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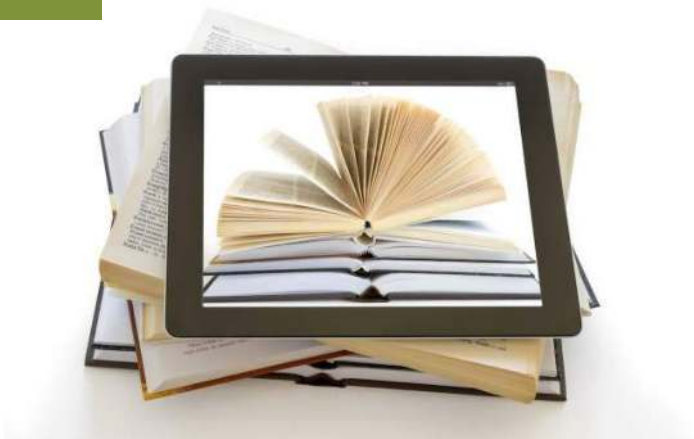
Christian M. Stracke
Michael Shanks
Oddgeir Tveiten (Eds.)

Smart Universities
Education's Digital Future



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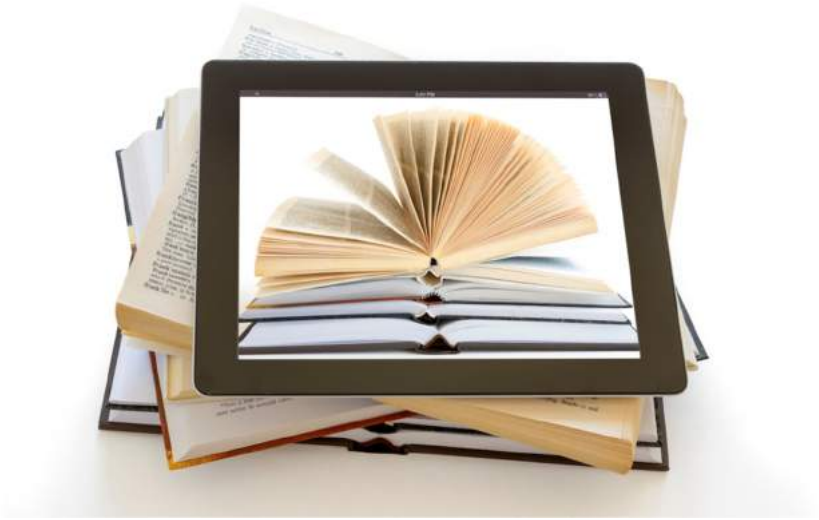
Smart Universities: Education's Digital Future



Official Proceedings of the International WLS and LINQ Conference 2017

World Learning Summit 2017

International LINQ Conference

Organized by the University of Agder, the Open University of the Netherlands, the University of Standford and by the International Community for Open Research and Open Education (ICORE)
and supported by:

Christian M. Stracke,
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Table of Content

Smart Universities: Education's Digital Future

Christian M. Stracke, Michael Shanks and Oddgeir Tveiten

Institutions of learning at all levels are challenged by a fast and accelerating pace of change in the development of communications technology. Conferences around the world address the issue and research journals in a wide range of scholarly fields are placing the challenge of understanding „Education´s Digital Future“ on their agenda. The World Learning Summit and LINQ Conference 2017 proceedings that you are now reading, take this as a point of origin. Noting how the future also has a past: Emergent uses of communications technologies in learning are of course neither new nor unfamiliar. What may be less familiar is the notion of ”disruption”, marking many of the conferences and journal entries. Is “education´s digital present” as transformative as in the case of the film industry, the music industry, journalism, and health? If so, clearly the challenge of understanding goes to the core of institutions and organizations as much as pedagogy and practice in the classroom.

Research from various fields now emphasize the *effects* of learning technologies, *texts* and *aesthetics*, personalized learning *experience*, new means of *assessments*, the potentials of globalized *learning networks*, if not to say the futures of a work-life characterized much more than before by demands for *flexibility*, media *competence*, problem-solving skills, and more. Scholars come to the field of education technology from pedagogy and from a variety of other fields, such as ICT, media studies, organizational studies, psychology, geography, and anthropology. With the coming of sophisticated digital learning analytics, the questions asked will also tell a great deal about the potential answers found. Entrepreneurs in the education technology business often argue that more education technology in the classroom makes for more effective students. But is that really the case, generally? And is it the most pressing question?

If we take as point of departure the idea that media transformations of the last few decades are transformative at the wide range of levels, then it follows that the challenge of education transformation ought to be viewed accordingly. Marshal McLuhan and his contemporary Harold Innis, once noted how communication technologies and transition from one prototypical paradigm to another is also an aspect of a deeper civilizational change. Conceptions of the world change. Power relations change. Interaction conventions change. Taste relations change. Aesthetics change. Ideas about learning and how human beings learn, also change. Does not our very discourses on what it means to learn, in the 21st century reflect back profoundly on education as a social institution?

Concerns such as these frame the conference theme at the 2017 World Learning Summit. An annual conference, WLS was held for the seventh time in 2017. This year, WLS joined forces with the Learning Innovation and Quality (LINQ) Conference, to forge a new global meeting space for innovators and critical thinkers to discuss and reflect on what is ahead in the world of learning. We believe that a need for a change in future learning and education is apparent. We also believe that formulating a framework for that change is an inter-disciplinary challenge. Like other conferences and summits in this field, the WLS and LINQ approach is an open and interdisciplinary one. What we add is a consistent emphasis to merge critical research with practical innovation, as these summit proceedings from 2017 amply illustrate. Previous and coming conferences bring to the discussions global thought-leaders, interested in contextualizing scholarship in education and learning within a broader frame of social change and development.

Several challenges were formulated in the summit call: Learning technologies are changing the face of learning, education and society, but a surprisingly small number of world-encompassing companies own that world change. So, is the future of learning and education open? Do we foresee a sustainable future learning space available to all? Is learning and education the last digital frontier in a world of disruption and change foreseen and owned by the few – in a world of escalating digital divides? How do we respond, as citizens, learners and custodians of education?

One approach to the pursuit of a critical debate is the concept of *Smart Universities* – educational institutions that adopt to the realities of digital online media in an encompassing manner:

Universities now co-operate globally in networked modes, bridging North and South, High and Low – if not to say formal and informal learning. Would a key perspective then seem to be our capability to understand learning technologies from the point of view of the *medium*, *mediation*, and *media*? Technology enables, but context is cultural. Smart universities address both. They transfer the innovative process from the drawing board and the tools at hand to the learning designs that in turn reflect on human interaction; what it is that technology aims at helping us achieve.

How can we as smarter universities and societies build sustainable learning eco systems for coming generations, where technologies serve learning and not the other way around? Perhaps that is the key question of our time, reflecting concerns and challenges in a variety of scholarly fields and disciplines?

These proceedings present the results from an engaging event that took place from 7th to 9th of June 2017 in Kristiansand, Norway. First the scientific papers submitted to the Open Call for Papers and selected by the international programme committee in double-blind peer review followed by the invited keynotes and articles:

Esther Tan et al. discuss the horizontal key competence "Learning how to Learn" and its need to meet the future challenges in work and society.

Gaustad and de Paoli focus on the different roles of professors as writer, director, actor and producer in online education.

Konert et al. research the use of open badges and how they can be applied to competency alignment.

Gjesteland, Vos and Wold analyse the flow experiences by students in a physics laboratory while using mobile phones and free software.

Jahn, Jacquet and Lombaerts present first steps towards an evaluation toolkit for asynchronous book clubs and their provided audios.

Smith and Qayyum demonstrate in their short paper how visualization software can improve the online assessment by students.

Guardióla Lopez discussing in her short paper the required change for 21st century schools related to leadership and education.

Uvalić-Trumbić and Sir Daniel highlight the challenges of openness and quality for smart universities in the post-truth and post-trust era that is based on their keynote and introducing the section of invited papers.

Obiageli Agbu reflects on smart universities based on her incidental learning experiences of open and distance education.

Tveiten proposes a new theory framework called "Contact Education" for exploring media rich learning designs.

Stracke addresses the quality of open online education and learning and the current efforts towards a "Quality Reference Framework" for online courses.

Nampijja provides empirical data on smallholder farmers in resource limited and non-formal learning setting using mobile technologies.

Tveiten reflects on the emergent learning technology industry by discussing MOOCs as a framework for thinking through journalism education.

From the Calls for Projects, **seven projects** are also selected and briefly introduced in these proceedings. Opening this section of project presentations, and ending the proceedings, **Trondsen** outlines his vision of Nordic EdTech – the formation of a Nordic education technologies network: He discusses challenges and opportunities relating to future Nordic collaboration, as studied in two projects from 2013 to the present, aimed at fostering that joint Nordic arena.

This book volume contributes to the debate on the need and imperatives to change education from a broader and more deeply embedded understanding of how digital media now transform society. The future of education is digital, it is online, it is open: Smart Universities may be a promising concept and a first step on our long-term journey along that trajectory. We were pleased to welcome experts and practitioners from all parts of the world at WLS and LINQ 2017!

Scientific Papers

Learning to learn: Beyond 2020

Esther Tan[1], Christian M. Stracke[1], Marek Prokopowicz[2], Edit Kővári[3], Tamás Kigyós[3], Tibor Csizmadia[3], Karin Kronika[4], Bea Fehérvölgyi[3], Krisztina Erdős[5]

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Abstract: The current discourse on staying relevant in the 21st century workplace and lifelong learning is instrumental for this empirical work. This research study has a two-fold objective. First, it identifies the skill-deficit in our graduates when they enter the workforce: critical thinking, problem-solving and managing one's own learning process. Second, it captures best practices of educational, non-educational and training agencies in developing and evaluating the above-mentioned three core skill-sets. In-depth interviews were carried out with 72 organizations: 34 educational institutions and 19 non-educational institutions plus 19 training agencies as specific third target group. Two main findings emerged: First, there is a gap between employers' expectations and graduates' competences, and second, the methods of developing and evaluating the three core skill-sets differ between educational institutions on one hand and non-educational institutions and training agencies on the other hand. This implies a need for a more integrated planning system amongst the core stakeholders: the HEI, industry players and governmental bodies.

Keywords: lifelong learning, critical thinking, problem-solving, managing one's own learning, global connectivity

1 Introduction

Technological advances has revolutionised not only the way we learn, but also the way we work in the 21st century landscape. Global connectivity has created not only borderless classrooms, but also virtual workplaces. Current discourse on lifelong learning, future skills, and future-ready graduates imply a dire need to

revisit the existing Higher Education (HE) instructional programmes and rethink how we might better equip and empower our graduates to increase their employability and mobility in the 21st century workplace (Stracke, 2011). In the face of rapid global changes, Davies, Fidler, and Gorbis (2011) identify 10 future skills that would be much needed for a future-ready cohort of workers: sense-making, novel and adaptive thinking, virtual collaboration, transdisciplinary, cross-cultural competency, social intelligence, cognitive load management, new media literacy, a design mindset and computational thinking. New competences in the future workplace also imply the need for professional development and training of our teachers (European Commission, 2012).

In Europe, the Education and Training 2020 strategy (ET2020) forms part of the Europe 2020 strategy to promote growth and jobs (Kim, 2015). Similiar trends can also be traced in Asia. In Japan and Korea, there is a clear vision to improve tertiary education and to promote lifelong learners. In Japan, stronger partnership and collaboration between the respective universities, corporate world, governmental bodies have been enforced (Kim, 2015). And to the Far-east, Singapore, its educational vision and mission statement, “Thinking Schools, Learning Nation“, aims to develop creative thinking skills and to foster lifelong learning. In a nutshell, education will remain a key driver for economic growth and nation building in Asia. On the same note, the key research interest in the European Union (EU) also foregrounds internationalization in higher education (Yemini & Sagie, 2016). Likewise, Staley and Trinkle (2011) accentuate the need for formal HEI’s commitment to general education, i.e., provision of training in practical and vocational contexts.

In the light of the EU context, the research questions read:

1. What are the core skill-sets a graduate would need to possess when he or she enters the workforce?
2. What would be the best practices (methods or tools) to develop and evaluate the core-skill sets of our graduates?

2 Methodology

2.1 Sample and design

The empirical study is conducted in two phases. In the first phase, desktop research and establishing initial contacts with various organisations ranging from formal educational institutions (such as schools and universities) to non-formal educational institutions (such as enterprises) and including specialised training agencies as third specific target group via an insight-card were carried out. Under the overarching competence - 'learning to learn', three core skill-sets with their respective subsets were identified as critical for graduates to enter the workforce: critical thinking, problem-solving and managing one's own learning process (see figure 1).

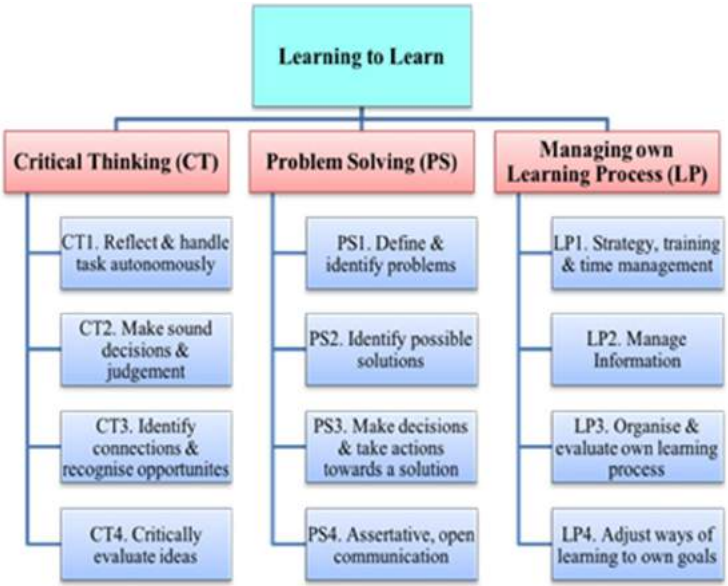

Figure 1: Three core skill-sets in Learning to Learn

In the second phase, 72 structured interviews were conducted via face-to-face interviews, Skype and other electronic forms over a period of three months (from Feb to April, 2016). Table 1 provides an overview of the framework of the structured interview and a summary of the core question items.

Table 1: Framework of the in-depth structured interview

Core aspects of structured interview	**Interview questions on the three core skill-sets:** critical thinking, problem solving & managing one's own learning
Importance & Implications of skill-set	How important is the skill-set (e.g., problem solving) in your organization? In which areas is the skill-set (e.g., problem solving) most essential? And why in those specific areas?
Method(s) of assessing skill-set	What method(s), tool(s) and/ or diagnostic test(s) (if any) are used to identify potential employees? Please elaborate on the strengths and limitations of these means of assessments
Method(s) of developing & evaluating skill-set	Do you offer any training activities for your employees (e.g., related to developing the ability to problem-solve)? If not, why? What is the reason for not doing so? If yes, could you elaborate on those solutions / training courses / modules / methods/ tools What possible problems / limitations could emerge with regard to the solution(s)/ method(s)? How can they be countered or overcome?

The structured interviews on the three core skill-sets and the overarching competence of learning to learn involved schools, universities, teacher education centres, adult education centres (continuing education centres), scientific research centres, training institutions, psychological and educational counselling services for adults, foundations, associations operating in the education and continuing education field, career counselling services, job agencies, as well as human resources departments in companies. In total, we obtained 72 structured interviews across Europe (countries in alphabetical order: Austria, Belgium, Bulgaria, Czech Republic, Finland, Germany, Hungary, Lithuania, the Netherlands, Norway, Poland, Slovakia and Ukraine): 34 educational institutions (e.g., universities, schools, i.e., so-called formal education); 19 non-educational organizations (e.g., companies, workplace) and 19 training agencies (e.g., language and coaching schools, continuing education centres etc.).

2.2 Data collection and analysis

The structured interviews via Skype and face-to-face were audio-recorded and/ or field notes were also taken. The corpus of audio (Skype & face-to-face) and written data (from the electronic format) were then analysed and coded with respect to five thematic categories: (1) importance of the three skill-sets, (2) areas/fields where the skill-set(s) is/are particularly needed, (3) methods of assessing/ verifying the skill-set(s), (4) method(s) of developing the skill-set(s), (5) method(s) of evaluating the acquired skill-set(s). For the scope of this paper, we present the findings on the importance and implications of the three core skill-sets, as well as methods on developing and evaluating these three skill-sets.

3 Findings

This section addresses the two main research questions. We will first present the findings on the importance of the three core skill-sets in section 3.1. Next, we will identify the method(s) to develop and to evaluate these skill-sets in section 3.2.

3.1 Importance of the skill-sets in future workplace

Findings from the insight-cards, as well as in-depth structured interviews identifed a gap between employers' expectations and graduates' competences. Employers have increasingly sought potential employees which possess the "learning to learn" competence, i.e., the capacity to embrace and process new knowledge and new skills, as well as to leverage new experiences to explore unchartered terrorities and new entrepreneurial opportunities. The overarching competence - "learning to learn" is foreseen to be even more pronounced in the present Western labour markets which will empower the individuals both to achieve set goals and to perform effectively and efficiently. And albeit domain-specific knowledge acquired in formal education still serves a perfunctory role, both educators and employers alike, foresee that the competence for continuous learning and improvement shall remain a greater asset for progress and development in all companies and industries.

