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**Open Education
and Learning Quality:
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Experiences**

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Open Education and Learning Quality: The Need for Changing Strategies and Learning Experiences

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Abstract — Open Education is movement with a long-term tradition and broad approach. In this paper we compare Open Education with smart education first. We can conclude that Open Education as a holistic concept can embed smart education with its mainly technological focus and covers all three quality dimensions to improve the learning quality: potential, processes and results. Furthermore Open Education embraces all three levels: macro, meso and micro level. Such a holistic concept can change strategies and learning experiences of future education to address the needed societal challenges. It requires future research and surveys that are started now based on a first pre-survey on MOOCs revealing the differences between MOOC designers and learners. We believe that Open Education can improve future learning and education to facilitate learner-centered education addressing the requirements from learners as well as educational providers, public authorities and societies.

Keywords — Open Education; learning quality; MOOCs; smart education; educational strategies; pedagogies; learning experiences

I. INTRODUCTION

This paper discusses the need for introducing Open Education and focusing and improving the learning quality due to the global transformations. During the last years, smart education has evolved as a concept to facilitate new learning environments and experiences, also in engineering education [1] [2] [3]. However, most smart education approaches are starting from new technologies and their opportunities and not from pedagogical design. We believe that the pedagogical design has to lead and to embed new technologies into educational opportunities.

In section II, we compare Open Education and smart education and discuss how Open Education serves this purpose by following the open learning philosophy. It is a holistic approach that covers not only open access but combines broad legal, operational and visionary dimensions.

In section III, we are focusing the learning quality and are analysing Massive Open Online Courses (MOOCs) as the

currently most prominent example of Open Education to identify how they can change educational strategies and learning experiences.

Finally in section IV, we discuss whether MOOCs and Open Education in general are the next revolution in learning. We conclude how Open Education can improve the quality development and can implement the vision of smart education.

II. OPEN EDUCATION AND SMART EDUCATION

This paper focuses on Open Education and the learning quality to address the global challenges. Open Education can enrich and guide smart education with its mainly technological orientation. Even though that the concepts “open” and “openness” are currently becoming more and more in vogue they are often remaining vague and their meaning and impact are not defined precisely [4]. Therefore we have proposed the following definition for a common understanding of Open Education:

"Open Education covers and addresses all dimensions related to operational, legal and visionary aspects throughout the analysis, design, realization and evaluation of learning experiences to facilitate high quality education meeting the given situation, needs and objectives." [5]

Open Education has got a long-term history that can be based on the philosophy of open learning and many different theories going back to ancient times in Europe and Asia [6]. Among many others, Confucius and Socrates can be considered as most prominent educators promoting and practicing open learning. Today, Open Education is not a fad but an increasing requirement due to dramatic changes in societies leading to new personal, institutional and strategic requirements [7]. Open Education is garnering interest as well as spurring adaptations, implementations, and success but still remaining a small global movement by visionaries and enthusiasts.

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Independent from this long-term history of open learning and Open Education, the concept of smart education evolved following the concepts of smart technologies and smart cities [2]. Smart education is focusing new learning environments and experiences to be facilitated by new technologies, systems and services. It has been addressed in several fields and disciplines with strong concentration in the subjects science, technology, engineering and mathematics (STEM) including informatics and engineering education [3].

Smart education has been considered and introduced for several different scenarios and environments in technology-enhanced learning (TEL): ranging from flipped classroom, MOOCs, game-based learning, augmented reality and virtual reality, gesture-based learning to educational robots [1]. However these TEL scenarios are viewed only from the technology perspective and not from a learner-centered view.

And the same applies with the key pedagogical innovations presented in smart education and learning environments: Knowledge generated from micro-social interactions, change in assessment practices to include knowledge generated from micro-social interactions, assessment in ubiquitous learning environments and real-time intervention in learning [1].

Thus, smart education and learning environment require an overarching design approach like Open Education to avoid losing educational impact or becoming an 'urban myth' like the fairy tales of the so-called *digital natives* [8].

