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Changing the culture of curriculum development in teacher education

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Abstract

This paper focuses on the changing of the culture of curriculum development in teacher education and analyses the impact of the rapidly changing world on the teaching profession. The key objective of this paper is to introduce the main trends and processes on curriculum development in teacher education under the umbrella of some paradigmatic changes and challenges of 21st century skills, such as creativity and innovation, critical thinking and problem-solving, communication, and collaboration. On the basis of this analysis, the article introduces the main trends and processes on curriculum development, especially emphasizing the main phenomena behind the changes. Finally, the paper draws conclusions raising some dilemmas and scenarios.

Keywords:	*Schlüsselwörter:*
Teaching Profession	Profession Lehrer/in
VUCA-World	VUCA-World
Learner- and Learning-Centred Paradigm	Lerner- und lernzentriertes Paradigma

1 Introduction

"Teaching is a profession that lies at the heart of both the learning of children and young people and their social, cultural and economic development. It is crucial to transmitting and implanting social values, such as democracy equality, tolerance cultural understanding, and respect for each person's fundamental freedoms." ("Building the Future Through Quality Education." Policy Paper on Education adopted unanimously at the 6th Education International World Congress 2011.)

2 Contextual background of changing on teaching profession

The above citation is published in the foreword of a relevant book (Future of Teaching Profession) on teaching profession. MacBeath (2012) pointed out the importance, complexity and high social added value of teaching profession. Furthermore, he defined 12 formal criteria of the teaching profession, such as theoretical knowledge and concomitant skills, high quality pre-service academic and professional preparation, legal recognition and professional closure, induction, professional association, work autonomy, code of professional conduct or ethics, self-regulation, public service and altruism, authority and legitimacy, inaccessible and indeterminacy body of knowledge, and mobility (MacBeath, 2012). From a practical point of view, continuous professional development, reflective thinking, creativity and autonomy are the key pillars of teaching profession. There is a strong connection between defining criteria of the teaching profession and the quality of teaching. The quality of teacher education (pre-service or in-service training) is widely seen as a key factor of teacher professionalism and continuous teacher development. (Darling-Hammond, Hyler and Gardner, 2017; Schleicher, 2011) Teacher education is has been widely and frequently discussed among experts, decision makers and practitioners over the past 25 years with successful education argued to be largely dependent on teachers' competence standards.

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It is thus not surprising, that this period has redefined the teaching profession using a comprehensive approach because of the growing complexity of the professional standards. Joshi and Latha (2014) defined 10 trends in teacher education:

1. Teaching and learning methodology
2. ICT based teaching
3. Use of smart boards and e-podiums in class
4. Use of Mobile Wireless Technologies in Higher Education
5. Language and literacy development
6. Making interactive, task/activity based lessons
7. Curriculum development
8. Maintaining a balance between theory and practice
9. Evaluation and assessment process
10. Teaching according to age (children, young learners, adult) (Joshi & Latha, 2014)

No doubt, curriculum theory, design, development, evaluation and implementation have been the significant elements of teacher education for centuries. Parallel to a growing complexity, these standards are changing dramatically in the 21st century because of the fast changing world. At the macro level, technological, demographic, cultural, economic and social changes have an enormous impact on our knowledge-based society, information society, as well as knowledge economy. An economy-based, market-oriented acronym (VUCA) summarizes these changes and consists of four characteristics:

'Volatility (V) – Volatility refers to the speed of change in an industry, market or in the world in general. It is associated with fluctuations in demand, turbulence and short time to markets and it is well-documented in the literature on industry dynamism. The more volatile the world is, the more and faster things change.

Uncertainty (U) – Uncertainty refers to the extent to which we can confidently predict the future. Part of this uncertainty is perceived and associated with people's inability to understand what is going on. However, uncertainty is also a more objective characteristic of an environment. Truly uncertain environments are those that don't allow any prediction, not even on a statistical basis. The more uncertain the world is, the harder it is to predict.

Complexity (C) – Complexity refers to the number of factors that we need to take into account, their variety and the relationships between them. The more factors, the greater their variety and the more they are interconnected, the more complex an environment is. Under high complexity, it is impossible to fully analyse the environment and come to rational conclusions. The more complex the world is, the harder it is to analyse.