Likewise, all interviewed partners identified critical thinking as one of the core competences necessary for the workplace, as well as for one's career advancement. Notwithstanding interviewees differed in methodologies for

triggering and inculcating critical thinking skill in their employees, however, all shared similar understanding of critical thinking and the related four sub-skills (as shown in figure 1, page 3). The sub-skills carry important implications for effective and efficient project task planning and execution.

On problem-solving skills, most interviews expressed that critical thinking and problem-solving skills are inseparable in many ways. What essentially distinguishes these two skills lies in possessing a positive attitude towards problem-solving. Having the right attitude was emphasised as the most important aspect to develop and to nurture.

Finally, managing one's own learning process was thought by most interviewees as being the most challenging to define. However, all unanimously agreed that managing one's own learning path involves work-life balance, lifelong learning and career goals. In this competence, they included time management skills, self-knowledge and reflective mind-set as important sub-skills.

3.2 Methods for developing and evaluating the three skill-sets

As shown in table 2, methods of developing and evaluating the three skill-sets differ mainly between educational institutions and non-educational institutions including training agencies. Educational institutions develop and evaluate these three skill-sets in a less contextualised environment whereas non-educational and training institutions give focus to developing and evaluating empolyees in real-world contexts. Likewise, for non-educational and training institutions, authentic workplace training is a recommended method of developing such skill-sets and the appropriate method for evaluating the acquired skill-sets are task performance, target observation and diagnostic test.

Table 2: Summary of methods to develop and to evaluate the three skill-sets

Methods of Development	Methods of Evaluation
Educational Institutions	
Case study; project/ research work; peer feedback; supervision	Periodic assessments; exams; task performance
Non-educational Institutions	
Internal & workplace training; specific tasks	Competency tests; task performance

Training Agencies	
Internal & workplace training; mentoring; practical tasks; problem solving; educational walks	Diagnostic tests; targeted observation; periodic evaluation based on competency profile

Whilst the educational, non-educational and training institutions may vary in their methods of developing and evaluating the three core skill-sets (as illustrated in table 2), there is a general consensus on an ideal learning environment which embodies three critical aspects: pedagogy, organisation and communication. Here, emphasis is given to active learning and learner-centered teaching, cross-curricular competences and appropriate assessments, and importantly, all three types of institutions expressed the need for concerted effort and the necessary infrastructure for effective communication, coordination and collaboration of all key stakeholders, i.e., educational, non-educational and training institutions, future employers and industry players.

4 Conclusion

This empirical study investigates the skill-deficit in our current HE graduates and methods of developing and evaluating the core skill-sets that are pivotal as these HEI graduates join the workforce. Two key findings were surfaced: 1. There is a gap in existing HEI curriculum programmes and the type of skills that employers desire and demand from their employees; 2. Albeit that some HEIs could be attempting to develop and to evaluate the three core skills, the methods of fostering and assessing these skill-sets vary between educational and non-educational institutions including training agencies.

To bridge the gap between employers' expectations and graduates' competences, and to integrate the three core skill-sets into the existing HEI curriculum, there are three important implications: 1. The Preparation: A new infrastructure to faciliate communication, coordination and collaboration amongst formal HEI institutions, non-educational institutions, training agencies, industry players, as well as governmental bodies is imperative. This new 'infrastructure' requires a socio-technological approach to facilitate an effective collaboration amongst the core stakeholders. To put in place a HEI curriculum that prepares our graduates for the 21st century workplace, collaboration amongst the key players in developing and designing the curriculum will be pivotal. To this end, a knowledge sharing community model that facilitates virtual

collaboration, as well as face-to-face communication will be instrumental to foster a concerted effort amongst the HEIs, governmental bodies and industry players; 2. The Practice: Authentic tasks in real world settings are instrumental in developing and evaluating those skill-sets in our graduates. This implies that there should be greater alignment between internship, developing graduates' competences and career interests; and 3. The Pay-off: An integrated planning system involving all key stakeholders will foster closer links between educators, industry players, and policy makers. This will work towards equipping and empowering our graduates for the local and global marketplace, and importantly, supporting them to develop their capacity for lifelong learning and going beyond 2020 to stay relevant in the 21st century.

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6 Reference

Davies, A., Fidler, D., & Gorbis, M. (2011). Future work skills 2020. *Institute for the Future for University of Phoenix Research Institute*, 540.

European Commission (EC). (2012). Rethinking education: investing in skills for better socio-economic outcomes.

Kim, B. (Ed.) (2015). *MOOCs and Educational Challenges around Asia and Europe*. South Korea: KNOU press.

Staley, D. J., & Trinkle, D. A. (2011). The changing landscape of higher education. *FormaMente: Rivista internazionale di ricerca sul futuro digitale*, (1-2011), 15.

Stracke, C. M. (2011). Competences and skills in the digital age: Competence development, modelling, and standards for human resources development. *Communications in Computer and Information Science, 240 (34-46)*. Berlin/ Heidelberg: Springer.

Yemini, M., & Sagie, N. (2016). Research on internationalisation in higher education–exploratory analysis. *Perspectives: Policy and Practice in Higher Education, 20*(2-3), 90-98.

New Faculty Roles in Online Education: The Professor as Writer, Director, Actor and Producer?

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Abstract: Advances in online education requires higher education institutions to develop and institutionalize new faculty role systems to stay competitive and ensure educational quality. The use of video and other online tools has introduced new faculty tasks demanding specialized skills and qualifications. As it becomes difficult for any individual faculty member to combine and fulfil all the requirements for developing an online course, a clear system of roles is required to coordinate the work. In this paper we provide a taxonomy of core online education roles by developing an analogy to film production. We analyse the core roles in film production of the writer, director, actor and producer in order to develop the online education faculty roles of course developer, designer, instructor and manager. Finally, we discuss implications of unbundling roles related to faculty skills, qualifications and resources.

Keywords: Online education, distance learning, MOOC, SPOC, roles, coordination, projects, university management, film production.

1 Introduction

As advances in online education are starting to shake up higher education institutions, faculty roles are also changing (Kaplan & Haenlein, 2016; Neely & Tucker, 2010). Faculty members must perform new tasks requiring new competences as classic lectures, classroom teaching, and text-based curriculums are complemented or replaced by new educational tools within a richer media environment. Acquiring and developing skills to fulfil the new tasks is necessary, but not sufficient when tasks are specialized and divided between faculty members. Consequently, universities also need to develop and institutionalize a new set of faculty roles as a means to efficiently organize and coordinate tasks. Without a clear understanding of these new roles, education quality is likely to suffer and universities may struggle to stay competitive.

Nonetheless, very little of the literature on online education centers on faculty, instructors and teaching (Arbaugh, Dearmond, & Rau, 2013; Veletsianos & Shepherdson, 2016). In fact, our reference to "online education" may even seem odd, as "online learning", "e-learning" and "distance learning" are among the more commonly used terms for the same phenomenon. However, these all call attention to students and their learning, so our choice of "online education" is made deliberately to emphasize educators (institutions and instructors)[1].

The need for new skills and competences is clearly demonstrated in the use of recorded video as a course delivery tool. It has become an important element in online education, particularly for massive open online courses (MOOCs), but also for small private online courses (SPOCs) and as an element in blended learning solutions (Singh, Mangalaraj, & Taneja, 2010; Whitaker, New, & Ireland, 2016). It allows for asynchronous online education where educators reach students not only separated by distance, but also by time.

However, a good MOOC or SPOC is more than a filmed lecture and requires new tasks and skills. It usually consists of several 10- to 12-minute videos filmed from different camera angels, with an integrated use of course collaboration, learning and assessment tools, such as questions and short quizzes, which can be graded automatically (Kaplan & Haenlein, 2016; Singh et al., 2010).

Based on these and other developments, Kaplan & Haenlein (2016) argue that developing an online course has become similar to producing a movie, implying that it involves coordinating a number of diverse and specialized tasks demanding diverse and specialized skills. In this paper we pursue this analogy further to better understand emerging faculty roles and organizational requirements. Drawing on the film production literature's description of core roles in content production (e.g. Finney & Triana, 2015; Squire, 2017) we develop a taxonomy of core roles in online education productions and discuss implications at both individual and organizational levels.

[1] This is not to say that a student's learning style is less important than the faculty teaching mode. On the contrary, effective teaching modes (e.g. developing video material) require a good understanding of learning styles (e.g. how students learn from video material).

2 Learning Online Education from Film Production

Looking to the organization of film production for guidance is not only relevant due to the increasing use of video in online education. There are well-known and far-reaching similarities between knowledge-based industries, such as higher education, and creative industries such as film production (see e.g. Florida, 2002). Both involve highly professionalized environments, specialization of competence, and clearly defined professionalized ethics and codes of conduct.

Looking at the nature of the work, developing an online course is similar to producing a movie in its requirements for coordination. The tasks involved in developing and running a course may be complex just in relation to one type of tool, such as using videos for course delivery. But choices made within one category of tools will also affect others. Choices related to video may affect and depend on those related to course collaboration and learning and assessment tools, and these will all depend on the staging tools that provide the basic structure for managing and delivering courses. And finally, all these choices must be made with the students and online learning in mind. It all adds up to the type of interdependent, complex work that is characteristic of producing a movie.

In film production, a role-based system is developed that capitalizes on specialized skills for diverse tasks (Bechky, 2006; DeFillippi & Arthur, 1998). A clear and generalized role structure was developed during the Hollywood studio era that evolved through the establishment of union rules, and this shapes the structure of international film production today. It provides a mechanism for coordinating work that allows filmmakers to move from project to project, still immediately knowing their basic tasks, expectations and reporting relationships. Then, within each project, nuances in the generalized role structure are negotiated by the filmmakers in situ as they enact their roles in response to the enactments of others. In this way roles develop and adjust to changing circumstances. Sometimes roles are also combined, as when the same filmmaker acts as both writer and director or as director and producer. From the individual filmmaker's perspective this offers opportunities to use roles as a resource in pursuit of personal interests since the expansion or combination of roles may provide new opportunities, greater creative influence and control, and so forth (Baker & Faulkner, 1991). However, even though roles may be adjusted, expanded or combined within a specific project, the basic generalized role-structure remains relatively stable at an industry level, providing continuity between projects (Bechky, 2006).

In online education, a clear and generalized role structure is not developed (Bawane & Spector, 2009; Neely & Tucker, 2010; Williams, 2003). A number of new faculty roles are identified, but they are typically defined within the setting of a specific educational institution, seem to change as new technology becomes available, and are not clearly related to individual and organizational levels. Hence, online education lacks a role system that can both organize immediate work and maintain continuity across different course projects and institutions.

There are structural differences between the contexts in which movies are produced and in which online courses are developed. While movies are typically produced in temporary organizations, course development usually takes place within the boundaries of a permanent educational organization. Yet, since there is a similar underlying project-based structure, where each course development process may be defined as a project, the basic principals observed in the film industry's role-based structure are still applicable (DeFillippi & Arthur, 1998).

In sum, while the role-based structures in film production are well established and institutionalized, the roles within online education are still very much emerging. Herein lies the opportunity to learn by applying knowledge of film production to online education.

3 A Taxonomy of Online Education Roles

The established core roles in film production are summarized in Table 1 below along with our suggested generalized core roles in online education. Both taxonomies are provided at a project level. For film, it focuses on production and does not include roles in permanent organizations to which the temporary production organizations may be connected, such as development and marketing executives at a financing and distribution studio. Similarly, for online education, it focuses on course development and does not include related roles in the school's ongoing administration, such as deans of online education or administrators of staging tools.

Each of the core roles described in Table 1 will have support roles, which may be filled by support staff, dependent on the scope of the production or course. For instance, a film director is supported by assistant directors to handle administrative tasks on the set, and similarly a course designer will sometimes lean on technology experts or media publishers while instructors benefit from support staff running tutorials or engaging with participants online.

Also dependent on scale and scope, as well as on each person's strengths and competences, roles may be combined and carried out by one filmmaker or faculty member. Even so, the roles remain clearly defined and separated by definition. This is evident by looking at very low-budget film production carried out under the so-called DYI (do-it-yourself) model (Fleischman, 2017). Here limited resources often force filmmakers to combine roles, but when doing so they do not define newly merged roles, but rather take on the generally defined responsibilities of each combined role. A filmmaker becomes the "writer-director-producer" rather than the "auteur". Similarly we would suggest a "course developer and designer" rather than a "course creator" when the two roles are combined in one faculty member, as this approach maintains and enforces a generalized role based system.

Table 1: Core roles in film production and our suggested taxonomy of online education roles (Sources: Finney & Triana, 2015; Neely & Tucker, 2010; Squire, 2017; Williams, 2003)

Film Production	Online Education
Writer: Works with the creative concept or "idea" of what will make a potential movie. Creates story, characters and settings -- the elements required to convey the movie's concept in an effective manner. Creates and delivers the work in the format of a screenplay, which is a lean and economical description that leaves creative format choices to the director.	**Course Developer:** Works with the academic concept or 'idea' of what will make a potential course. Develops the 'idea' into a lean and economical course curriculum outline by assembling academic literature and content in accorcance with specific learning goals. Leaves delivery tool and other format choices to the course designer.
Director: Has the creative and artistic responsibility for turning the screenplay into a movie and oversees its entire artistic production. Interprets and expresses in film the intentions the writer and producer set out in the screenplay by controlling the action and dialogue in front of the camera, the added visual effects, editing, sound and music choices, and so forth.	**Course Designer:** Prepares the course curriculum for online education, choosing teaching strategies and models, as well as the appropriate course delivery, collaboration and assessment tools. Aligns and designs the course materials with the instructor for the chosen channels and tools.
Actor: Performs the role of a character described in the screenplay as instructed by the director. Influences the character (and its actions) by his or her interpretation of the character description and the direction.	**Instructor:** Creates course materials with the designer. Teaches the course and assesses learning outcomes through the channels and tools chosen by the course designer.
Producer: Initiates the movie, based on an original "idea" or on one submitted by a writer, director or actor. Hires the writer(s), the director and actors, arranges for financing and oversees the production of the movie. Carries the ultimate responsibility for the original shaping and final outcome of the movie.	**Course Manager:** Initiates the course, based on "ideas" from developers, designers and instructors or from own "ideas". Pitches the course "idea" to school's decision makers and secures resources for development and delivery. Assembles the rest of the core team and oversees development and delivery of the course.

Even though roles are clearly defined and separated, the tasks performed are highly interdependent, requiring collaboration and interaction between them. For instance, writers work closely with producers who provide script notes to guide and improve the work. The collaboration also requires insight into the other core roles. Writers are, for example, concerned with "producibility" (whether something on the page can be translated to the screen), which requires familiarity with direction, acting and production (Goyer, 2017). We would expect similar levels of understanding and team-collaboration between course developers, designers, instructors and managers.

4 Unbundling the New Roles

Our film production analogy and the ensuing taxonomy may not offer a definitive blueprint for online education roles, but it indicates a direction towards greater specialization with numerous implications for online education management. We will briefly discuss some related to faculty skills, qualifications and resources.

Beyond the use of teaching assistants in the traditional classroom model, faculty members are accustomed to filling bundled roles including everything from course development to instruction and assessment. With higher requirements for specialized skills and qualifications in online education it becomes increasingly difficult for a single faculty member to combine all roles. The online education roles structure will therefore most likely be unbundled (Neely & Tucker, 2010) along the lines suggested in our taxonomy.

Just as some filmmakers will argue that the auteur's role cannot be unbundled into separate writer and director roles, some professors may argue that some of their online education roles cannot be unbundles without losing quality or the essence of the course. As in film production, this may be context-dependent. For some courses and faculty members unbundling may be undesirable, and even lead to deskilling, for others it may be unproblematic.

Kaplan and Haenlein (2016) note that to run a successful MOOC, professors should be charismatic as well as telegenic (i.e. have good on-screen appearance). In our taxonomy of roles, this would only be required of instructors. Course developers, for instance, may be introverted and uncharismatic experts in their academic fields as long as they are able to collaborate with faculty in other roles. A more specialized and unbundled role structure may therefore open up online education to potential success for a wider array of academics.

Unbundling is also likely to imply higher costs for better resources (Neely & Tucker, 2010). In a competitive educational environment where courses are more independent of time and space the professor creating course videos in her office using her cell phone camera will not be competitive compared to those supported by a team of specialists, and she may even tarnish her school's image by trying. Moving education online is also moving towards winner-takes-all markets where the value and cost of top performers within each core role increases (Elberse, 2013; Kaplan & Haenlein, 2016).

5 Conclusions

The taxonomy of core online education roles suggested here offers both guidance for practice as well as a framework for further research into new faculty role structures. While based on a highly relevant but distant film production analogy, it is also grounded in the existing literature on roles in online education (Bawane & Spector, 2009; Neely & Tucker, 2010; Williams, 2003). It suggest that online education will move away from traditionally bundled faculty roles as the requirements for specialized skills increase, and it offers a way forward towards defining the new roles.

6 References

Arbaugh, J.B., Dearmond, S., & Rau, B.L. (2013). New Uses for Existing Tools? A Call to Study On-line Management Instruction and Instructors. *Academy of Management Learning & Education, 12*(4), 635-655

Baker, W.E., & Faulkner, R.R. (1991). Role as Resource in the Hollywood Film Industry. *American Journal of Sociology, 97*(2), 279-309

Bawane, J., & Spector, J.M. (2009). Prioritization of Online Instructor Roles: Implications for Competency-Based Teacher Education Programs. *Distance Education, 30*(3), 383-397

Bechky, B.A. (2006). Gaffers, gofers, and grips: Role-based coordination in temporary organizations. *Organization Science, 17*(1), 3-21

DeFillippi, R.J., & Arthur, M.B. (1998). Paradox in Project-Based Enterprise: The Case of Film Making. *California Management Review, 40*(2), 125-139

Elberse, A. (2013). *Blockbusters: hit-making, risk-taking, and the big business of entertainment*. New York, NY: Henry Holt & Company.