The key argument is that such new smart education and learning environments are not making sense if they are not embedded in and exploited by a holistic, carefully developed and sound pedagogical design: It has to take into consideration the learning objectives and needs of the individual learners as well as of the educational provider and educators, next to the different target groups and their specific requirements and also the given operational and legal situation.

While these developments related to smart education are taking root, another phenomenon suddenly appeared in Open Education and changed the public discussion on online learning: Massive Open Online Courses (MOOCs).

In the following we will discuss how Open Education can contribute to the learning quality and quality development using MOOCs as an illustrative example.

III. QUALITY IN OPEN EDUCATION AND LEARNING

Open Education and TEL, also called e-Learning, are sharing the same sources and their common historical development and interdependences are explored [9] [10]. Both are special concepts and fields of learning and education in general and thus, the principles of learning and education in general has to be applied to Open Education and TEL: First, the relevance of quality development was analysed for learning processes in general [11] and afterwards for introducing Open Education in particular [9].

We could conclude earlier that (learning) quality is most important for learning, education and training [10] [12]. The debates on holistic quality management and on learning quality are very old [13] [14] [15], but discussions and theories on quality development in learning and education only began a few years ago [11]. The concept and philosophy of holistic quality development with a continuous improvement cycle was first introduced in Japan and would gain recognition, acceptance, and inspire implementations worldwide [16] [17]:

A long-term debate has focused on quality development in general regarding the different quality issues, aspects and approaches [11]. In its broadest sense, it quality development can be defined as covering 'every kind of strategy, analysis, design, realization, evaluation, and continuous improvement of the quality within given systems' [12]. Thus, quality development is described formally by the chosen paradigm. Quality is not a fixed characteristic belonging to subjects or systems but rather depends on adapting to specific situations.

In learning and education quality development is gaining another challenge: the continuous improvement of the learning processes and experiences are the targets that cannot objectively prescribed but only subjectively adapted to the learners and their situation and needs. That requires that the learner is getting into the center of all efforts for the pedagogical design.

Due to the dramatic changes in societies, openness and open education are becoming not only more and more in vogue, but also vital: It is not a fashion but an increasing requirement [6]. To address and meet the societal challenges, we have transferred and applied the three generic quality dimensions (potential, processes and results) [18] to learning and education in general and to Open Education in particular [9] as illustrated in Fig. 1.

Fig. 1. Quality dimensions in open education [9]



In Open Education, the new term MOOC (Massive Open Online Course) has immediately attracted the masses, despite the fact that it is just another label for a diversity of different online learning scenarios and methodologies that were already developed and implemented many years before [19].

MOOCs can be considered and defined as a special type of TEL (or 'e-learning'), piquing interest anew and offering opportunities to once again reach learners that are attracted to e-learning solutions for many reasons [20]. Thus, MOOCs can be the facilitators for a renaissance of e-learning even though their completion rates are very low and their general quality is questionable and currently under lively debate [21].

Nowadays, different types of MOOCs (so called cMOOCs and xMOOCs) are discussed, but the focus is still on the masses, technology, and promised innovations that are not easy to discover: Most MOOCs lack continuous tutoring and support for all learners who are expected to teach themselves [6] [19]. Having high drop-out rates raised the question of quality regarding MOOCs that currently is discussed heavily [22].

We believe that high drop-out rates are the wrong measure for the success of MOOC and are only demonstrating the diversity of personal goals of MOOC learners and that MOOCs are paving a path for the future opening up of education to improve the learning quality [9]. Therefore we have established the European initiative MOOQ for the quality of MOOCs aiming at the development of a common Quality Reference Framework for improving, assessing and comparing the quality of MOOCs in close cooperation with all interested MOOC designers, learners, providers and policy makers in Europe and worldwide [23].

IV. CHANGING STRATEGIES AND LEARNING EXPERIENCES

In general, learning and education can be divided into the three levels like other sectors: macro level, meso level and micro level. The needs analysis, design, development, realization and evaluation of learning and education as well as of Open Education have to focus and include these three levels illustrated in the Fig. 2.