Ambiguity (A) – Ambiguity refers to a lack of clarity about how to interpret something. A situation is ambiguous, for example, when information is incomplete, contradicting or too inaccurate to draw clear conclusions. More generally it refers to fuzziness and vagueness in ideas and terminology. The more ambiguous the world is, the harder it is to interpret.' (Kraaijenbrink, 2018)

At the micro level, it is highly relevant, especially under the umbrella of VUCA, to rethink the objectives, content and methodologies of teacher education for the 21st century. However, growing value of education, especially applied and tacit knowledge, is based on social dimension as well. In fact, higher education has been transformed in the last decade (Lundt & Arndt, 2019). This transformation is based on transformational learning and creative development (Smith & Vass, 2017). But a fast-changing world, the new context of transformation, as well as growing needs of creativity and innovation are just one side of the coin. The other side of the coin is a growing competition in the economic and social sectors. These competitive areas affect global higher education. In fact, globalization and internationalization are two important dimensions which have determined the context of higher education, and in a wider sense our economy and society. Thus, higher education needs to respond to the impact of global competition and a rapidly changing world. As quality of education is mainly based on teaching professionalism, teachers are the drivers and key factors of this above-mentioned process, which draws attention to the challenges of teacher education at the level of international and national education policy, research and professional discussions. From the viewpoint of this paper, it is significant that globalization and internationalization have had an enormous impact on the curriculum in teacher education 'to minor changes in content to fundamental redesign of objectives, teaching methods and assessment'. (Maringe, 2012, p. 31)

However, this paper has not focused on a comparative analysis of contemporary changes of different curricula in teacher education or on introducing historical milestones of changing the role of curriculum development in different teacher training programs. The main focus of this article is to change the culture of curriculum development in teacher education. The key objective of this paper is to introduce the main trends and processes of curriculum development in teacher education under the umbrella of some paradigmatic changes and

challenges of 21st century skills, for instance creativity and innovation, critical thinking and problem solving, communication, collaboration. (Jacobs, 2010; Fadel, Bialik and Trilling, 2015)

3 Main trends and processes on curriculum development

Turning to the main trends and processes of curriculum development, the original meaning of curriculum has changed from the 'plan for teaching' to the 'plan for learning'. From the paradigmatic perspective of curriculum theory, the emphasis has transferred from the teacher-and teaching-centred to the learner- and learning-centred paradigm. (Cullen–Harris–Hill 2012; Easton 2002; Hipkins, Bolstad, Boyd and McDowall 2014; McCombs–Whisler 1997; Pinar–Irwin 2004; Pinar 2012; Schiro 2013). In the focus of a learner- and learning-centered paradigm, instead of selection and structuralization of content or subject-matter knowledge, competences are coming to the fore. To sum up, a learner- and learning-centered curriculum is one of the most important drivers in changing the culture of curriculum development in teacher education. The main characteristics of a learner-centered approach for curriculum development is focusing on competences for lifelong learning, especially learning to learn and problem solving via individual, differentiated learning paths. In this context, another recent trend in curriculum development is a competency-based curriculum approach, where the focus is on planning transversal competences (critical, creative and innovative thinking, communication, collaboration, global citizenship, physical and psychological health) as horizontal points. There are some significant trends in changing the culture of curriculum development in teacher education. In fact, curriculum theory is a relevant part of teacher education programs and one of the basic competences on teaching profession. Curriculum development is based on three types of design: subject-centered, learner-centered and problem-centered designs. A traditional approach of teacher education is related to a subject-centered design where teacher training focuses on educating subject specialists. Basically, subject-centered designs are 'very popular and widely used'. Ornstein and Hunkins stated: 'Knowledge and content are well accepted as integral parts of the curriculum' (Ornstein and Hunkins, 2018:188). Subject-centered design has focused on required knowledge in different subject areas. In this process the most important teachers' competence is organizing content under the umbrella of subject-based knowledge from teacher education. Content and knowledge refer to a quantitative dimensions. In the rapidly changing world, the main problem is how a subject-centered curriculum design can handle the challenges brought about by a fast growing amount of information. According to the curricular experts, the other problems are: fragmented curricular content without context, as well as neglecting students' interests, needs and experiences. (Ornstein and Hunkins, 2018) A more progressive type, a learner-centered curriculum design has focused on learners and learning. Curricula are based on children' interests, experience and activities. 'Learning by doing' is a central part of this curriculum design. In this process, the most important teachers' competence is to know a 'whole-child approach', especially from cultural, social, psychological and pedagogical aspects. These teaching competence standards have enormous potential to change traditional views of teacher education strengthening psychological and pedagogical elements in the training. According to my experience, the main problem on learner-centered curriculum design is content and knowledge. In fact, knowledge is a structural question emphasizing an integrated curriculum, especially a curriculum mapping and webbing in the process of curriculum development. (Drake, 1993, 2007; Jacobs, 1989) Knowledge structuralization is determined in the problem-centered designs focusing on 'real life problems of individuals and society'. (Ornstein and Hunkins, 2018:199) Problem-centered designs have an integrated approach as well as balancing learners' and content development. The central focus of this type is planning different problems, such as real-life situations, individual and social needs, or contemporary social problems. According to my experience, the main problem of this type is inconsistency with the subject-centered exam requirements. Problem-centered designs have prioritized progressive teaching methodology as basic competence of teacher education, for instance project- and problem-based learning, project method and cooperative learning.