Finney, A., & Triana, E. (2015). *The International Film Business: A Market Guide Beyond Hollywood* (2nd ed.). New York, NY: Routledge.

Fleischman, E.B. (2017). Producing in the DIY Model. In J. E. Squire (Ed.), *The Movie Busienss Book* (4th ed.). New York, NY: Routledge.

Florida, R. (2002). *The Rise of the Creative Class: And How it's Transforming Work, Leisure, Community, and Everyday Life.* New York, NY: Basic Books.

Goyer, D.S. (2017). The Screenwriter. In J. E. Squire (Ed.), *The Movie Business Book* (4th ed.). New York, NY: Routledge.

Kaplan, A.M., & Haenlein, M. (2016). Higher education and the digital revolution: About MOOCs, SPOCs, social media, and the Cookie Monster. *Business Horizons, 59*(4), 441-450

Neely, P.W., & Tucker, J.P. (2010). Unbundling Faculty Roles in Online Distance Education Programs. *Contemporary Issues in Education Research, 3*(6), 17-23

Singh, A., Mangalaraj, G., & Taneja, A. (2010). Bolstering Teaching through Online Tools. *Journal of Information Systems Education, 21*(3), 299-311

Squire, J.E. (2017). *The Movie Business Book* (4th ed.). New York: Routledge.

Veletsianos, G., & Shepherdson, P. (2016). A Systematic Analysis and Synthesis of the Empirical MOOC Literature Published in 2013-2015. *International Review of Research in Open and Distributed Learning, 17*(2), 198-221

Whitaker, J., New, J.R., & Ireland, R.D. (2016). MOOCs and the Online Delivery of Business Education What's new? What's not? What now? *Academy of Management Learning & Education, 15*(2), 345-365

Williams, P.E. (2003). Roles and Competencies for Distance Education Programs in Higher Education Institutions. *The American Journal of Distance Education, 17*(1), 45-57

Competency Alignment of Open Badges

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Abstract: In a networked world, achievements from formal and informal learning need a representation format that is easy to handle, can visualize competen-cies and can be transferred between organizational structures as a certification of one's abilities. Open Badges are a flexible way to certify a broad range of person's qualities. One main problem of competency-aligned Open Badges is the ambiguity of competencies in frameworks they refer to. Consequently, it is hard for algorithms to decide whether or not two different Open Badges might represent the same competency, amend each other or build on each other. Second, badge issuers cannot easily find the proper URLs to use as a reference in the badge definition. To overcome the obstacles, an approach is proposed that provides a competency directory as a service to find, add and reference existing semantic competency definitions worldwide. As a result, Open Badges (as digital micro-credentials) allow automatic decisions, whether or not a person fulfills defined requirements for a course or a position no matter which different competency frameworks are used.

Keywords: open badge, competency frameworks, linked-data, semantics, digital certificates, competency alignment

1 Introduction

Open Badges are representational digital tokens that can fulfil manifold purposes such as visualizing membership, recording learning, and recognizing learning outcomes, or communicating accomplishments. They build on a web-friendly open standard and are created, awarded and displayed in a decentralized and

user-centered way (Casilli & Hickey, 2016). Open Badges are supported by the Open Source Open Badge Infrastructure (OBI) which enables anyone to create, award and display badges across the web. The Badge Alliance[1] (BA) promotes badges to be used as digital indicators for credits, achievements, or skills (as witnessed based on some evidences) of the badge owner. Open Bades as micro-credentials allow to record, visualize and transfer skills in a more granular and individual way as traditional certifications (Knight & Casilli, 2012). Technically, Open Badges are bound to online identities of issuers and earners, but the (open) formats behind are not bound to one authority, which allows Open Badges to drive a digital disruption of more traditional global qualification and certification systems.

The Open Badge Specification (OBS) Version 2.0 consist of *BadgeClass*, *IssuerOrganization* and *Assertion* (Badge Alliance Standard Working Group, 2016). A *BadgeClass* defines one specific type of badge token. The *issuer* field should contain an URL pointing to an *IssuerOrganization* definition. If an individual earns a defined badge, an *Assertion* object instance is created. This represents the certification and links the *BadgeClass*, the earner (recipient), and a *VerificationObject* to prevent forgery and build trust. Most relevant for this paper are the two fields *criteria* and *alignment* of the BadgeClass. The c*riteria* field contains an URL to the definition what has to be fulfilled to earn the badge. No further specifications about the format are made. The *alignment* field can be empty or contain an array of *AlignmentObjects*. Since version 2.0 these objects contain a *targetName*, a *targetUrl* pointing to some official standard description of a competency , and may have a *targetFramework* or *targetCode* to precisely identify an element in the *targetURL* website. In other words, an issuer states that a badge represents one or several competencies. Further aspects of badge collection, e.g. in backpacks, and displaying are not discussed here, but can be found at http://openbadges.org.

2 Competency Frameworks

Competency frameworks play an important role in the European context. Given the diversity of cultures, languages and educational systems in the world in general and in Europe specifically, competency frameworks aim at enhancing both domestic and cross-border transparency of qualifications. There has been a

[1] http://www.badgealliance.org/, last accessed 01.03.2017

large number of EU-wide initiatives to establish common European qualification standards and certificates (EU da Vinci project TRACE, 2012). One of the most far-ranging EU initiatives is the *European Qualification Framework (EQF)* which is a meta-framework aiming at increasing transparency and supporting mutual trust to enable comparability of qualifications frameworks and systems (European Commission, 2008). Further Europe-wide initiatives include (a) meta-frameworks like the European Credit System for Vocational Education and Training (ECVET), European ICT-skills meta framework, a Common European Digital Competency Framework (DIGCOMP) and (b) sectoral frameworks related to a specific family of professions, e.g. European Marketing Confederation Qualification and Certification Framework (EMCQ), European Coaching/Mentoring Competence Framework (EMCC), European Competence Framework for Industrial Pharmacy Practice in Biotechnology (PHAR-IN). Additionally, (c) generic frameworks and (d) domain-specific frameworks have been designed to describe cross-domain and domain-specific competencies respectively.

3 The Current Body of Knowledge

In order to identify key requirements for the alignment of Open Badges with competency frameworks, a number of activities have been undertaken the EU Erasmus+ project Open Badge Network (OBN) since 2014. The key method of requirements analysis is the application of use cases. The OBN has identified eight use cases for the application of Open Badges in formal and informal education in Europe (Rousselle & Jacyniuk-lloyd, 2016).

One of the use cases—*Building a portfolio from badges*—refers to Open Badges as a digital micro-portfolio which can be easy searched by employers to find suitable recruits for job openings. *"By earning badges, young people become more discoverable by tech sector employers, showcasing skills that are now in high demand"* (Ronan Dunne, CEO Telefonica UK) (Dunne, 2015). Another use case—*Open Badges in schools and higher education*—addresses the problem of school credentials hardly describing the competencies pupils achieved. Since schools often fail to recognize prior informal learning of their students, e.g. from employment context. Open Badges ecosystem, which has been growing in this area, poses a challenge in creating parity between seemingly similar badges. In this way, it becomes difficult for badge earners and badge consumers to compare learning outcomes and understand what level of competence a badge represents.

Additional methods of requirement analysis applied in OBN project are qualitative and quantitative online surveys. For example, a still ongoing online-

survey[2], which was started in Q1 2016, focuses on the quality and infrastructure expectations on Open Badges. So far, 30 members of the worldwide Open Badges community participated in this survey (50% issuers, 23% earners) and were asked a number of questions, such as *"What do you think is important for building quality into a badge when you create it?"*. Most responses (69%) to this question selected the requirement "*I should be able to indicate the level of the badge, e.g. if it is part of a larger badge scheme or competency framework*" out of a list of five possible selections.

Additionally, the requirements analysis methodology applied expert interviews to verify and specify in detail preliminary requirements elicited from the general Open Badges community. For example, expert interviews were conducted with ten professional members of the partner institutions or associated members of the OBN project using the following three main questions: (1) *What is the relevant state of the art in competency definition and alignment to Open Badges?* (2) *What requirements exist for a support of competencies in Open Badges?* (3) *What obstacles and out-of-scope functionalities are already known to be considered?* The interview result were condensed and transformed into a *list of requirements, out-of-scope functionality, and problems to solve* (Konert, 2016, Chapter Requirement Analysis). Parts relevant to the course of the paper are listed below. The full lists were reviewed by the project members for approval. Still, it must be considered as not absolutely objective as it covers only the experience and insight of the eight partner organizations behind OBN.

Requirements to Open Badge competency alignment [R1-R7]

R1. Detection of badges that relate to the same competencies (unambiguous)
R2. Detection of alignments and similarity of competences between existing CFs
R3. Decentralized solution
R4. Support for a community wide directory of competency frameworks (CF)
R5. Alignment of OB to competencies remains optional (backwards compatible)
R6. Provision of a standardized vocabulary (multi-language support)
R7. Plugins for frontends, like Learning Management Systems (LMS), to allow direct usage of CFs on badge definition

[2] http://www.openbadgenetwork.com/fill-in-our-survey-about-the-quality-of-open-badges/, last accessed 01.03.2017

4 Existing approaches

In 2015 the Badge Alliance has created an Open Source Open Badge directory with the goal to increase transparency about existing badges and to support discovery[3]. The directory not yet supports any similarity search based on criteria or alignment field of the *BadgeClass*, but the solution could serve as a basis. With COMPBASE an approach exists to define a central competency database that is generic enough to support all competency definitions (Dehne & Lucke, 2015). The authors use Resource Description Framework (RDF) triples in their database, which is accessible via web services and *Representational State Transfer Application Programming Interfaces* (REST-APIs). The solutions lacks the support for decentralized definition as demanded in R3, or alignment to existing (external) CFs (R2), and has not (yet) a support for a standardized vocabulary (R6).

In 2013 the *Integrating Learning Outcomes and Competences* project (InLOC), published its solution to a decentral definition of competency frameworks and cross-referencing them by using Linked Data (LD) (European Commitee for Standardization, 2013). This semantic web approach uses defined, machine-readable reference links (*International Resource Identifiers* (IRIs)). Thus, it is algorithmically possible to differentiate equality, similarity and dependencies among competencies. To address the problem of referencing identical competencies in several CFs, the InLOC *exactMatch* reference can be used (European Commitee for Standardization, 2013, p. 41). Unfortunatelly, InLOC lacks implementation and application of any existing framework. As a sucessor, the European Classification for Skills, Competencies, Qualifications and Occupations (ESCO) defined a new vocabulary *and* encodes a reference framework of common skills and competencies. Like InLOC, ESCO allows *exactMatch* relations to cross-reference other competency frameworks (Balasubramaniam & Kangasharju, 2014). Even though this has currently not been demonstrated, the already available competency definitions of ESCO are a promisiong next step towards alignment of various competency frameworks.

[3] https://badgealliance.github.io/openbadges-directory, last accessed 01.03.2016

5 Discussion

Based on the requirement analysis (R1-7) and the analysis of related work, we propose the following approach to align Open Badges to (existing) competency frameworks. The main element needed is a *competency directory*[4], which allows the community to add, update and search competency definitions of manifold frameworks.

The currently already possible semantic competency alignment of Open Badges is ralely used due to the limitations in finding the proper competency definitions. Moreover, the unique IRI to use for the *targetURL* is hard to find. Initiatives like ESCO are valuable activities to ease the process of finding competency definitions and their IRIs, but still manifold competency frameworks exist beside and need to be found by Badge Issuers, if they want to link *targetURLs* to them in *AlignmentObjects*. Thus, beside the decentralized, cross-referencing web of linked data documents of competencies, one (or several) directories of competency definitions can help to find the proper IRIs to link Open Badges to. The directory is proposed to be fed by IRIs to documents using ESCO vocabulary. The directory software application can then access and parse the documents, index defined competencies and references, and update the data by regular crawling (refresh) of the parsing. A (web-based) user-interface and REST-API to the directory provides search functionality by e.g. keywords, similarity, popularity, region or issuer of competencies. Especially issuers of official competency frameworks are asked to provide a machine-readable format of their frameworks that can be imported by the directory. Until this is established common procedure, the Open Badge community can assist in defining relevant existing competency frameworks in a semantic vocabulary. A detailed proposal with schematic explanation can be found in (Konert, 2016)

6 Conclusion and Outlook

Open Badges can be used as representational digital tokens of competencies. When used as micro-credentials for competencies in online learning

[4] Open Source Release planned at https://github.com/openbadgenetwork/competencydirectory/, last accessed 01.03.2017

environments, the current standard 2.0 allows targetURLs to be used that link to semantic definitions of competencies an Open Badge is aligned to.

This paper proposes the use of semantic linked data, specifically the ESCO and InLOC vocabularies, to align Open Badges to competencies they represent. Thereby, processing tools can better decide which badges represent the same (official) competencies, amend or contain each other, and might be accepted as equal to official certification. Based on an analysis of the current standard and existing approaches towards semantic definition and processing of competency frameworks, this paper proposes a two-tier approach created as part of the Open Badge Network project. This approach contains (1) a competency directory for easy retrieval and search, and (2) an assisting tool to allow definition of existing competency frameworks in the desired linked-data vocabularies.

Currently, the issue of OBI standardizations are under discussion in the community (beside others with Badge Alliance). The IMS Open Badge Extensions for Education (OBEE) Specifications and Compliance Taskforce is dissecting the current Open Badge Specification as it relates to criteria, evidence, assessment characteristics, and the like, and is exploring additional specifications (data requirements or 'rules') that will clearly communicate the educational rigor of Open Badges and ensure interoperability. OBN partners are directly contributing to these Task Forces.

Next steps in the effort to align Open Badges with competency frameworks in the Open Badge Network project will include the release of the currently developed prototype of the competency directory. When it is established as an way to find suitable competency IRIs to use, then assisting tools need to be defined to allow release of new competency frameworks definitions in proper semantic vocabularies.

Based on the requirement analysis (R1-7) and the analysis of related work, we propose the following approach to align Open Badges to (existing) competency frameworks. The main element needed is a *competency directory*[5], which allows the community to add, update and search competency definitions of manifold frameworks.

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[5] Open Source Release planned at https://github.com/openbadgenetwork/competencydirectory/, last accessed 01.03.2017

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7 References

Badge Alliance Standard Working Group. (2016). Open Badges Technical Specification V2.0. Retrieved March 19, 2016, from http://openbadgespec.org/

Balasubramaniam, S., & Kangasharju, J. (2014). ESCO: Boosting Job Matching in Europe with Semantic Interoperability. IEEE Computer Society, 10(October), 62–68.

Casilli, C., & Hickey, D. (2016). Transcending Conventional Credentialing and Assessment Paradigms with Information-rich Digital Badges. The Information Society, 32(2), 117–129. http://doi.org/10.1080/01972243.2016.1130500

Dehne, J., & Lucke, U. (2015). An infrastructure for cross-plattform competence-based assessment. In Prof. of Workshop Facing the Challenges of Assessing 21st Century Skills in the Newly Emerging Educational Ecosystems (CHANGEE 2015). Toledo, Spain.

Dunne, R. (2015). Welcome presentation at the O2 Badge Academy Launch Event. Telefonica UK Offices London.

EU da Vinci project TRACE. (2012). Transparent Competences in Europe - Overview of European Competency Frameworks.

European Commission. (2008). The European Qualifications Framework for Lifelong Learning (EQF).

European Commitee for Standardization. (2013). InLOC - Part 1: Information Model for Learning Outcomes and Competences (CWA 16655-1).

Knight, E., & Casilli, C. (2012). Mozilla Open Badges. In D. G. Oblinger (Ed.), Game Changers: Education and Information Technologies (pp. 279–284). EDUCAUSE.

Konert, J. (2016). Open Badge Network: First Proposal on Competency Alignment and Repository. Retrieved March 20, 2016, from https://t.co/tNDHQTwWSP

Rousselle, E., & Jacyniuk-lloyd, M. (2016). Open Badge Network: O2A1 Collection of Use Cases.

Students experiencing *flow* in a Physics laboratory task using mobile phones and free software

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Abstract: In this paper we outline a study on an alternative to laboratory learning. Normally, lab learning is part of engineering students' courses on Physics. Instead of making them work in a lab, we gave students an inquiry-based, open task: to model the movement of an object. The laboratory equipment consisted of their mobile phones for filming, and free available tracker software. Students worked in groups and reported their results on a poster. We studied the engagement of students with the task and whether it generated *flow*, a state in which one forgets about time. The results show that, indeed, students got into a *flow*, and this related to their perception of challenge. Also, the experiment shows that mobile and free technology can make Physics laboratory learning feasible beyond university campuses and opens new possibilities in inquiry-based laboratory learning, also for large numbers of students, distance education or within less affluent institutions.