Fig. 2. Macro, meso and micro level in learning and education



The three levels can be described as follows:

1. Macro level: At the macro level, organizational and societal contexts including policies, vision, philosophy, strategy, public curricula and impact are addressed,
2. Meso level: At the meso level, the institutional processes and the design processes of learning opportunities and their programmes including all different types and levels of education are analysed,
3. Micro level: At the micro level, specific learning opportunity and learning experiences of individual learners are examined.

For changing strategies and learning experiences all three levels have to be addressed to achieve impact and to improve the learning quality. Furthermore all three quality dimensions (potential, processes and results) have to be covered at the three levels for meeting the needs of the society (macro level), the organisation (meso level) and the individual (micro level).

Open Education with its holistic concept and approach can provide a theoretical framework as well as practical means by focusing the learners and their situation. As explained above by using the example of MOOCs, many learners can have different personal goals that can also differ from the learning objectives set by the educators and learning providers what can also include the society through the public authorities when referring to public K-12 education of the future citizens.

Currently Open Education is lacking appropriate methodologies and instruments for broad application and implementation: The learners could benefit from quality indicators to assess and compare open learning opportunities and designers and educators could benefit from tools and guidelines for their design and adaptation. Finally learning providers and public authorities could benefit from studies and recommendations explaining the implementation and impact of Open Education at large scale.

To achieve these lacking means, we have established the European initiative MOOQ for the quality of Open Education and in particular of MOOCs aiming at the development of a common Quality Reference Framework for improving, assessing and comparing the quality of MOOCs in close cooperation with all interested MOOC designers, learners, providers and policy makers in Europe and worldwide [23].

As a first action, we have run a small pre-survey on the interest of MOOC learners (n=45): The findings revealed that many MOOC learners do not share the intentions of the MOOC designer and have got their own personal goals like e.g., simple download of all available materials for their self-regulated learning and review [5]. Based on the analysed results we are launching three surveys for MOOC learners, designers and facilitators to collect base-line data for the development of the missing methodologies and instruments. Our overall aim is the development of a Quality Reference Framework for Open Education and MOOCs that will serve learners as well as providers to assess and compare open learning opportunities and MOOCs.

According to Marx, a revolution is the complete change of the production relations and means and their new ownership and direction towards changed production power [24]. In relation to open education, the current question is whether open education is indeed a social revolution for individual learners, educational institutions, and global society, or whether MOOCs, the most prominent method of open learning, are only marketing instruments by the traditional educational systems. This paper intends to spark the debate and ensuing research will provide further cases for future discussion. It can only initiate the discussion on the impact of Open Education. It is necessary for future research and publications to focus on these challenges and provide more cases for further discussion.

We believe in education as a human right and public good as defined in the Sustainable Development Goal no. 4 by the United Nations [25] and that learning and education need to be changed to keep this status due to major global challenges [6]. The overview of the quality and future of open education and MOOCs has presented the needs and potential approaches to satisfying these requirements, along with how we can achieve higher learning quality by opening up education and introducing open learning innovations [9]. Current main movements in open education such as the global Open Educational Resources (OER) initiative launched with the UNESCO OER Forum (2002) [26] and OER Declaration [27], the International Community for Open Research and Open Education (ICORE) [28] and Opening Up Education by the European Commission [29] are addressing the demand how to change future education. First frameworks and instruments are developed to assess the importance of open learning and open education for our future and the positive impact on our personal lives and developments as well as on all societies worldwide [30]: Future research should address and investigate the validation of Open Education and its impact in innovating learning experiences and quality education as well as in long-term effects in improving personal development and societies.

VI. CONCLUSIONS AND FUTURE WORK

Open Education and in particular MOOCs have the potential to change and improve future learning experiences. To make it happen this paper identifies the need to look into all three dimensions of Open Education (potential, processes and results) to meet the learners' requirements and intentions. In addition Open Education has to address all three levels (macro, meso and micro) to cover all requirements from the different perspectives.

Further research is needed to investigate how the different groups of MOOC learners with their specific intentions can be addressed by providing personalized learning experiences in MOOCs as well as to assess the impact of Open Education in the society.

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