Basically, these three types of curriculum designs have different impacts on teacher education. When referring back to the title of this paper: Changing the culture of curriculum development in teacher education, we need to introduce the phenomena of traditional culture of curriculum development. Firstly, traditional culture of curriculum development has an isolated planning process, which is based on individual work. In teacher education, there are a lot of individual tasks involved, planning different curricula on the base of curriculum theory. On the other hand, curriculum development has a rigid algorithm: defining aims and objectives, planning content, teaching methods (in good case students' tasks) and tools, finally turning to summative assessments. In this context, a curriculum is an input-or aim-based approach, as we see from the subject-centered designs, content and knowledge are the central parts of the curriculum development. On the

other hand the new culture of curriculum development has an output-approach, with three characteristics: planning learning outcomes, focusing on competences and students' acitivites. Kennedy, Hylan and Ryan defined learning outcomes as:

'Learning outcomes are statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of a process of learning.' (Kennedy, Hylan and Ryan, 2007:5)

Outcomes are usually expressed knowledge, skills or attitudes, which structures are related to competences. In order to understand the essence of planning on learning outcomes, we need to cite Bingham's defintion:

'Learning outcomes are an explicit description of what a learner should know, understand and be able to do as a result of learning.' ((Kennedy, Hylan and Ryan, 2007:4)

In this interpretation, learning outcomes are based on original and revised Bloom's taxonomies, especially regarding the cognitive domains (Bloom, 1956; Anderson and Krathwohl, 2001). The cognitive domain of original Bloom's taxonomy has six levels: knowledge, comprehension, application, analysis, synthesis and evaluation. Writing and planning learning outcomes at different levels of cognitive domains using varieties of verbs is one of the significant parts of teacher education in the 21st century. For instance, the level of knowledge contains recall, identify, describe, define etc. The level of comprehension is based on change, associate, select, differentiate, recognize, review etc. The level of application comprises of construct, apply, select, relate etc. On the level of analysis, potential verbs are: analyse, compare, debate etc. The level of synthesis consists of recognise, summarise, organise etc. Finally, at the level of evaluation, the potential verbs are: assess, evaluate, summarise. Kennedy, Hylan and Ryan defined some verbs in the affective and psychomotor domains, but in practice the cognitive domain focuses on attention.

Without a doubt, there is strong coherency between learning outcomes and competences. In order to strengthen this coherency, first and foremost, it is necessary to make a list of basic competences in order to formulate learning outcomes on different domain-specific and generic areas, such as communication, creativity, complex problem solving, critical thinking, cooperation, decision making, digital competence, self-understanding and self-development. A second step is to create a competency matrix in order to develop this coherency deliberately. For instance, on the creativity competency area there are some sub-fields: divergent thinking, originality, productive, expressive and inventive creativity, fluency, problem sensitiveness, flexibility, elaboration, and synthesis. This matrix can promote formulating learning outcomes at different competency areas and fields. One of the main advantages of creating strong coherency between learning outcomes and competences is turning from a knowledge- and content-based curriculum development to a competency-based curriculum, where the different competency areas are in the central focus. This is the holistic view of curriculum development with growing needs to conceptualize the required consistency among the different competency and content areas. A holistic view of curriculum promotes on the one hand, moving forward from a knowledge level of Bloom's taxonomy to comprehension, application, analysis, synthesis and evaluation. On the other hand, a holistic view of curriculum transfers a whole-child approach and development as a horizontal point on the curriculum moving from a teacher- and teaching-centered to a learner- and learning-centered curriculum.

The next step changing the culture of curriculum development in teacher education is focusing on students' activities and teaching methodology. If you use a variety of verbs (see above) formulating learning outcomes with different competency areas and matrix fields, you create opportunities for creative student activities and a progressive teaching methodology. Progressive teaching methodology is based on project method, cooperative learning, problem-based learning, debating, questioning, integrating technology, role playing, and inquiry-based learning. In fact, students are actively participating in the learning and teaching process. It is worth emphasizing, that the focus of curriculum development is on students' activities. Under the umbrella of the basic principle of 'learning by doing', conceptualizing 'doing' in the curriculum is professional work. These changes are related to problem-centered designs.