Keywords: engineering education - inquiry-based learning - laboratory tasks - mobile technology - Physics education - free software

1 Introduction

At the Faculty of Engineering of University of Agder, we deal with large student numbers (>300). This is a worldwide phenomenon as more and more students gain access to higher education. A few years ago, the large numbers made the faculty decide to abandon the laboratory training in the first-year Physics courses, because the laboratory facilities and its staff could no longer harbour the students. However, the students at our faculty will become engineers, managers, or researchers, who will need skills to measure and model phenomena from the real world so they can describe and analyse these, and eventually, make predictions. For their proper training, it is insufficient to offer large-scale lectures, instructional videos or tutoring sessions to train for written examinations. They also need training to relate measurements to theoretical models. They need skills

to practically handle instruments, calibrate these, measure precisely, work with error margins, and so forth. Therefore, we investigated whether lab training can be done outside of laboratory facilities. If this is feasible, then laboratory training can become independent of university campuses, and become feasible with large student numbers, in less affluent areas, and within distance education.

Generally, *laboratory learning* in Physics is known as boring, because the activities are like cooking from a cookbook. The students follow each step to get a result and it does not involve any thinking. Domínguez et al. (2015) carried out research at a university in Mexico, showing that laboratory learning can be done differently. They asked their students in a Physics course: *a child is throwing a candy to another. Make a mathematical model of this movement*. With such an open-ended, inquiry-based task, students really have to think, because they need to consider the what, how, and why themselves. Research has demonstrated the advantages of such inquiry-based tasks over traditional lectures or teacher demonstrations (De Jong, Linn, & Zacharia, 2013; Minner, Levy, & Century, 2010).

We adapted the open-ended, inquire-based task from Dominguez et al. (2015) and added to it that students would use their mobile phones for filming. Many students now have mobile phones that contain cameras with the quality to film motion sufficiently precise for video analysis. Also we added the use of free software available that can capture the motion from videos based on contrasts and pattern recognition; this is known as *tracker* software. Such democratic availability of equipment opens new possibilities for inquiry-based laboratory training for which expensive laboratories are no longer needed.

2 The task

We carried out an experiment in a large-scale Physics course for first-year engineering students. We gave the students an obligatory, inquiry-based laboratory task, for which no expensive equipment was needed. The task asked students to select a movement of an object (they could chose whatever: throwing a ball, jumping their skate board, driving a car driving). They had to film this movement with their phones. Thereafter, they had to use free tracker software (http://physlets.org/tracker/) on their laptops to transform the movement into measurements, approximate the movement with a mathematical model, and then present this video analysis as a poster including a discussion of the accuracy of their model in comparison to the measurements. The task had to be done in groups of two or three. Collaboration was convenient, because one student alone cannot easily create and film a movement simultaneously.

It was our first time to implement such an open, practical task. Therefore, we did not want to focus on students' learning effects. We considered it a pilot study to find out whether such a task was feasible with large numbers, without expensive laboratory equipment, and with students who have litte experience with open-ended tasks. We felt that we - as lecturers - should first take the opportunity to learn and see whether the task activated students. Our research question was: to what extent does an open task about video analysis of motion with mobile phones and free tracker software activate the students in kinematics and dynamics?

3 Flow

To study the activation of students, we used the concept of *flow*, which is "a state in which people are so involved in an activity that nothing else seems to matter; the experience is so enjoyable that people will continue to do it even at great cost, for the sheer sake of doing it" (Csíkszentmihályi, 1990, p.4). This concept was developed in research on video games, but it also has been used in other research (a.o. Armstrong, 2008, Drakes, 2012). Experiencing *flow* means that one is absorbed, forgets about time, and even may pay a price for this state of activation. Figure 1 illustrates how *flow* depends on the perceived challenge of a task and perceived skills of a person engaging in the task. If the activity is too challenging for the skills, then the task may cause anxiety. If the activity is too easy for the skills, then the task may cause boredom. When challenge and skills are aligned, a person engaging in a task may experience *flow*.

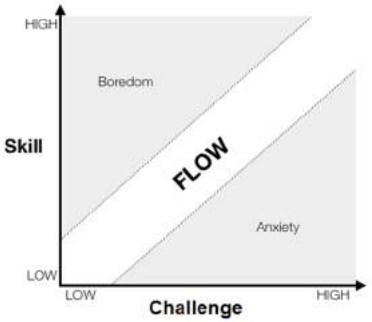

Figure 1: Flow, boredom, and anxiety as they relate to task challenge and a person's skills. Adapted from Csíkszentmihályi (1990)

4 Methods

In the Spring of 2017 we presented the task described in Paragraph 2 to the students of the engineering department (Mechatronics, Electical Engineering, Data Engineering, ICT, and others), as part of the first-year Physics course. There were 346 students for whom the task was mandatory.

The research design for studying students' *flow* was a survey, whereby data were collected through a digital questionnaire within the university's Virtual Learning System. We also conducted interviews and assessed students' work, but those results will be reported elsewhere. Participation in the survey was voluntary and encouraged with prizes of NOK 500 (approx $50) for three randomly drawn participants. After removing irregular answer patterns (e.g. who chose constantly a 3), we remained with n=239 students. Thes response rate 69% is high for a web-based survey (Bryman, 2015).

Table 1: The scales in the questionnaire measuring Skills, Challenge and Flow

Scale	Contributing questions	Cronbach Alpha
Skills (5 items)	q3 The Tracker technology was easy to use. q4 (Inv.) It was complicated to find the right formula of the model. q5 The aims of the task were clear to me. q10 During this task I had full control over what we did. q15 Filming the movement of an object was easy.	0.55
Challenge (5 items)	q1 The "Modelling med Tracker Task" made me curious. q6 Making a poster made me feel like a "real scientist". q8 (Inv.) This task is more suitable for Secondary Schools. q9 This task helped me to better understand the theory. q13 During this task I started thinking about other movements (what if.)	0.73
Flow (5 items)	q2 (Inv.) This Tracker task took too much of my time q7 Time was flying when we worked in this task. q11 (Inv.) I was easily distracted when we worked on this task. q14 I would do this task even if it wasn't obligatory. q16 I would like to have more of such practical tasks.	0.63

Based on instruments from earlier research we developped questions in alignment with the task. We had 15 closed questions asking for (dis-)agreement to statements on a 5-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree), see Table 1. Five questions were designed to measure students' perception of *flow*. For this, we asked for example, whether they forgot about the time, and whether they even would do the task if it wasn't obligatory. By asking several questions related to *flow*, a participant's score is indicator of the extent to which he/she had experienced *flow*. Five other questions were

designed to measure students' self-perceived skills, and a further five questions were designed to measure students' perception of challenge.

We make a difference between *flow* as a concept (written in italics), and the *scale* of Flow (with a capital letter). The concept of *flow* is a psychological state of a person, and therefore it cannot be measured. However, we assume that it can be approximated by a score on the scale of Flow, which results from answers to five questions in our questionnaire. The score on the scale is found by adding the scores on the five questions. As the score on one question ranges from 1-5, the score on the Flow scale ranges from 5-25. Likewise for respectively, challenge and the Challenge scale, and skills and the Skills scale. To increase reliability, within each scale one or two questions were inversely posed, and the scoring was inverted, too. As measure of internal consistency, we calculated Cronbach's Alpha for each scale. If lower than 0.5, a group of questions is considered inconsistent as scale (Bryman, 2015). It turned out that all three scales were acceptable, especially the scales for Challenge and Flow, see Table 1.

5 Results

We observed students everywhere on campus, throwing apples, a cat, or balls. We received more than 100 posters in our Virtual Learning System. However, in this paper we don't analyse the performance of the students (the precision of their measurements, their understanding of modelling, the depth of their analysis, etc.). Instead, we focus on their activation in terms of *flow* as measured through the questionnaire. Appendix A shows the frequencies on the questions pertaining *flow*. Table 2 shows the mean scores (1=low, 3= middle, 5=high).

Table 2: Scores on Flow questions (n=239)

Flow questions	mean (std dev)
q2 (Inv) This Tracker task took too much of my time	3.67 (0.88)
q7 Time was flying when we worked in this task.	3.60 (0.92)
q11 (Inv) I was easily distracted when we worked on this task.	3.55 (0.91)
q14 I would do this task even if it wasn't obligatory.	2.60 (1.13)
q16 I would like to have more of such practical tasks.	3.70 (1.02)

The mean score on four questions is higher than 3.5, being well on the positive side. This indicates that a majority of the students experienced a state of *flow* to quite an extent. Only question 14 is answered below the middle range. This is the question about doing the task even if at higher costs (Csíkszentmihályi, 1990).

When adding the students' scores on the five questions, we obtain their score on the scale Flow. On this scale, 31 students (13%) scored 13 points or lower, 67 students (28%) scored in the medium range of 14-16 points, and 141 students (59%) scored 17 points or higher. This indicates that approximately three out of five students experienced *flow*.

Table 3: Mean scores to Skills, Challenge, and Flow (n=239)

Scale	**mean (std dev)**
Skills (5 items)	18.8 (2.7)
Challenge (5 items)	15.5 (3.3)
Flow (5 items)	17.0 (3.1)

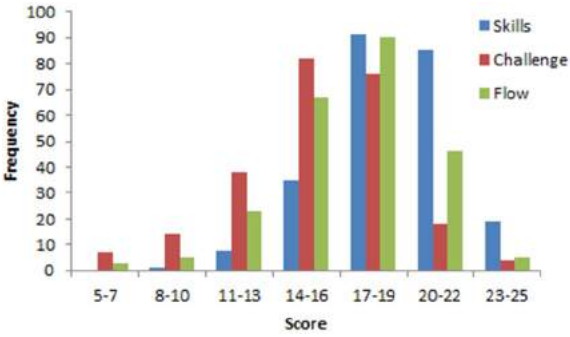

Table 3 presents the mean scores on the scales for Skills, Challenge and Flow (minimal score = 5, medium score range = 14-16, maximal score = 25). The histogram shows the frequencies of scores (number of students with certain scores). The scores on Skills are highest: generally, students perceived themselves as highly skilled; the low standard deviation indicates a high agreement among students. The scores on Challenge are around the medium; these scores are most "normal" (making a Gauss curve). The distributions for Skills and Flow are skewed to the right, which means that students gave these, on average, higher than medium scores.

We can make a scatter diagram similar to the Csíkszentmihályi-figure, see Figure 1. We can take each student as a dot defined by his/her Challenge score on the x-axis and the Skills score on the y-axis, see Figure 2. The diagram shows a scattered distribution, which means that there is no correlation between the scales Challenge and Skills (r = 0.097). In the diagram we added the scale for Flow by coloring the dots depending on students' Flow scores. These range from red (low), via yellow (medium) to green (high). Roughly, one can discern red, yellow and green areas with overlappings. The red area is on the left showing the students who experienced little *flow* (13% of the students). These students indicated that the task posed little challenge, independently of their perceived skills. The yellow area runs from top left to bottom right showing the students who experienced medium *flow* (28%). These students either indicated low challenge and high skills, or medium challenge and medium skills. The green area

is the largest with the majority of students (59%), and it is in the top-right showing the students who clearly experienced *flow*. These students indicated that the task was challenging, and they perceived themselves skilled. This color distribution of Flow does not confirm the Csíkszentmihályi-diagram; instead, the figure suggests that the students in our study experienced *flow* depending on the perceived challenge, and less depending on their skills.

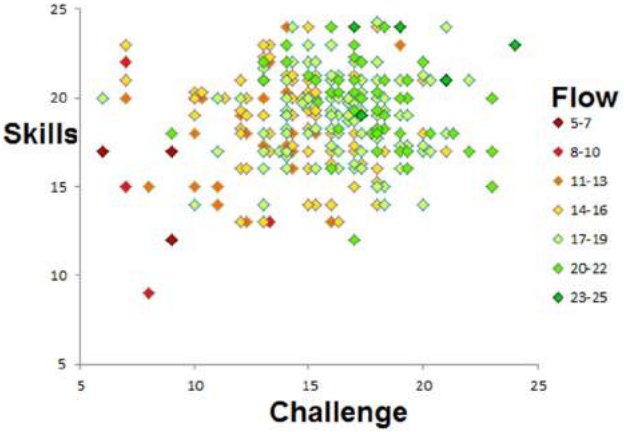

Figure 2: Flow score indicated by color, as depending on Skills and Challenge

6 Conclusions

Our research question was: to what extent does an open laboratory task about video analysis of motion with mobile phones and free tracker software activate the students? Based on the results from the survey, we conclude that a majority of the students (59%) experienced *flow*, forgetting about time and wanting more of such activities. This result is confirmed by anecdotal evidence of students' reactions in tutorial sessions and the high response rate to the survey. We cannot confirm Csíkszentmihályi's (1990) theory that *flow* depends on the alignment of skills and challenge. This may be caused by the task characteristic of *low floor, high ceiling*. This means that the task was accessible to all students, whether excellent or not, and that they could adapt the level of challenge by chosing a more complex movement to analyse. In this way, the task characteristic made that the challenge directed the *flow* and the *flow* became independent of skills.

7 References

Davies, A., Fidler, D., & Gorbis, M. (2011). Future work skills 2020. *Institute for the Future for University of Phoenix Research Institute*, 540.

Armstrong, A. (2008). The fragility of group flow. *Journal Math[cal] Behavior, 27*(2), 101-115.

Bryman, A. (2015). *Social research methods.* Oxford, UK: Oxford University Press.

Csíkszentmihályi, M. (1990). *Flow: The psychology of optimal experience.* Harper & Row.

De Jong, T., Linn, M. C., & Zacharia, Z. C. (2013). Physical and virtual laboratories in science and engineering education. *Science, 340*(6130), 305-308.

Domínguez, A., de la Garza, J., & Zavala, G. (2015). Models and modelling in an integrated physics and mathematics course. In *Mathematical Modelling in Education Research and Practice* (pp. 513-522). Springer International Publishing.

Drakes, C. I. (2012). *Mathematical Modelling: from Novice to Expert.* (Unpublished doctoral dissertation), Simon Fraser University, Burnaby.

Minner, D. D., Levy, A. J., & Century, J. (2010). Inquiry-based science instruction — what is it and does it matter? Results from a research synthesis 1984 - 2002. *Journal of research in science teaching, 47*(4), 474-496.

8 Appendix - Frequency results on Flow items of the survey

2. This "Modellering med Tracker" took too much of my time.

Alternativ	Antall	Prosent
Veldig enig	4	1.6%
Enig	20	8.1%
Verken enig eller uenig	67	27.2%
Uenig	119	48.4%
Veldig uenig	34	13.8%

7. Time was flying when we worked on this task.

Alternativ	Antall	Prosent
Veldig enig	27	11%
Enig	83	33.7%
Verken enig eller uenig	100	40.7%
Uenig	31	12.6%
Veldig uenig	5	2%

11. I was easily distracted while doing this task.

Alternativ	Antall	Prosent
Veldig enig	7	2.8%
Enig	27	11%
Verken enig eller uenig	63	25.6%
Uenig	126	51.2%
Veldig uenig	22	8.9%

14. I would do this task even if it wasn't obligatory.

Alternativ	Antall	Prosent
Veldig enig	7	2.8%
Enig	55	22.4%
Verken enig eller uenig	68	27.6%
Uenig	67	27.2%
Veldig uenig	48	19.5%

16. I would like to have more of such practical tasks.

Alternativ	Antall	Prosen
Veldig enig	55	22.4%
Enig	95	38.6%
Verken enig eller uenig	69	28%
Uenig	18	7.3%
Veldig uenig	9	3.7%

Towards an Evaluation Toolkit for Asynchronous (Audio) Book Clubs

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Abstract: As an additional opportunity for personalized learning, within a university course, a new mobile learning module was designed and implemented to facilitate students' learning based on elective course readings. Facebook Groups were launched as shared learning spaces, each dedicated to one of the shortlisted titles. Each Asynchronous (Audio)Book Club (AABC) was structured via identical learning activities designed to foster cognitive and metacognitive learning processes and provide social aspect to reading. Creation of an Evaluation Toolkit is one of the objectives of a larger research project. The first actionable and possibly transferable evaluation and design principle is reported here, offering an insight regarding the existence of somewhat separate components of the learning experience students derived from the module.

Keywords: asynchronous audiobook clubs, educational design research, learning experience, mobile learning, personalized learning, meaningfulness, enjoyability, evaluation principle.

1 Introduction

Current research points out the concurrence of increasingly ubiquitous use of mobile technologies and social media among university students and faculty in some parts of the world (Ally & Tsinakos, 2014; Brooks, 2016; Chen & Denoyelles, 2013; Farley et al., 2015; Gikas & Grant, 2013). Several authors stress the potential of mobile technologies to support and facilitate personalized learning (Grajek, 2016; Pimmer, Mateescu, & Gröhbiel, 2016; Sinen, 2015). Growing body of research offers insight into the 'why', 'what' and 'how' of mobile learning at universities (Ally & Tsinakos, 2014; Farley et al., 2015; Gikas & Grant, 2013;

Pimmer et al., 2016; Sinen, 2015), but gaps in implementation and practice remain (Brooks, 2016; Chen & Denoyelles, 2013; Chen, Seilhamer, Bennett, & Bauer, 2015; Farley et al., 2015; Grajek, 2016). A recent systematic review of empirical studies of mobile learning in higher education confirms gaps in research (Pimmer et al., 2016), finding mobile learning designs to be mostly of instructionist nature, with only a small numbers of studies focusing on situated, collaborative or constructionist learning designs (Pimmer et al., 2016). There is also a prevalence of research being conducted in language learning, health and computer science courses. Pimmer et al. called for empirical demonstration of affordances and constraints of mobile learning in other disciplines (2016).

