of teacher educators' knowledge and educational effectiveness, or the student's workload preparation. Most of the literature is about using the new digital technologies to make learning or classroom work more effective. Indeed, to harness the potential of ICT, teachers and industry must create and develop new educational resources (Frost and Durant, 2013). They may find encouragement and support to do so in changes in related education policies, including curricula, student- and teacher-assessment frameworks, initial teacher training and professional development activities for teachers, as well as in school practices that support collaboration and encourage teachers to take risks and share lessons learned (Harris, 2005; Resnick *et al*., 2010; Avvisati *et al*., 2013).

Some of the major problems with current experiments in teacher education are connected to the goal of designing educational environments so that the new types of learning can be introduced successfully. It is essential in the instructor's reflection of the training process to be able to plan and optimize the programme and the learning environment (Schön, 1995). Primary and kindergarten student teachers were generally provided with little support to be able to think about competence and to be able to set learning goals during their high school studies. Problem-based assignments and feedback are used in training to help them to take on responsibilities, so they can develop and form self-regulated learning processes (Savery,

2006). Both teachers and students can benefit from relevant feedback from the learning processes that emphasises the strengths and achievements as well as areas of weaknesses. Systematic constructive feedback can be a tool to increase the success of the teaching-learning process (Duffy, 2013). To design support that creates the educational environment necessary for social changes, teacher training institutions must be able to provide real support along clear guidelines, with conviction to teachers, parents, and communities involved in the development process.

The absence of, or difficulty in accessing, devices and connecting them to the internet is certainly a barrier for integrating digital competencies in teaching and learning (Tondeur *et al.,* 2012).

Teachers arrange learning environments to be effective, and these learning opportunities must be recognised by the student. This is particularly important if students are to go beyond habituation learning and try to develop skills that they can confidently apply in new contexts as well. The instructional quality is difficult to measure, as existing evidence suggests that there is no one best way of teaching. According to the literature on educational effectiveness, several classroom variables appear to be related to better instructional quality and learning outcomes (OECD, 2013c).

There is a long debate about the inability of teacher training programs to use digital technology in their professional practice.

This could provide teachers with new approaches to knowledge and learning, but presumes that systematic planning, tutoring pupils, differentiation models and school-home cooperation will all contribute towards capturing pupils' aptitudes and needs within the framework of a community of practice. For the first time in history, it is possible to evaluate, utilise and challenge the digital competence of students as an entry point to the new learning strategies in Hungarian schools. This implies a significant pedagogical potential, but this potential cannot be fulfilled without a digitally competent teacher who knows how to utilise digital competencies in educational settings. There is a need to identify the digitally competent teachers who can maintain a clear goal in their pedagogical work in these kinds of learning environments and who can realise that these competence objectives can be reached by means of very different learning strategies among students. There has to be symbiosis between the elevated status of the digital competencies in the curriculum, teachers' digital competence and a set of digital learning resources. At the same time, this shows the complexity of the digital competence that every teacher must deal with in our digitised schools, and it goes without saying that teachers need time to achieve this digital competence.

As a summary of this model of digital competence, one can see how important it is that educational learning outcomes and digital competence 'merge together' in order for the teachers to exploit new trends in the digitised schools of today, considering new teacher training, curricula, and policy documents. Teachers increasingly integrate digital competencies into their lessons over time. This consists of a process of adoption, adaptation, appropriation, and innovation. For their students, teachers develop an explicit part of the knowing and awareness, tacit knowledge, acquired throughout this process. In the first part of this process, teachers are getting comfortable with basic ICT skills. In this aspect, the teachers can develop both pedagogical and didactic innovations by using ICT in teaching in a creative approach, which also implies their ability to redesign and develop digital competencies.

THE NATIONAL DIGITAL EDUCATION STRATEGY

Hungary has adopted a national Digital Education Strategy. The focus of this strategy is the development of digital skills in the varied subsystems of the education system. This has been developed with a key input from the sectoral association of IT companies, and it was formally adopted by the government in 2016. The strategy builds on several previous developments. In fact, since the beginning of the last decade, several large data collection systems, databases, and data management systems have been created. Several key developments have supported the creation and the development of these systems. The Digital Pedagogy Methodology Centre (DPMK) in Budapest has set out to establish a baseline framework to support the new digital era in teacher training programmes.

The Working Groups are cross-professional networks operated by the DPMK to support the implementation of community beliefs and to provide an input to the development of new policies. They are composed of government delegates from member states and of relevant stakeholder group representatives. The mandate of the DPMK on schools covers teacher related areas as well, including teacher education which makes its activity highly relevant for the educational community. The new 21st-century infrastructure enhanced information communication, education-related development projects supported cost-effectiveness, and improvement of working conditions promoted efficiency at work.

The education sector recognised that without an organisational development that is based on the concept of adaptive and effective learning, some of the work that they invested in the process could be just tilting at windmills. Caring for capable students, being able to develop an ever better and more supportive environment is inconceivable without the involvement of digital competencies and the students (Hennessy, 2013).

The real question is not whether we need complex thinking about digital development but what the most optimal solutions would be, taking the given circumstances into consideration. How to create an institutional environment that is capable of effectively supporting common thinking amidst differing cultural and professional specialized traditions?

Several features of ICT support teachers in giving adaptive feedback to students and, more generally, individualising instruction. They support student-oriented and formative assessment behaviours in teachers' classroom practice. They also facilitate collaborative projects and enable teachers to extend the spatial and temporal boundaries of their lessons, thus creating the potential for cognitively challenging and engaging activities. In contrast, teachers cannot expect computers to be much help in managing the classroom or in certain structuring practices.