We now come to the most critical part of changing the culture of curriculum development in teacher education, namely assessment. Traditionally a part of assessment has focused on a summative function. In the first approach, turning to the outcome-based curriculum development formulating learning outcomes, it strengthens summative assessment. In the second approach, learner- and learning-centered curriculum requires diagnostic and formative assessment as well. Following the students' progression and assessment for learning puts an emphasis on changing assessment functions. Accordingly, rubrics, portfolios and personalized learning diaries are significant elements of these curricula.

However, the biggest change is a collaborative curriculum development, where teachers work and plan together. This networking has some advantages: Teachers…

1. know each others' education philosophy.
2. strengthen coherency and integration among different subject areas.

3. know each others' prior knowledge on learning and teaching.
4. manage time and space, avoiding redundancy.

The next level of collaborative curriculum development is planning together with the students sharing aims and expectations, knowing students' needs and experience. In teacher education, collaborative curriculum development is not a simulation, but real-life problem solving working with teachers in practice. Effective collaboration of curriculum development has an enormous impact on efficient learning and teaching processes and in creating a professional learning community. Hargreaves and O'Connor stated:

'Collaborative professionalism is about how people collaborate more professionally and also how they work as a profession in a more collaborative way.' (Hargreaves and O'Connor, 2018:4)

The domain of collaborative professionalism is curriculum development. The aim of collaborative planning is 'creating stronger and better professional practice together'. In this case, collaborative curriculum development is a learning process, where equal participation is based on individual and collaborative professionalism. Hargreaves and O'Connor summarized 10 tenets of collaborative professionalism: Collective Autonomy, Collective Efficacy, Collaborative Inquiry, Collective Responsibility, Collective Initiative, Mutual Dialogue, Joint Work, Common Meaning and Purpose, Collaborating With Students, Big-Picture Thinking for All (Hargreaves and O'Connor, 2018). From the point of our topic, changing the culture of curriculum development in teacher education, there is no doubt that these tenets of collaborative professionalism are relevant, especially Collective Autonomy, Collective Responsibility, Mutual Dialogue and Joint Work in the process of collaborative curriculum planning.

In summary, changing the culture of curriculum development in teacher education has some significant differences when compared to the traditional way of curriculum planning. When summarizing these differences (see Chart 1), we first of all need to point out that the vision of changing the culture of curriculum development understands the curriculum as a process. Thinking of it as a developmental process is a key factor of this vision, which is based on an 'active model of the individual'. (Kelly, 1999) This developmental model prioritizes competences and learning strategies. Parallel to this model, an output-based approach concentrates on learning outcomes. Learning outcomes focus on what the learner has achieved and what the learner can reach at the end of a learning activity. It is thus different from formulating aims and objectives or defining content. Assessment has more complex phenomena, with diagnostic and formative assessment functions having a more important role in curriculum development. Finally, from the point of cultural changes, collaborative curriculum development has an enormous impact on students' learning and organizational development.

Traditional way of curriculum planning	Changing the culture of curriculum development
curriculum as product	curriculum as process
individual planning	collaborative curriculum development
input (aims and objectives)	output (learning outcomes)
knowledge and content	competences
teaching methodology	learning strategies
summative assessment	diagnostic and formative assessment
teacher- and teaching-centered	learner- and learning-centered

Table 1: Differences on traditional way of curriculum planning and changing the culture of curriculum development

4 Conclusion

Quality of teacher education (pre-service or in-service training) is widely seen as a key factor of teacher professionalism and continuous teacher development. Successful education is largely dependent on teachers' competency standards, which has been discussed extensively in the past 25 years. There is no doubt that, curriculum theory, design, development, evaluation and implementation have been significant parts of teacher education for centuries. Basically, the three types of curriculum designs (subject-centered, learner-centered and problem-centered designs) have different impacts on teacher education. Effective collaboration of curriculum development has enormous impact on efficient learning and teaching processes and on creating a professional learning community. Collaborative professionalism is a key factor of this process. There are two scenarios for changing the culture of curriculum development in teacher education: The first scenario is based on the industrial model of curriculum development, which prioritizes learning outcomes and taxonomies. Professional autonomy and flexibility is weak, the developmental algorithm is strong. The second scenario is based on collaborative professionalism and students' activities for innovation and creativity. Human factors are thus dominant in this flexible system.

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