While the trends towards mobile learning and personalized learning in higher education are evident, university learning management systems are mostly not yet ready (Grajek, 2016). On the other hand, social media tools are available to serve as mobile learning platforms and facilitate instructionist, situated, collaborative and constructionist learning. According to some research, many academics and students do not believe in the capacity of social media as learning platform (Madge, Meek, Wellens, & Hooley, 2009; Manca & Ranieri, 2013, 2016). To investigate potential gains and limitations, a new mobile learning module was designed for a university course and implemented to facilitate personalized learning based on elective course readings. Facebook Groups were leveraged as a platform. An evaluation and a design principle is proposed here.

2 Asynchronous AudioBook Club module design

Providing students with meaningful personalized learning experiences is one of the current design challenges for faculty in higher education (Grajek, 2016). The Asynchronous AudioBook Club module was one of the outcomes of an ongoing course redesign effort. Going 'more mobile' was an additional self-imposed design restriction based on presumed and observed needs of students. The AABC jointly answered following design challenges:

- How can we best facilitate personalized learning based on shortlisted elective readings?
- How can we best provide students with credit bearing mobile learning opportunities?

A book club, in its nature, is a shared learning space. In this case, a space structured by ten generic micro learning activities designed to scaffold discussion, collaborative meaning making and support students' self-regulated learning. The

learning activities gave high level of agency to students to further personalize their learning within the AABC based on each student's specific interests. Decision was made to use Facebook Groups as platform for deployment of AABCs, striving for easy online and mobile access independent of university learning management system. The AABCs were fully asynchronous – students participated at a time of their choosing within a period of four months. The AABC was integrated as an opt-in (extra) credit bearing learning activity within the course. Students decided to participate or not, chose freely from the proposed four book titles according to own interests. Participants then made the decision to consume the titles either as audiobooks, eBooks, books or combine the available media.

Considering the ubiquitousness of mobile devices among students, accessibility of platforms, relative simplicity of deployment of the AABC and availability of tens of thousands of non-fiction audiobooks and eBooks, podcasts and playlists in diverse disciplines, there seems to be potential for diffusion of the format within and beyond higher education. Use of social media as platform is not necessary, but has some advatages and brings interesting opportunities, such as merging learners from higher education and participants of professional development and/or lifelong learners within one learning space. Production of a body of diverse empirical research on implementations of AABCs would be helpful to ground best practice in evidence.

3 Educational Design Research

After evaluation of some implementations in local context, the intention is to scale up the endeavours into an Educational design research project, where empirical investigations will be "conducted in real learning settings to craft usable and effective solutions" (McKenney & Reeves, 2013). Engagement of researchers and practitioner from diverse institutions in "iterative development of solution" (McKenney & Reeves, 2014) seems to the best course of action for achieving a durable and transferable design. If the Asynchronous (Audio)Book Club, should present a viable, customisable solution to the widely present need for personalized and/or mobile learning within university courses, it needs to come with suitable evaluation tools for practitioners' use. Thus, creation of an Evaluation Toolkit is one of the key research objectives of the EDR project. The guiding questions for this objective are:

1. What evaluation criteria and methods in general will be most meaningful for AABC evaluation?

2. What tools and metrics can best inform maturing of the design and its diffusion?
3. What (tools) do practitioners need to gain immediate and actionable insights into their own implementations?

We begin to answer the questions here, with a proposition to evaluate the 'book related' and the 'club related' components of the learning experiences separately, versus gathering feedback only on the AABC module as a whole. The hypothesis of existence of these components was formulated based on observation in an ongoing AABC implementation and based on issues with interpretation of feedback encountered during previous iteration of the course module.

4 Methods

Course, Students and AABC Deployment

AABC was piloted in *Management for Educational Change* course within the Master of Educational Sciences Program and in *Innovations in Education* course offered in Adult Educational Sciences programs of the university. For most students, this was their first university course with English as a language of instruction. Only 2 students identified as English native speakers. Students' prior exposure to Audiobooks was limited. Based on the beginning of term survey (n=83), 72% have never listened to an audiobook before taking the course and less than 5% have previously used audiobooks for a school reading assignment. 92% of respondents reported using a smartphone daily and 97% had frequently used Facebook prior to start of the course. Less than half of the enrolled students started participating in the module. Students were free to participate in any, none or all AABCs at any time. Completion of the module was rewarded by 3 points out of 20 possible points (20 points = 100%). Maximum 2 AABC participations per student were eligible for course credit rewards. The AABCs were launched as full rollout in first week of the course via Facebook groups. Each AABC was structured in twelve 'posts' by course staff. Two posts were of organisational nature; ten posts facilitated requisite micro learning activities, e.g. articulation of motivation for participation, formulation of learning objectives, sharing of learning strategies or reflection of learning experience. Students also uploaded three required digital learning artifacts – mindmaps.

Instruments

Bellow presented data regarding students' perceptions of learning experience was collected via an online survey embedded in the AABCs. Students filled in the survey towards the end of their participation in the module. Among other diverse qualitative and quantitative items, Likert scales were used for items measuring meaningfulness and enjoyability as dimensions of the respondent's perception of the (audio)book and the learning activities within AABC. In the hypothesis, meaningfulness was considered as a likely predictor of enjoyment of the learning activity. The survey yielded 38 responses from 32 students who completed at least one AABC module, 4 students completed two and 1 student completed three AABC modules. Data was analyzed using the MAXQDA Analytics Pro v. 12.3.1. (Verbi GmbH, Berlin, Germany). A significance level of 0.05 was used. The degree of correlation was classified as small (from 0.10 to 0.29), moderate (from 0.30 to 0.49) and high (from 0.50 to 1).

5 Results

To examine the hypothesis of existence of two distinct components of the learning experience derived from participation in the course module, correlations between the user survey responses were analysed. Identified significant relationships between perceived a) meaningfulness of the book, b) enjoyability of consumption of the book, c) meaningfulness of the learning activities and d) enjoyability of participation in the AABC are presented in Table 1.

Table 1: Related but distinct components of learning experience within the module
(CORRELATION: SPEARMAN'S RHO using MAXQDA12; n=38, p-value: 1-tailed; Valid cases: 38; Missing cases: 0)

	Fun participating in AABC	Meaningfulness of learning activities	Fun listening/reading of the book	Meaningfulness of the book
Fun participating in AABC		0,634 (p=0,0000)	0,329 (p=0,0219)	0,099 (p=0,2774)
Meaningfulness of learning activities	0,634 (p=0,0000)		0,394 (p=0,0072)	0,253 (p=0,0626)
Fun listening/reading of the book	0,329 (p=0,0219)	0,394 (p=0,0072)		0,612 (p=0,0000)
Meaningfulness of the book	0,099 (p=0,2774)	0,253 (p=0,0626)	0,612 (p=0,0000)	

The results show statistically significant positive correlations of perceived meaningfulness of the book and enjoyment of the listening/reading. Another strong relationship appears between the perceived meaningfulness of the learning activities with the AABC and enjoyment of participation in the AABC. The correlation of enjoyment of the book and enjoyment of the activities is only moderate, but exists, as does the link between enjoyment of the listening/reading and meaningfulness of the activities.

6 Discussion

The correlation pattern confirms the existence of two related but distinct components of the overall learning experience derived from participation in the course module. The first component is the 'club related' component of the learning experience. Second is the 'book related' experience.

The distinction of components of the learning experience may play an important role in practitioner's decision making regarding relevant design modifications between implementations. If analysis of the collected responses reveals space for improvement in perceptions of meaningfulness of the book among students, the relevance and usefulness of the content can be discussed with the cohort and/or different book titles can be considered and students can be engaged in curating the shortlist. If the book is perceived as meaningful, but students report not enjoying the experience, it may be an indication of usability issues. If lack of perceived meaningfulness of activities occurs, their relevance and objectives can be discussed with the cohort and/or different activities can be considered and students can be engaged in proposing these. Perceptions of meaningful but not enjoyable activities may indicate interpersonal or usability issues.

Without recognizing the distinct experience components during feedback collection, what conclusions can practitioner draw? What modifications should be made to improve students' learning experiences in next iteration if only overall module experience is evaluated?

In case of a 'perfectly tuned' implementation, with excellent feedback on all four variables, the distinction of the two components will statisticaly disappear, but till that time, a more detailed understanding of possible issues of a specific implementation can be gained by gathering detailed, rather than only overall module feedback.

7 Conclusions

Although the small scale of the pilot could be considered an important limitation for drawing ecologically valid claims or conclusions regarding learning experiences derived from participation in Asynchronous AudioBook Clubs in general; the presented study provides potentially valuable and transferable design and evaluation guidelines. The existence of two related but distinct components of the overall learning experience derived from participation in the course module – the 'book related' and the 'club related' component. In this EDR project, learners' perceptions of meaningfulness and enjoyability of the book and the learning activities will be tracked and analysed as linked, but separate components of the AABC learning experience. Further dissection of the two AABC learning experience components will be necessary to gain even more clarity on specific implementation issues in diverse contexts.

8 References

Ally, M., & Tsinakos, A. (2014). *Increasing access through mobile learning*. Commonwealth of Learning, Vancouver.

Brooks, D. C. (2016). *ECAR Study of Undergraduate Students and Information Technology*. 2016.

Chen, B., & Denoyelles, A. (2013). Exploring students' mobile learning practices in higher education. *Educause Review*, *7*.

Chen, B., Seilhamer, R., Bennett, L., & Bauer, S. (2015). Students' mobile learning practices in higher education: A multi-year study. *Educause Review*.

Farley, H., Murphy, A., Johnson, C., Carter, B., Lane, M., Midgley, W., … Koronios, A. (2015). How Do Students Use Their Mobile Devices to Support Learning? A Case Study from an Australian Regional University. *Journal of Interactive Media in Education*, *2015*(1). https://doi.org/10.5334/jime.ar

Gikas, J., & Grant, M. M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones & social media. *The Internet and Higher Education*, *19*, 18–26.

Grajek, S. (2016, March 7). Trend Watch 2016: Which IT Trends Is Higher Education Responding To? Research report. CO: ECAR.

Madge, C., Meek, J., Wellens, J., & Hooley, T. (2009). Facebook, social integration and informal learning at university: "It is more for socialising and

talking to friends about work than for actually doing work." *Learning, Media and Technology*, *34*(2), 141–155. https://doi.org/10.1080/17439880902923606

Manca, S., & Ranieri, M. (2013). Is it a tool suitable for learning? A critical review of the literature on Facebook as a technology-enhanced learning environment. *Journal of Computer Assisted Learning*, *29*(6), 487–504.

Manca, S., & Ranieri, M. (2016). "Yes for sharing, no for teaching!": Social Media in academic practices. *The Internet and Higher Education*, *29*, 63–74. https://doi.org/10.1016/j.iheduc.2015.12.004

McKenney, S., & Reeves, T. C. (2013). *Conducting educational design research*. Routledge.

McKenney, S., & Reeves, T. C. (2014). Educational Design Research. In J. M. Spector, M. D. Merrill, J. Elen, & M. J. Bishop (Eds.), *Handbook of Research on Educational Communications and Technology* (pp. 131–140). New York, NY: Springer New York. https://doi.org/10.1007/978-1-4614-3185-5_11

Pimmer, C., Mateescu, M., & Gröhbiel, U. (2016). Mobile and ubiquitous learning in higher education settings. A systematic review of empirical studies. *Computers in Human Behavior*, *63*, 490–501. https://doi.org/10.1016/j.chb.2016.05.057

Sinen, H. B. (2015). A literature review on mobile learning. *International Journal of Social Media and Interactive Learning Environments*, *3*(3), 219. https://doi.org/10.1504/IJSMILE.2015.072266

Improving student approaches to Online Assessment in Higher Education with Visualisation Software

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Abstract: Studying via the Internet using information tools is a common activity for students in higher education. With students accessing their subject material via the Internet, studies have shown that students have difficulty understanding the complete purpose of an assessment which leads to poor information search practices. The selection of relevant information for particular learning assessments is the topic of this paper as it describes a case study that focuses on the information tool use of a small group of participants and is a continuation of similar research studies. The study and discussed research findings point to the benefit of students use of a visualisation tool to provide relevant learning cues and improve engagement with online assessment.

Keywords: visualisation, open source, online

1 Introduction

Customising technology use and practices to enhance learner experience provides students with an affordance (Jones & Shao, 2011) to capitalise their learning and benefit from technology. Yet many students still struggle with aspects of information literacy even though their access to technology has improved and they appear to be very familiar in its daily usage (Jones et al., 2010). Selecting the correct search tool, determining constructive search criteria and evaluating the retrieved information is still problematic for many students. Students persist in using search platforms such as Google or Wikipedia instead of using technologies in a sophisticated manner to make use of the increasing set of information platforms. Students rather conform to a conventional pedagogy using generalist information platforms (Judd & Kennedy, 2010). Springer (2016) found that teaching staff who do experiment with newer technologies, usually revert back to established tools and methods and are reluctant to use emergent social technologies. The students are then influenced in their technology and

internet use by the guidance and professional practice set by their instructors (Beckman, Bennett & Lockyer, 2014).

A challenge in learning from internet-based material is the sheer amount of information available online that can potentially hinder deep reading. In a comprehensive study of web browser logs of 25 participants, Weinreich *et al.* (2008), analysed nearly 60,000 first page visits to conclude that 17% of new pages were visited for less than 4 seconds, while nearly 50% of the first page visits lasted less than 12 seconds. It seems that users generally scan or glimpse over the information to locate keywords rather than doing any actual reading. Most user stops on Google search results were even shorter (ranging from 2-12 seconds), and there were no lengthier stays. Thompson (2013) reports similar searching trends from a survey of 388 first year university students and recommends students be given explicit instruction in forming search terms and evaluating the discovered information.

This paper showcases the use of a visualisation tool to influence information retrieval by describing a third phase pilot study that examined how university students use information tools to answer assessment tasks. The study investigated how students interacted with first the visualisation tool and then online information tools as they approached a learning task. Some of the data from the study will be presented along with some initial key findings and serves as a forerunner to a larger intended piece of research.

2 Methodology

The study was undertaken at Charles Sturt University in Australia in the Faculty of Arts and Education and continues the methodological approach adopted for the first two phases of the research. In this case study, student volunteers were required to undertake a 45 minute usability study in a computer lab located on one of the university campuses where their information searching was recorded using eye tracking software and then participate in a 10 minute interview with one of the researchers.

Phase three of the study focused on using a visual intervention to assist students in refining their information searching. There 5 participants who were enrolled in the K-12 B Ed degree. During a one-week period in an arranged mutually convenient time, students met with one of the researchers in the library located on one of the university campuses. The method of collecting the data was identical to the previous two phases where students were requested to

employ their usual study approach for information searching and their computer activity was recorded using eye tracking software followed by a 10 minute interview. However, before the students started their information search process they were asked to use a software program called 'Wordsift' which is open source software developed by Stanford University. The user inserts text into the software's dialog box and the program will identify the 50 most used words in the text as a word cloud. The program will also highlight words used in their original context along with Google image and visual thesaurus results.

The research plan was to paste the assignment text into Wordsift and observe students using the results in their information searching. Due to casual work pressures, only one student was able to arrange a meeting with the researcher before starting their assessment. The other 4 students participated after they had started their assessment and this timing of their participation did affect the finding.

3 Findings

The initial findings are divided into three categories; wordsift, information searching and information synthesis. The use of the wordsift program showed that an online intervention strategy does provide an extra layer of scaffold to assist students with their assessments. In the use of wordsift three of the five participants carefully checked some of the words from the word cloud in the contextual sentences and the visual thesaurus. The eye tracking response showed these three participants reading every line of the results. The first participant selected one word from the word cloud result and then used one of the context sentences as a search term. The interview with this participant confirmed that the word selected corresponded with an assessment section and the focus provided by wordsift enhanced the search results. The interviews with the other two participants who used wordsift revealed that they would have liked to have used the software at the start of the assessment but still found the software useful as they were able to confirm that they had used words in the correct context confirming that the use of contextual visualisation confirms the student engagement with the task (Brookes, Gilbuena & Krause, 2014). Of the remaining two participants one found the visual thesaurus useful and did state that they could see it as a benefit at the start of the assessment but the last participant said they did not like using that type of software.

The searching behaviour of the participants showed a more focused search by participants compared to the previous two research phases. All participants

entered productive search terms that yielded results connected to the assessment and the eye tracking software showed that they read every result on the first result page of their saerch. In all cases references from the first results page were opened for further investigation and use. Accompanying the data searches were findings showing increased elements of higher order thinking where students displayed behaviour that indicates evaluation of the material they were reading (Hung et al., 2010; Smith & Qayyum, 2015).

Characteristics of higher order thinking are apparent in the comparison of sites behaviour, comparison to annotated notes and point to some indication of information evaluation and analysis by the participants in the formation of their answers. There were other observed behaviours such as 7 instances of returning to a website to compare an overall result and in some cases specific pieces of information when answering the assessment question. All participants were rigorous in carefully checking responses.

4 Conclusion

The findings from the third phase of this case study provides some evidence that the use of specific formatting interventions can scaffold the way university students approach researching the answers for online assessment. Observation of participants showed that after using Wordsift, students searched for data with clearly focused search terms resulting in information results that could be used to answer the assessment and thereby reducing the amount of time searching for suitable information. This pilot study highlighted three outcomes that were beneficial for students studying online. The suitability of the software available to all students highlighted keywords for participants to seek and engage with information during their online research for the assessment, including their tool usage, search strategies and reading behaviours**.** Using the visualisation software influenced the way higher education students approach their investigation for assessment, either in focusing their initial strategy to answer the assessment or to confirm their answers**.** Finally using such software increased the efficiency and effectiveness in the way that the students approached the assessment enabling better use of time to investigate and interrogate information at a greater depth.