Understanding school education as a learning system directly responds to the challenges of complexity and improvement as it is based on collaboration and communication between horizontal and vertical connections. Horizontal connections may be between regions, between schools, or between a school and the wider community. They may be based on formal or more informal arrangements. Vertical connections are often hierarchical, such as between a school and the inspectorate. There are degrees of authority in these relationships, the level of which can influence how the work is initiated and carried out.

CONNECTED LEARNING IN TEACHER TRAINING

Discussion on digital competencies focuses too much on the individual teacher and not enough on collaboration. We should pay more attention to assessing teachers not only as individuals but also as a team. If we focus too much on the individual, we support the model of competing individuals instead of the team model of teaching. Familiarity with learning

theories, diverse learning strategies, and cultural interactions should be an essential part of high-quality educational work. By increasingly participating in the restructuring and revival of cultures, and being aware of learning environments outside of our own, we gain a more complex picture of the world around us (Wiley, 2000).

A collaborative decision-making process means engaging the trust of, and supporting a dialogue between, a range of stakeholders at all levels of the system, and fostering a sense of ownership, responsibility, and accountability. Schools should be the learning organisations that support effective digital competence centres and become contexts for a process of inquiry and continuous development at a local level (Horn, 2010).

The discourse about the role of educational institutions became increasingly intensive in the early nineties. Barr and Tagg (1995) analyse the practice of higher education, which they named the “instruction paradigm”. In this practice, the teacher is in the middle of the process and shares their knowledge in the form of fifty-minute lectures. The responsibility for learning the given material lies with the learner, but their efficiency is secondary; the key point is the teacher’s instructional effectiveness. The system is constructed according to autonomous scientific disciplines in this system; “knowledge bases” appear separate from each other (the organizational system of the University of Humboldt is an example).

The planning of instruction, the organization and control of its process is much simpler than influencing the complex process of learning. The teacher's task is much more complicated in this case, because they must have a concept about what pre-existing knowledge the learners possess; what is it that they can build upon; how learning happens in the individual learner; what the learner can use that knowledge for; and having the given knowledge in their possession, what will they be able to implement.

In their article, O’Neil and McMahon (2005) refer to Kember (1997) and describe how they see this change mainly in that learning comes about in the learner, the teacher’s role is that of facilitation and promotion of change rather than sharing knowledge. They quote Burnard (1999) in further parts of their article, who suggested that research was required into how learners not only know what they want to learn but also how and why they want to learn it. This concept underlines the choice of options for learners during the process of learning. Education and continuous learning have related to curricular theory for a long time.

SUMMARY AND IMPLICATIONS

Organisations are under constant pressure to innovate, and this does not always allow enough time for users to adequately join and stay within the development process. To avoid this, organisations should themselves identify problems and design adaptive solutions. Developments gave rise to programmes created by a professional community which conformed to the educational competence models and met training requirements. Enhancing and enriching methodological culture and organisational development training aimed at promoting awareness were based on the principle of coexistence and acceptance. The workshops were aimed at identifying service components’ areas of cooperation, while in other areas (for example, in liaising with workplaces) the goal was to develop methods that could be directly implemented in practice. The organisational development efforts have resulted in the renewal of educational work and have deepened work in certain fields of education.

This new way of curriculum redesign with close cooperation with students seeks to address the latter challenge, and not only support students with basic learning and competency in their given field but provide guidance in forming individualized goals that will facilitate working more effectively and being motivated at the university.

One of the programme's primary purposes is to develop and test methods for using the learning environment in an educated and conscious way.

Due to changes in the functions expected from the educational system, we are faced with the learner- or learning-centred curricular paradigm more and more frequently. There is, however, no consensus about the interpretation of this concept. Some identify it with active learning, while some strive towards a much more generic definition: it not only includes active learning, but also the possibility of choice in learning and a certain power shift in the relationship of teachers and learners. It all remains on the level of theory in most cases; we can see just rare examples of practical applications.

While there is criticism, the most common opinion is that by putting the learner into focus, we can come closer to making the learner able to decide what kind of knowledge they need, and in which form they want to acquire that knowledge. There is less waste of human and educational resources that were previously used to teach students things that they either already knew or were not at all interested in. However, it should also be considered that this is not an easy process and we can only hope that we can, in this process of iteration, provide evidence and a theoretical background for the organization of education that is even more learner-centered (Yoon et al, 2005; Romiszowszky, 2016).

We use many terms to describe the everyday work of teachers. From a curriculum designer to a facilitator of classroom work, there are many roles that teachers take on in the class. There are many highly standardized curricula and guides, and teachers are told exactly how to teach, rather than being empowered to differentiate instruction and create engaging learning environments to meet the needs of their students. Many teachers have been pushed into a role where they are not being utilized for their expertise and skills. Teachers need to be empowered with a variety of instructional design skills to meet the needs of all students, and to become more of a learning designer. Teaching is becoming a design profession now, or even a design science. "Teaching is now a design science. Like other design professionals - architects, engineers, programmers - teachers must work out creative and evidence-based ways of improving what they do" (Laurillard, 2016).

Teachers need to be recognised for their knowledge and ability to create engaging and motivating learning environments. I believe there are no simple terms that encapsulate and redesign the teachers' work.

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