Clearly when students are studying online any automated assistance that students can rely on to assist them in providing greater understanding for academic tasks is of benefit. Such results point to the need to involve a greater number of students engaged in an online subject to compare and validate findings to the previous case study. Such findings will provide direction to those

areas of the university involved with either designing online assessment pr providing assistace to students in the online environment and may lead to an evolution of the wordsift program to custom built software targeting the learning needs of higher education students.

5 References

Beckman, K., Bennett S. & Lockyer L. (2014). Understanding Students' Use and Value of Technology for Learning. Learning, Media and Technology, 39(3): 346–367.

Brooks, B., Gilbuena, D., Krause, S., & Koretsky, M. (2014). Using word clouds for fast, formative assessment of students' short written responses. *Chemical Engineering Education*, *48*(4), 190-198.

Hung, M. L., Chou, C., Chen, C. H., & Own, Z. Y. (2010). Learner readiness for online learning: Scale development and student perceptions. *Computers & Education*, *55*(3), 1080-1090.

Jones, C & Shao, B. (2011). *The net generation and digital natives: implications for higher education.* Higher Education Academy, York.

Judd, T., & Kennedy, G. (2010). A five-year study of on-campus Internet use by undergraduate biomedical students. *Computers & Education*, *55*(4), 1564-1571.

Springer, J. A. (2016). *The development of effective online pedagogical skills among higher education faculty in three private California universities* (Doctoral dissertation, University of La Verne).

Thompson, P. (2013). The digital natives as learners: Technology use patterns and approaches to learning. *Computers & Education*, *65*, 12-33.Here are some examples:

Weinreich, H., Obendorf, H., Herder, E. & Mayer, M. (2008). Not quite the average: an empirical study of Web use. ACM Transactions on the Web, 2(1), Article no. 5.

Leadership and Educational Change for 21st Century Schools

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Abstract: All current school reform efforts aim to improve teaching and learning. But there are huge differences in how this is done. All approaches, however, depend on the motivations and capacities of leadership. Any reform creating innovative schools to meet the challenge of the 21st century is difficult unless leaders share its aims and are prepared to make it work. So "effective" or "successful" leadership is critical to school reform. Evidence suggests that successful leadership can play a highly significant role in improving school reform and learning. Social change requires leadership that encapsulates vision as well as achievable practice. This paper investigates the key elements of identified change in educational networks and how do they relate to the employment market (existing and anticipated). It examines the link to external social and demographic change. Within this framework we look at how leadership will play a key role in determining choices as well as in energizing existing and emerging networks and in driving change.

Keywords: Leadership; Change; Teacher training; School transformation; Educational networking; transformation; innovation.

1 Introduction

All current school reform efforts aim to improve teaching and learning. But there are huge differences in how this is done. All approaches, however, depend on the motivations and capacities of leadership. Leadership essentially concerns itself with and is all about organizational improvement. In more precise terms, leadership concentrates on establishing widely agreed, valued and worthwhile directions (both strategic and tactical) for the organization and implementation of all that is required doing to stimulate, motivate, guide and support people to move in those directions. A generic definition of leadership – especially impactful and effective leadership – is quite elementary - it is about direction and influence. Stability could be described therefore as the goal of what is often called

"management." In that context it can be said that Improvement is the goal of leadership.

Any reform creating innovative schools to meet the challenge of the 21st century is difficult unless leaders share its aims and are prepared to make it work. So "effective" or "successful" leadership is critical to school reform. Evidence suggests that successful leadership can play a highly significant role in improving school reform and learning. Social change requires leadership that encapsulates vision as well as achievable practice. This means leadership needs to be investigated at intermediate levels, as it is conceptualized and developed within the following frameworks:

- Networks of educational centres
- Administrative coordination networks
- Professional bodies and associations
- Policy bodies.

There is much to be learned about who provides such leadership, how it is productively distributed across the school system and what stimulates and sustains its development. There is much to learn about which forms of leadership are most likely to foster learning and how such successful forms of leadership contribute to school reform and innovation. One key issue in what we know about successful school leadership is that much of the educational leadership literature does not focus on actual *leadership practices* but rather on the leaders' values, beliefs, skills or knowledge felt necessary to act in an effective manner, inferred from observation of leaders at work. Accumulated empirical evidence has a great deal to say about effective leadership practices, but this must be developed. The key research question is to investigate leadership practices at the intermediate level in K-12 schools and how this contributes to an agenda of educational reform in Catalonia.

The aim of this paper is to provide evidence of productive, helpful or successful leadership practices and how they interact to improve student learning and school reform. This means describing those successful practices, as well as their relationship to the school organization and to enhanced learning outcomes for students.

2 Leadership in Emerging Schools

The focus of this research investigation can be looked at from twin perspectives. On one hand, there is the need for a new model of school organization that can

provide students with life skills required in our emerging knowledge society. On the other hand, there is the importance of understanding the critical nature and role of leadership in this change process. Specific attention focuses on schools in Catalonia and their performance in a process of profound educational policy change.

The development of schools in a way that facilitates the kind of learning needed in the new knowledge society means configuring forms of versatile organization to accompany this transformation. Flexible organizational structures facilitate possibilities for change and refocusing of these organizational structures (Martín-Moreno, 2007). Students of the 21st century must learn continuously to develop self-directed basic skills to achieve their full potential as citizens. The challenge is that schools need to develop and extend new forms of leadership essential to organizing centers capable of promoting educational environments based on the *Principles of Learning* (Dumont et al., 2010).

Leadership in the field of education is one of the key factors of this change. Indeed, the OECD report, *Innovative Learning Environments*, added three new learning principles to the seven pre-existing ones, with leadership being one of these (ILE, 2013). Thus, leadership in education is one of the basic principles of learning as established by the provisions of the OECD (Instance, 2015). For this reason, to be interested in the transformation of the existing education and learning system also means the need for a strong focus on leadership. Leadership is critical to improve practice and to implement new educational policies that facilitate schools to provide young learners with environments and learning experiences geared to the current demand for "rethinking education" (UNESCO, 2015). This is also a demand of large international organizations in seeking to ensure a proper and relevant education for society and the knowledge economy (Martinez et al., 2013).

In this regard, the Education Law of Catalonia (LEC Law 12/2009 of 10 July) promotes a shift towards improving educational organizations. In particular, Article 100 states that the administration should promote the leadership capacity of the education professionals who organize and manage learning centers, under the aegis of the draft *Decree of Autonomy Teaching and Management Centres*. A central question of this paper focuses on how this leadership is both understood and operationalized. While the Law provides for the independent evolution of each center and the implementation of strategic plans for improving educational offers available to schools based on their uniqueness, it encourages development of advanced educational settings where leadership constitutes a decisive factor. An added critical aspect is geared towards training center directors so that they meet planning, participation, improvement, efficiency evaluation and school

goals. Therefore, the LEC provides a framework to promote a Catalan education system that can take appropriate steps to respond to the demands of the twenty-first century with flexibility. These steps include the power of systematic and structured pedagogical innovation, recognition of good educational practices, the promotion and support of educational leadership, teacher training, infrastructures for digital learning and the provision of centers for pedagogical excellence (Preamble, LEC, 2009).

In this process of change and evolving legal frameworks, the specific role of leadership is crucial. Leadership for effective learning is an essential factor for improving the models of learning and sustainable academic success in Catalonia and internationally (Martinez et al., 2013). As we have seen, the OECD has stresses that development of learning environments needs to go beyond the seven principles that underpin the nature of learning (OECD, 2010). We need to remember three complementary aspects to understand change, innovation and educational reform:

- Research on learning
- Practice, analysis and design of innovative practices
- Implementation and system change through leadership, innovative strategies and expansion of change into widespread sustainable best practice (Instance, 2015).

This paper investigates the importance of leadership in development of educational models and networks at the intermediate level of policy change and renewal. These networks will drive the process to ensure schools incorporate change into their operating systems so they can respond adequately to the need to rethink education (UNESCO, 2015). Leadership plays a key role in determining choices as well as in energizing existing and emerging networks and in driving change. The nature, type and role of this leadership is critical in determining the success of networks in achieving goals and targets. The focus can be classrooms, but the structures and networks are emerging and expanding rapidly in Catalonia.

The research adopts a Grounded Theory perspective in its methodology using theoretical sampling to undertake in-depth interviews, observations, data collection, materials and document reviews, analysis of results, and identification of leading indicators to provide evidence of strategieswhich link to the type of educational leadership used by each intermediate network in Catalan schools.

3 Conclusions

Recent research has emphasized that leadership in education is a subject that deserves to be analyzed because of its impact on implementation of policy but also on the functioning of schools and academic results of students (TALIS report, 2013). Moreover, in today's context, analysis of the leadership issue relates to the need for school organizations to develop into more flexible and dynamic organizations where all stakeholders (Teachers, directors and students) are able to adapt to the changes and challenges of education in an interconnected world, which is also uncertain and complex.

This context requires a framework which increasingly sees a gradual transition from traditional organization and uniform centers to a new model of "versatile school", an educational institution without definitive or permanent organizational structures, organized with sufficient flexibility, providing opportunities for change and reorganization of part or all of the educational programs on offer.

Schools are not isolated from society, but form an intrinsic part of it (Fullan, 2006). Changing one part may have a certain impact, but not as much as if the transformation occurs in all parts simultaneously or in coordinated joint effort, especially if schools or if they are working in shared and complementary ways. For this reason, it costs more to make reforms in education through rebuilding the social structures that promote and implement reforms in schools rather than partial and piecemeal individual efforts. But evidence demonstrates that leadership is the single meta-systemic strategy to ensure that every school can be a great school (Hopkins, 2007).

4 References

Dumont, H., Istance, D. & Benavides, F. (2012). *The nature of learning. Practitioner Guide. How can the learning sciences inform the design of 21st century learning environments?* pp. 6-7. OECD Publications: Paris.

Fullan, M. (2006). *Turnaround Leadership. J*ossey-Bass Leadership Library in Education: U.S.A.

Hopkins, David. (2007). *Every school a great school. Realizing the potential of system school.* Open University Press. McGraw-Hill Education. McGraw-Hill House.

Instance, D. (2015): *Innovative Learning Environments: Implementation and change. Draft Report. EDU/CERI/CD7RD.* OCDE: Paris.

Martínez, M. et al: *Lideratge per a l'aprenentatge. Estudis de cas a Catalunya.* (2013). Polítiques: 81. Fundació Jaume Bofill.

Pont, B., Nusche, D. & Moorman, H. (2008). "*Improving School Leadership. "* Volume 1: Policy and Practice. OECD Paris, 2008.

Martin-Moreno Cerrillo, Q. (2007): *Organización y dirección de centros educativos innovadores. El centro educativo versátil.* Madrid: McGraw-Hill.

Challenges of Openness and Quality for Smart Universities in the Post-Truth and Post-Trust Era

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Abstract: A 'smart university' is a university that exploits education's digital future. What is their role at a time when universities are accused of being on the 'wrong side of history'? Contemporary 'post-truth' and 'post-trust' attitudes undermine higher education's historic commitment to rigorous knowledge, academic openness, professional expertise and international collaboration as the basis for human progress. We explore the political developments behind these attitudes. Despite these trends, however, humankind will depend on universities for its healthy development into the 21st century. Whereas the Millennium Development Goals of 2000 were limited to basic education, the Sustainable Development Goals for 2030 have higher education as one of their targets, namely: "by 2030, ensure equal access for all to affordable and quality technical, vocational and tertiary education including university education." This means that smart universities must offer greater curricular diversity. Degrees are a useful foundation, providing evidence that a graduate has learned to think, but today's hybrid jobs require extra skills. People must learn to dissect post-truth discourse and post-trust attitudes so as to position themselves on the continua between open/closed and inclusive/exclusive that are successors to the older left/right political distinctions. Measuring learning outcomes in these new curricular contexts challenges traditional quality assurance methods, not least when shorter courses on specific items of knowledge and expertise are delivered online. Online learning is also a powerful tool for opening up institutional reach, especially to older part-time students. By making people more aware of their thinking processes online study helps them be more purposeful in pursuing lifelong learning, which in turn makes for better persistence and outcomes. The combination of online technology with the philosophy of openness, as exemplified in open source software, open access to research findings and open educational resources is of particular relevance to would-be smart universities.

Key words: Openness, Quality, Smart university, Post-truth, Post-trust

1 Introduction

This World Learning Summit is about 'Smart Universities'. What is a smart university and how does a university merit the title? Exploiting 'education's digital future' is a common theme. The University of Glasgow (Catapult Future Cities, 2016) declares that its smart campus: 'actively learns from and adapts to the needs of its people and place, unlocking the potential of e-technology and enabling world-changing learning and research.'

Hwang (2014) states that 'a smart learning system can be perceived as a technology-enhanced learning system that is capable of advising learners to learn in the real world with access to digital resources', adding that 'the rapid progress of mobile, wireless communication and sensing technologies has enabled the development of context-aware ubiquitous learning environments, which are able to detect the real-world learning status of students as well as the environmental contexts.' We shall focus first on the terms 'real world' and 'context-aware ubiquitous learning'.

The contemporary situation in the 'real world' is that surges of nationalism, nativism and populism aim to make societies more closed. An egregious example was the legislation passed in Hungary in April, 2017 threatening to remove the right to operate from the Central European University, which was set up expressly as an 'island of liberal thought' in former communist states (The Guardian, 2017). This and similar events are inimical to higher education's historic commitment to global openness and rigorous knowledge as the basis for human progress. Such political trends discount the importance of experts, elites and internationalism. They challenge would-be smart universities, not least because 'digital world resources' and 'mobile wireless communication' can promote 'alternative facts' as readily as verifiable knowledge.

Our first section examines the trends that have brought us to this 'post-truth' and 'post-trust' era, noting the impact of populism of both left and right. As a result, the old left-right political spectrum is no longer as salient as continua between open/closed and inclusive/exclusive.

In the second section, we argue that despite this dispiriting context, humankind will depend greatly on universities for its healthy development into the 21st century. The inclusion of higher education in the 2030 Sustainable Development Goals is just one indicator of a global consensus on its importance (UNESCO, 2015; 2016). But how should higher education respond to this new context? The core objectives of universities are to stand up for evidence, stand up for facts and stand up for the truth (Glover, 2017). University graduates

should acquire an attitude of systematic scepticism. This requires curricula that put less emphasis on didactic teaching and more on debate, both online and face to face.

Section three explores how our understanding of quality in higher education - and the means of assuring it - have evolved in recent decades. How can quality assurance adapt to these new challenges? The current emphasis of quality assurance on articulating and measuring student learning outcomes is well suited to the teaching methods now required.

In a final section, we urge that the various trends towards openness in academe (e.g. in software creation, access to research results and the sharing of educational resources) can be powerful forces for nourishing diversity and countering trends to close down debate.

3 The Post-Truth and Post-Trust Era

We start with the post-truth and post-trust era. Each year the Oxford dictionaries choose a 'word of the year'. For 2016 that word was 'post-truth'. They define post-truth as "relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief". Their example is the sentence: "In this era of post-truth politics, it is easy to cherry-pick data and come to whatever conclusion you desire."

Loss of trust in institutions is another feature of our times. This can be a gradual process. Over 50 years the trust that Americans have in government has declined from 80% to 20%. Trust in government is one of many measures that the Economist Intelligence Unit conflates to produce its annual democracy index (Economist Intelligence Unit, 2016). In 2016, for the first time, the US no longer ranked among the world's 19 'full democracies', but has been demoted to 'flawed democracy'.

In his book, *Trust and the Reconstitution of Social Order*, Francis Fukuyama (1995) demonstrated persuasively that the economic, social and cultural success of nations relates directly to the trust that their people have in each other and in their institutions. Some countries flourish because strangers learned to trust one another when signing contracts, allowing them to do deals outside the circles of family, tribal or in-group kinship relied upon in low-trust societies. Contrast Sweden and Sicily or Norway and Nigeria.

The rector of the University of Oslo, Ole Petter Ottersen, argues that universities should be trust building as well as truth seeking. "In our age of turbulence", he argues, "these two words – trust and truth – are inextricably intertwined" (Ottersen, 2016).

Populism is the political expression of these trends away from truth and trust. It combines nostalgia for the past, post-truth rhetoric, lack of trust in experts and institutions, a desire to divide and, above all, hostility to whatever can be labelled elite, usually by an accuser from another elite.

Populism can develop on either side of the conventional left/right political spectrum. Its common factor is an attempt to mobilise ordinary people against elites that are perceived to be self-serving. Right-wing populism also accuses these elites of coddling a third group, usually immigrants and other minorities (Judis, 2016).

Trump and Sanders stood for the right-wing and left-wing versions of populism in the 2016 US election campaign. In Europe, the right wing has the National Front in France and UKIP in Britain, while the left wing has Podemos and Syriza in Spain and Greece.

Recent events in Hungary are an alarming example of the threat that populist politics poses to universities. On April 4, 2017 the Hungarian Prime Minister, Viktor Orban, pushed a bill through parliament aimed at closing the Central European University (CEU) in Budapest, a prestigious university with an international mission and staff and students from over 100 countries. Transforming it into a Hungarian institution with a different name will, in his view, eliminate nefarious influences from abroad. Academics around the world have reacted angrily to this blatant attack on academic freedom and internationalism. The CEU's Rector, Michael Ignatieff, has pledged to keep the university and its values alive at all costs. Can this be achieved in a closing society? We note, as examples, two symptoms of the threats to truth and trust in closing societies.

First, 'expert' was used as a pejorative term in the 2016 referendum and election contests in the UK and the USA. British Leave-the-EU campaigners told people to disbelieve expert projections about the impact of Brexit, whether from economists, newspaper columnists or diplomats. In the USA, the Trump campaign denigrated the work of the intelligence services and the Bureau of Labour Statistics. Some Brexiteers cheered the post-referendum resignation of the UK's representative in Brussels, Sir Ivan Rogers, the top expert on UK-EU relations. In his farewell letter to staff he wrote: "I hope you will continue to challenge ill-founded arguments and muddled thinking and that you will never be afraid to speak the truth to those in power". He added "I hope that you will

continue to be interested in the views of others, even where you disagree with them, and in understanding why others act and think in the way that they do" (BBC News, 2017).

That is good advice to Smart Universities. The business of higher education is to produce experts in all fields of human endeavour. We must teach them use their expertise confidently and fearlessly.

A second but less obvious symptom of post-truth and post-trust thinking is loss of belief in progress. Higher education is grounded in a belief that change is welcome because, on the whole, it is for the better. The students in our universities believe that, by pursuing truth, they will operate from a higher base of knowledge and skill than we did, whether in dentistry, ecology, history or philosophy. They expect that their more advanced knowledge and skills will create a better world.

Although they do not always call them 'the good old days', many contemporary politicians hark back to a time when things were supposedly better. Wisely, they don't usually specify when that time was, because surveys show that most people think the world was at its best when they were in their early twenties. Dating the good old days is subjective. Nevertheless, nostalgia has resurfaced in a big way. People and movements are reaching back to an illusory past and trying to chart the future through a form of retreat (Kelly, 2016).

There are two antidotes to this: facts and knowledge. "Nothing is more responsible for the good old days than a bad memory", so higher education must be a good memory for humanity. All graduates should leave college with a grasp of the broad sweep of human development. We recommend a recent summary by the Swedish historian Johan Norberg, who documents the enormous progress achieved, not just over previous centuries but also over the decades since the badly remembered 'good old days'. His book, *Progress: Ten Reasons to Look Forward to the Future,* is a powerful antidote to the temptation to generalise from the latest news report about a famine, a war or the health challenges of modern life and think how awful things are now (Norberg, 2016).

Arguing that 'the Good Old Days are now', Norberg documents long-term trends for the better in vital areas of life all over the world. These underlying trends are persistent and will continue despite occasional setbacks or bad choices.

However, populist campaigns are usually advance warning of political crises. There are many such today and our higher education graduates will have to live through them and solve them.

4 How should Higher Education respond?

Despite the challenges we have outlined, humankind will depend crucially on universities for its healthy development into the 21st century. One indicator is that whereas the Millennium Development Goals of 2000 were limited to basic education, the Sustainable Development Agenda for 2030 has higher education as one of the targets of Goal 4, namely: "by 2030, ensure equal access for all to affordable and quality technical, vocational and tertiary education including university education" (UNESCO, 2015).

As regards what universities teach, degrees are a useful foundation, providing evidence that a graduate has learned to think, but today's hybrid jobs require extra skills. People must learn to dissect post-truth discourse and post-trust attitudes. They should cultivate an attitude of systematic scepticism and they must position themselves on the continua between open/closed and inclusive/exclusive that are successors to the older left/right political distinctions.

To quote Ottersen again: "what role can a truth-seeking university play in an era characterised as 'post-truth'?" His answer is that: "Faced with the prospect of a post-factual society, universities have to re-establish a respect for objective truth and powerful arguments – through our educational programmes and through our public outreach. We have to create many more arenas for debate – arenas that are open and inclusive so as to give a voice to those who feel left behind too" (Ottersen, 2016).

Pollsters noted that in the 2016 political campaigns in both the UK and the US, university graduates were much less likely than those without degrees to support populist positions. This suggests that higher education, in and of itself, acts as an antidote to post-truth and post-trust thinking. But we suggest that smart universities should be more explicit in challenging their students to position themselves along the continua of open/closed and inclusive/exclusive. We should not tell them where to position themselves but, as Ottersen said, create arenas for debate where they must address this issue personally, possibly arguing for different positions, whether they agree with them or not, rather as students do in Model United Nations simulations. More generally, smart universities must offer greater diversity in what they teach and how they enable people to learn.

Whatever the positions that individual students take, universities as institutions must stand for openness. Their motto could be the 50-year old slogan of The Open University: open to people; open to places; open to methods; open to ideas. Their challenge is to maintain openness in the post-truth era when

politics can have such a negative influence on higher education policies and practice as we can see in states like Hungary and Turkey.

5 Quality Assurance in the Post-Truth and Post Trust era

How should quality assurance change in this post-truth and post-trust era?

In fact, quality assurance (QA) is itself a victim of post-trust attitudes. In countries where governments play the major role in quality assurance many allege that it is either too formulaic or wrongly focused. However, in jurisdictions where the responsibility for QA is left largely to the higher education community, as in the USA, some politicians argue for more state control, arguing that there is too much mutual institutional backscratching. Academics oppose political interference in accreditation fiercely because they consider that governmental pressure on accreditors makes the processes more burdensome, with increasingly uniform nationwide standards. Their greatest concern is the disregard for diversity, especially at a time when more diverse higher learning is required (Ekman, 2017).

We argue here that the times require less focus on didactic teaching and more on challenging students to debate issues and argue their emerging positions and conclusions. How can higher education ensure the quality of learning in these circumstances? Are current methods of quality assurance appropriate and adequate?

In reality, QA is constantly evolving. It developed strongly through the 1990s and by the 2000s a general model had emerged with common elements based on regulation and guidelines set by the QA agency, a self-review by the institution, an external peer review and publication of the report.

This basic model is now spreading throughout the world and methods are converging in most systems. However, as QA methods converge the focus of QA is shifting to reflect the diversification of higher education itself. Not very long ago quality was judged by inputs – grades of incoming students, qualifications of teaching staff, number of books in the library and so on. Today quality assessment focuses more on the outputs: students' learning outcomes. What have the students really learned?

Multilateral organisations, such as the OECD (2015) and the EU (CALOHEE, 2017) are supporting this development because both private companies and distinct units within public universities are now creating a new sector of higher

education with offerings that are usually online and often much shorter than traditional programmes. This has been called 'post-traditional higher education'. Students' Learning Outcomes are the most solid basis for assessing the quality of such alternative provision.

In the USA Judith Eaton, President of the Council for Higher Education Accreditation (CHEA), wants 'to encourage fresh approaches to quality review of traditional providers and expand quality review to new providers and new credentialing' and to 'maintain and enhance the academic leadership of institutions and programs, peer review and the commitment to academic freedom.'

In this spirit, as an approach to QA for alternative, non-traditional providers that serve an increasingly large number of students, CHEA's International Quality Group (CHEA/CIQG) developed a *Quality Platform.* This is an outcomes-based review using simple standards, a self-review by the provider and external peer (expert) review. Successful candidates are designated as *Quality Platform Providers* for a three-year period.

The *Quality Platform* was pilot-tested successfully in 2015 with Shanghai's DeTao Masters Academy. This private company is not part of China's traditional higher education system and mostly uses teachers and distinguished experts (Masters) from outside China in a wide variety of disciplines. The programmes are run in partnership with the Shanghai Institute of Visual Arts, but since they are enriched majors, rather than full degrees, they are not covered by China's normal QA frameworks.

The CHEA/CIQG Quality Platform is now being piloted by the US Department of Education in a new programme, EQUIP (Educational Quality through Innovative Partnerships), designed to counterbalance what the Department itself called the "inflexible and unaffordable options" of traditional higher education for working adults. A partnership between Dallas County Community College District and Straighterline, an online content provider, is the first pilot.

Although focusing quality assurance on the articulation and achievement of student learning outcomes is a better match to the styles of learning and teaching required today than the former emphases on inputs and processes, that does not make it easy. We have argued for learning environments that place greater focus on debate and argument to help people learn how to ferret out the truth from a welter of information and 'alternative facts'.

6 How can technology help?

Our earlier definition of a smart university talked of using 'a technology-enhanced learning system that is capable of advising learners to learn in the real world with access to digital resources' (Hwang, 2014).

Online learning is a powerful tool for opening up institutional reach, notably to older part-time students. By making people more aware of their thinking processes, online study helps them to be more purposeful in pursuing lifelong learning, which makes for better persistence and outcomes.

For smart universities in the post-truth era, technology is both part of the problem and also part of the solution. We have noted that 'access to digital resources' can turn up 'alternative facts' just as readily as verifiable knowledge. However, technology can also greatly facilitate the debates in which students should engage in order to develop their own positions and an attitude of scepticism. It can also traverse national borders and offer quality content and verifiable knowledge even where nationalistic policies attempt to shut out ideas from the external world.

The combination of online technology with the philosophy of openness, as exemplified in open source software, open access to research findings and open educational resources is of special relevance to would-be smart universities.

Target 4.3 of the Incheon Declaration cited earlier (UNESCO, 2015) refers explicitly (item 43) to Open Educational Resources as a tool for promoting higher education, noting that 'a well-established properly regulated tertiary education system, supported by technology, *open educational resources* and distance education can increase access, equity, quality and relevance.

Both authors were involved in preparing UNESCO's 2012 World Conference on Open Educational Resources and in drafting of the Paris Declaration on OER that was adopted by acclamation. Noting that the wider use of OER can also facilitate the achievement of UN goals in many areas, the Declaration argued that 'governments can create substantial benefits for their citizens by ensuring that educational materials developed with public funds be made available under open licenses (with any restrictions they deem necessary) in order to maximize the impact of the investment.'

Although the Paris Declaration did not include any formal monitoring mechanism, reports show that the use of OER by both teachers and learners is increasing steadily (University Affairs, 2017). Although OER have not spread as rapidly as open access to research publications, open textbooks are very popular

with students and substantially cut the cost of higher education in those jurisdictions that make them available.

There will be a second UNESCO Conference on Open Educational Resources in Ljubljana, Slovenia in September 2017. This will be a good occasion to assess progress and we hope it will lead to better formal mechanisms for monitoring the spread of OER in higher learning.

7 Conclusion

We have argued that the post-truth and post-trust attitudes engendered by populist politics pose a serious challenge to higher education. Smart universities must re-establish a respect for objective truth and powerful arguments and put more of the onus on students to develop their own antibodies to alternative facts through lively debate. However, we remain optimistic that the importance of higher education to human development will continue to increase and that the momentum to greater openness in education is unstoppable.

8 References

BBC News (2017) Sir Ivan Rogers letter to staff, January 4. http://www.bbc.com/news/uk-politics-38503504 Accessed 2017

CALOHEE (2017) Measuring and Comparing Achievements of Learning Outcomes in Higher Education in Europe. https://www.calohee.eu/ Accessed 2017-04-12

Catapult Future Cities (2016) http://futurecities.catapult.org.uk/project/smart-campus-university-of-glasgow/ Accessed 2017-03-18

Hwang, GJ. (2014) Definition, framework and research issues of smart learning environments - a context-aware ubiquitous learning perspective, *Smart Learn. Environ.* (2014) 1: 4. doi:10.1186/s40561-014-0004-5 Accessed 2017-03-18

Glover, Barry (2017) Standing up for the facts in an era of post-truths, *University World News*, 2017-03-17 http://www.universityworldnews.com/article.php?story=20170306234144724 Accessed 2017-03-19

Eaton, Judith (2017) Regulatory Relief for Accreditation, *CHEA Occasional Position Paper* http://www.chea.org/userfiles/Occasional%20Papers/Regulatory-Relief.pdf Accessed 2017-04-2017

Ekman, Richard (2017). Burdensome Accreditation System needs overhaul. *CHEA Opinion-Editorial Series, Issue 2, March 2017.* http://www.chea.org/4DCGI/cms/review.html?Action=CMS_Document&DocID=1031&MenuKey=home. Accessed 2017-04-12

Fukuyama, Francis (1995) *Trust and the Reconstitution of the Social Order,* Simon & Schuster, New York.

Judis, John B. (2016) *The Populist Explosion,* Columbia Global Reports, New York.

Kelly, Cathal (2016) The New Age of Nostalgia, *The Globe and Mail,* December 23. http://www.theglobeandmail.com/news/world/us-politics/the-new-age-of-nostalgia/article33421337/. Accessed 2017-03-16

OECD (2015) AHELO Main Study. http://www.oecd.org/edu/skills-beyond-school/ahelo-main-study.htm Accessed 2017-04-12

Ottersen, Ole Petter (2016) How should universities confront a post-truth world? *University World News,* December 9. http://www.universityworldnews.com/article.php?story=20161205195200 37. Accessed 2017-03-16

Norberg, Johan (2016) *Progress: Ten Reasons to Look Forward to the Future,* One World Publications, London.

The Economist Intelligence Unit (2016) *Democracy Index 2016: Revenge of the "deplorables".* http://pages.eiu.com/rs/783-XMC-194/images/Democracy_Index_2016.pdf. Accessed 2017-03-16

The Guardian (2017) Hungary investigated by EU over law threatening top university, April 12. https://www.theguardian.com/world/2017/apr/12/frans-timmermans-eu-commission-central-european-university-budapest-hungary Accessed 2017-04-12

UNESCO (2015) The Incheon Declaration: World Education Forum 2015. http://en.unesco.org/world-education-forum-2015/incheon-declaration Accessed 2017-04-12

UNESCO (2016) *Global Education Monitoring Report 2016*, Education for People and the Planet, Creating Sustainable Futures for All (http://unesdoc.unesco.org/images/0024/002457/245752e.pdf)

University Affairs (2017) The open educational resources movement is redefining the concept of online textbooks. April 4. http://www.universityaffairs.ca/features/feature-article/open-educational-resources-movement-redefining-concept-online-textbooks/ Accessed 2017-04-12

Understanding 'Smart University' through Incidental Learning Experience of Open and Distance Education

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Abstract: In this years' Summit, the 7th edition, we are enjoined to deliberate on the concept and our understanding of 'Smart Universities'. The questions posed are: Is technology changing the face of learning, education and society? Is the future of learning open? Do we foresee a sustainable future of learning space available to all? How do we respond as custodians of education? And how do we collaborate within our regions and beyond? This paper hopes to add to these deliberations from the perspective of experiences from Open and Distance Education. My presentation, which is titled "understanding 'Smart University' through incidental learning of Open and Distance Education (ODE)'' draws on unplanned and unstructured observations and subsequent activities in the course of my work at the National Open University Nigeria (NOUN). It starts with a short narrative of how I encountered and embraced the practice of ODE, how improved access to education through ICT became a smart option for equity and justice in society; it discussed the smart technologies that enriched my experience and practice as an academic, and finally, ways through which we can share experiences and collaborate.

Key words: Smart University, Incidental Learning Experience, Open Education, Distance Education

Introduction

My name is Dr Jane-Frances Obiageli Agbu. I am from the National Open University of Nigeria. I am currently the Dean of the Faculty of Health Sciences and also an Associate Professor of Clinical Psychology. Finally, I hold the International Council for Distance Education (ICDE) Chair in Open Educational Resources (OER), (2017-2021).

I want to sincerely thank the organizers of the 7th World Learning Summit (WLS) for reaching out to me. Thank you for finding me worthy to speak in this

summit and hoping to share my experience and my understanding of 'smart University'. I am not an expert and I have listened attentively from previous presentations and have learnt a lot too. I hope that my insight will be helpful.

I was asked to speak from the broad perspective of "Learning at scale: Global development perspectives", an opening session presentation for the academic track of the summit. To my understanding, learning at scale described educational initiatives that provide learning experiences to large number of learners. Coming in from the perspective of e-Learning or Open and Distance Education/Learning (ODE/L) my presentation is titled: "Understanding 'Smart University' from Incidental Learning Experience of Open and Distance Education.

Just a year ago, I read an report shared by the Institute of Educational Technology of the Open University UK titled: Trends in Learning". This report analyzed 7 innovations in teaching, learning and assessment that shaped the education landscape in 2016, and they were

- Adaptive learning
- Adaptive teaching
- MOOCs
- Accreditation badges
- Analytics,
- e-books
- mobile learning
- Incidental learning.

But indeed I found the section on Incidental learning which they titled "harvesting incidental learning" most intriguing. The report described "Incidental learning as - learning without needing to be taught, in ways that are instinctive, unplanned, and at times, unintentional". The report therefore stressed the need to recognize the role of incidental learning in personal, professional and workplace development. (see the report online at: http://www.open.ac.uk/business/sites/www.open.ac.uk.business/files/files/OU_TrendsInLearningReport2016.pdf)

At this summit we are encouraged to ponder on these questions: Is technology changing the face of learning, education and society? Is the future of learning open? Do we foresee a sustainable future of learning space available to

all? How do we respond as custodians of education? And how do we collaborate within our regions and beyond? I could easily identify with these questions, as I have pondered on them for quite a while through my incidental learning experience of the Open and Distance Education. My presentation therefore draws on my unplanned and unstructured observations and subsequent activities in the course of my work at the National Open University Nigeria (NOUN). It starts with a short narrative of how I encountered and embraced the practice of Open and Distance Education (ODE); how improved and inclusive access to education became a smart option for equity and justice in society; It discussed the smart technologies that enriched my experience and practice as an academic and finally, ways through which we can share experiences and collaborate.

It was unplanned!
How I embraced Open and Distance Education

My initial encounter with the Open University system was unplanned. The conventional (traditional) University system was all I knew and in 2006, just about rounding up my Ph.D programme, I decided that it was time to engage in full-time employment. Also as a mother to three young children, with the youngest aged just 3 years then, I knew it would be challenging to work far from home. The nearest was the newly established National Open University of Nigeria (NOUN) which was located just few minutes from home. I applied for a position as a course facilitator and was pleasantly surprised when I got the job. Since NOUN was relatively new back then, and the only Open University in Nigeria, it opened its door to new entrants. The trainings were intense but we quickly adjusted to the practices of Open and Distance Education (ODE).

But there were misconceptions and Resistance

First from my Supervisor who screamed when I asked for the mandatory recommendation letter for employment: “What is Open about Open University!”, “So you want to waste all your years of training in an Open University?” He asked, “You want to be faceless and unclaimed”, he groaned and was genuinely worried for me. There were indeed little respite from colleagues so used to the conventional face-to-face mode of teaching and learning. I was unanimously voted as the least likely to succeed professionally. There were also resistance from conventional universities around Nigeria whiles phrases such as: “The

National Open University of Nigeria is a Fraud", "Their certificates must be fake", "It is not possible to study from a distance", "Government, please close down NOUN" were commonplace in the national dailies. Also staff and students, who were hitherto not used to teaching and studying via the Open and Distance Learning (ODL), questioned the practice with reactions to tiny challenges overblown. To my understanding, these are natural reactions to change, which are characterized by reluctance to accept new innovations and thus the tendency to act out. This was further heightened by lack of insight in Open and Distance Learning (ODL) as NOUN was the only single-mode ODL University in Nigeria.

How improved access in Education became a smart option for equity and justice in society

Thus at the peak of resistance and misconceptions from friends and significant others, and while lost in thought one day on the lift up to my office, a student asked "Do you work here? I nodded, he responded "thank you for giving me the opportunity to work and learn" I looked up, smiled, and I am still smiling, really thankful to be part of this vision.

UNESCO's vision for education asserts

"Towards 2030, our vision is to transform lives through education, recognizing the important role of education as a main driver of development and in achieving the other proposed SDGs. We commit with a sense of urgency to a single, renewed education agenda that is holistic, ambitious and aspirational, leaving no one behind. This new vision is fully captured by the proposed SDG 4 "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" and its corresponding targets. It is transformative and universal, attends to the 'unfinished business' of the EFA agenda and the education-related MDGs, and addresses global and national education challenges. It is inspired by a humanistic vision of education and development based on human rights and dignity; social justice; inclusion; protection; cultural, linguistic and ethnic diversity; and shared responsibility and accountability. We reaffirm that education is a public good, a fundamental human right and a basis for guaranteeing the realization of other rights. It is essential for peace, tolerance, human fulfillment and sustainable development. We recognize education as key to achieving full employment and poverty eradication. We will focus our efforts

on access, equity and inclusion, quality and learning outcomes, within a lifelong learning approach" (see online at: http://www.unesco.org/fileadmin/MULTIMEDIA/HQ/ED/ED/pdf/FFA_Complet_Web-ENG.pdf)

It is important to note that the Open Universities by their philosophy, design and practices has triggered massive admissions into Universities all over the world as learners now have the opportunity to study from anywhere and at anytime. This sure is a veritable tool for the development of citizens in any country. In Nigeria for example, the admission capacity of the 128 Universities is not more than 400 thousand yearly, with yearly application averaging 1.6 million. This shows that more than 1 million students are left unplaced in Nigerian Universities and the backlog continues. However the National Open University of Nigeria, with 76 study centers in all states in Nigeria (including special centres in prisons), has increased student enrolment of 16,000 in 2004 to over 469,132 by June 2017. This indeed is smart.

What of Classical Openness?

'Open' in 'Open University' refers to the following set of classical features:

(1) Open entry (no formal requirement)

(2) Freedom of time

(3) Freedom of place

(4) Freedom of pace

(5) Open programming (i.e., curriculum variety in size and composition) and

(6) Open to all population and target groups (i.e., heterogeneous population of all ages, and in difference context, generally involving some type of combination of study with job or domestic and care tasks)

Though not a single Open University is fully open in all six aspects of openness, but derived from their missions, OUs definitely score higher in these classical notions of openness. This classical notion of openness creates room for flexible, inclusive and lifelong learning opportunities. This indeed is Smart! (Agbu et al, 2016; see online at: www.oerafrica.org/system/files/12272/noun.pdf?file=1&type=node&id=12272).

What of the Smart Technologies and Concepts that Enriched my Experience?

Online facilitation for me was novel and exciting as I could reach out to students synchronously and asynchronously. The practice of uploading of computer-based assessment for students became less mysterious as the training gave digital confidence to a digital migrant such as me. And I encountered OER and MOOCs: Digital openness that flanked the classical openness. Cathy Casserly from the Creative Commons noted in her presentation at this summit that, "When we think about economy, we think about scarcity, but in the commons, we think about abundance". This statement depicts the beauty of sharing knowledge for common good, the vision of Open Educational Resources (OERs). Also while listening attentively to earlier presentations and comments at this summit, a panel discussant from ICDE narrated how irritated her colleague gets whenever she pushes for capacity building, citing her, "capacities are everywhere, we just need to identify, build on it and share it"! And I pondered; "yes, capacities are everywhere, but who identifies it?" I asked rhetorically, but somebody has to identify and share it.

In 2013, I attended a UNESCO/COL/ECOWAS capacity building workshop on OER for West Africa. We were made to understand that the term OER, coined at UNESCO's 2002 Forum on Open Courseware and describes "teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. Open licensing is thus built within the existing framework of intellectual property rights as defined by relevant international conventions and respects the authorship of the work" (see online at: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/WPFD2009/English_Declaration.html).

UNESCO 2012 Paris declaration on OER therefore recommends that States, within their capacities and authority should:

1. Foster awareness and use of OER
2. Facilitate enabling environments for use of Information and Communications Technologies (ICT)
3. Reinforce the development of strategies and policies on OER
4. Promote the understanding and use of open licensing frameworks

5. Support capacity building for the sustainable development of quality learning materials
6. Foster strategic alliances for OER
7. Encourage the development and adaptation of OER in a variety of languages and cultural contexts
8. Encourage research on OER
9. Facilitate finding, retrieving and sharing of OER
10. Encourage the open licensing of educational materials produced with public funds (see online at: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/WPFD2009/English_Declaration.html)

After this intense experience, I realized that my institution, the National Open University of Nigeria (NOUN) being a public funded University has a quantum of course materials that could be shared for common good and also is well-position to embrace OER. I wrote a proposal on this and a year and half later, my institutions made a decision to join the OER movement. To my colleagues, I must have been crazy embracing and championing OER, but I keep stressing that; "it is in our nature to share, so why are we not sharing knowledge? Also, "it is more fulfilling to share than to hoard" Just like the 'Rs' of OER, this summit provides us with opportunity to share, revise, remix, reuse and redistribute knowledge. There is really no new knowledge, just fresh perspectives. Also through collaboration with UNESCO, COL, EADTU, OpenupEd, OERu, I and my colleagues experienced first-hand the excitement of instructional design and digital navigations by learning how to convert materials into formats of EPUB, ODT and PDF for accessibility as OERs and also how to use OERs to enrich our course materials.

In 2016, due to the plight of unplaced students in University, NOUN designed an OER-based Massive Open Online Course (MOOC) on "History and Philosophy of Science", a general study course taken at 100 level in Nigerian Universities. This was aimed at introducing students to online learning, keep them constructively occupied as they wait for the next year for another Joint admission exam and also get them a bit conversant with a course they will be taking in the University. This I found fulfilling.

Access to education is not success in learning, it is about meaningful instructional design

Numerous training in course material writing and design in the course of my work experience made me realize that course materials should be written by experts, should be extensively reviewed, should be current, interactive, conversational with clear formative and summative assessment linking the learning objective and outcome. It is important to note that NOUN course materials are online and visible to all and thus open to public consumption and scrutiny.

I also realized that being guide on the side and by leveraging on technology, you become a better teacher

In 2001, when I was invited back at my former school as a visiting lecturer, I taught how I knew best by simply identifying lesson objectives, expected outcome and linking all the classroom experience to these expected outcomes, just like in our course materials. I introduced my students to ebooks, flipped classroom, OERs, stimulating their interest in being creators of knowledge. I also encouraged them to try out MOOCs, which heightened their curiosity and excitement. I realized that finally I could understand and teach the digital natives all thanks to navigating the Open and distance education terrain.

And how do we share experiences and collaborate? – Simple, leverage on networks.

Finally

Observations have shown us that technology is indeed changing the face of learning, education and society so there is need to quickly adjust and adapt to this changing trend. Also in order to provide learning space for all, thus stimulating access, equity, inclusive lifelong learning, the future of education should indeed be open, flexible and smart. There is also the need for stakeholders to collaborate across the globe for insight and good practices in this regard. Cathy Casserly in her plenary presentation noted that, universities of the future needs to: reach out to students wherever they are; engage in continous learning; work transparently; provide micro-credentials; stimulate permeable boundaries; be highly collaborative and encourage co-creation/co-learning. This makes a lot of sense!

Thank you!

Contact Education – a Theory Framework

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Abstract: The paper outlines the concept "Contact Education", as a framework for exploring media rich learning designs. At the University of Agder, Norway, attempts are made to foster a campus-wide dialog and collaboration towards education´s digital future. What concerns, challenges, concepts and conclusions come into focus in such a wide attempt to develop a common arena? In seeking to refine a framework, the paper presents and appraises key research perspectives from that point of view.

Key words: Future Learning, media-rich learning and education, multi–media, hypertext, narrative, multimodality, Contact Education

1 Introduction

How can research on educational uses of new technologies contribute to the development of progressive teaching and learning methods in an age of media and mediation? How can exploration of new learning designs assist in lowering threshold for teachers and students in applying media from outside of school, inside the classroom? To what extent do digital learning platforms challenge or support current pedagogical paradigms – given societys' increasing media immersion? How can the notion of a "digital pedagogical paradigm" successfully be wed to classic humanistic concerns with *narrative*, *curation* and *performance*? These are the questions underlying a project to develop an interdisciplinary approach to the study of education´s digital future, at one particular university. This paper offers no space for methodological considerations, other than to say that a discourse analytic approach was used to review a much wider variation of literature than what the paper format allows us to report.

What is reported below are nodal clusters or themes of issues and research concepts in the area of emergent digital learning. The background is simple: In 2009, a proposal was fielded to establish a Future Learning Lab at the University of Agder (UiA), Norway, to follow a previous cross-university endeavour called

Learning Arena 2020. Future Learning Lab did not become a center but still thrives as a research group, amongst several others. A university-wide PhD student network was set up under the name Agder Digital Learning Arena (ADILA). The university´s media center dug in a foothold and began adapting to the new digital learning eco system. The UiA Teachers Training College, and several research groups and centers did the same. For a designated period, the university became a national hub for exploring digial assessments.

But the question remained: *Where* is the common arena – indeed; what is the common arena? Universities are complex organizations embedded in teaching, administration, policy building knowledge production, regional change, and more. They adapt slowly, and ought to. They are hierarchies where traditions and paradigms cultivate and clash. Transforming the entire organization becomes a key change parameter, partly at odds with cultivating the diverse inter-disciplinary arena where research develops more unruled. Accordingly, certain challenges in parsing research with development often remain critically undercommunicated, falling between the cracks, so to speak. This paper first outlines some theoretical perspectives and concepts that would seem to inform an interdisciplinary endeavour to scrutinize and critique that fact. This particular framework is what we label *Contact Education*. The paper nexts presents a brief discussion, as the basis for a research agenda in the making.[1]

2 Contact Education: Discourses in the literature

In 2007 a *FutureLab* report asked whether we as a society and as educators *are prepared for the massive changes in human capabilities that digital technologies are likely to enable in the next few years*.[2] They concluded that we are not, in fact that our models of society and of education require reassessment if they are to adequately reflect the kinds of changes that are now taking place in our modes of communication. As research within many areas of the social sciences and humanities show, digital (or ”new”) media are ushering in a post-print paradigm,

[1] The format does now allow for extensive referencing, which is a limit in a concept review. Hence, the emphasis is on identifying clusters of ideas, perspectives, and mutually linked frameworks. The full report eventually available from Future Learning Lab on request.

[2] http://www.futurelab.org.uk/resources/publications-reports-articles/literature-reviews/Literature-Review383

shattering established frameworks of thinking about research, teaching, and learning (Korakakis et.al. 2008). The argument is not all that recent (i.e. Toffler 1993). Hill and Hannafin note how "... individuals evaluate vast numbers of digital resources located in expanding information repositories" (pp.38, 2001). However, in 2011, when Stanford University developed their first on-line university course to exceed 10 000 students, one might say that a qualitatively new era was beginning. That course had 165 000 students, leaving anyone to reflect on what that means (Norvig, 2016). *Scale* comes to mind as does *hyper-narrative.* Formal education today is more flexible, more networked and more monitored than at any time in human history. And meanwhile, a changing labor market also demands adaptive learning to ensure as good a fit as possible between formal education, informal learning, and ever-changing knowledge needs at the work place. Individual motivation to become and remain a "life-long learner" perhaps catches the mood of contemporary discourse (Christensen, 2011).

The term "Contact Education" may offer a conceptual model of thinking in the current Future Learning Lab project to derive a broadly interdisciplinary framework for exploring digital learning designs. UiA opens two functional learning and interaction labs in 2017. Accordingly, might we refine a passable, over-all framework to fit? Coined by Tveiten and Bundsgaard, (Tveiten, 2008), the general hypothesis behind Contact Education is that students learn more and deeper, and do it more permanently when being in contact with: a) Each other and people from outside of school; b) Important problems from real life; c) authentic ways of investigating and acting related to the problems. Points like these summarise a great deal of learning research. The question then is how technology and ICT-rich environents configure into that perspective (Bundsgaard, 2009)?

The concept *Contact Education* was coined as a counterpart to the term "Contact Journalism", as labeled by Mark Kramer at the Harvard Nieman Foundation's Program for Narrative Journalism:[3] News does not engage sufficiently, according to that argument, so the question becomes; *how does one re-think story-telling in journalism to engage people*? Needless to say it is a big question. As noted in a research proposal we filed as a Nordic team this year (Viteli, 2017), the same question can be raised in studies of learning: *How does*

[3] http://nieman.harvard.edu/books/telling-true-stories/

one create engagement? The notion of *21st. century skills* is high on the education-political agenda as an attempt to articulate particular skills needed to succeed in a highly digitized society. The term denotes those skills that children and young people are required to have in order to be competent, active and empowered citizens in the digitalized society of the 21st century (OECD, 2009; Binkley et al, 2012 cited by Viteli, 2017). The vision is, in part, to foster more *interactive-*, *collaborative-* and *self-paced learning*.

2.1 Mobility and virtual networks

Therein lies the challenge of *engagement* (Erstad, 2013; Iversen et.al. 2017 cited by Viteli, 2017). 21st. century skills as a concept also reflects back on a expanding as well as more flexible boundaries between formal education and learning more generally. To elaborate, five dimensions of future learning are highlighted in this paper, the first being the concept of *mobility*: Education´s digital future reflects fundamentally how people, ideas and information now travel further and faster than at any time in human history. Education and learning is becoming more and more immersed in constantly evolving networks. Likely, students in the future will be very different in their expectations than education institutions today is set up to deliver (Barbour and Reeves, 2008). They travel more in real time. Knowledge will travel even more comprehensively in virtual time. From YouTube and other social media to more complete eco systems like Massive Open Online Courses (MOOCs), three facts emerge: 1) Students have more comparative insight than they used to, 2) formal education melds with informal learning in new ways, 3) while insight and competence in using technology poses new forms of stratification and variation (Sappa and Aprea, 2014; Dunleavey et.al., 2009; Brennan er.al., 2003). Indeed, a well-documenteds book notes in the introduction how “seamless learning”;

> “…implies that a student can learn whenever they are curious in a variety of scenarios and that they can switch from one scenario to another easily and quickly using the personal device as a mediator. These scenarios include learning individually, with another student, a small group, or a large online community” (Wong, et.al., 2015, pp.*v*).

2.2 Communities of learning

Accordingly, in our search for Future Learning Lab foundations, we identified

Situated Learning as a means to defining that interdisciplinary framework of self-paced learning and engagement: In their seminal book on the topic*,* Lave and Wenger (1991) developed the concept *Community of practice*. A community of practice is a group of individuals participating in communal activity, continuously creating their shared identity through engaging in and contributing to the practices of their communities and thereby developing a shared repertoire (Wenger, 2008). Shaffer worked with the concept in relation to computer based learning, arguing that different communities develop different ep istemic frames, that is "[…] different ways of knowing, of deciding what is worth knowing, and of adding to the collective body of knowledge and understanding of community" (Shaffer, 2006, p. 10). Similar concerns are noted by Erstad (2013), as well as Casserley (2017). In short, professions like those of doctors, engineers, journalists, etc., each have a particular learning practice, or *practicum*. By simulating such a practicum an *epistemic frame* makes it possible for students to learn to *think like* doctors, engineers, journalists, etc. That is, they learn to be a part of a particular community of practice. As the thinking goes, situation and explorative interaction amongst participant learners fosters autonomy and interest in learning. And one might add the prospect of globalized learning which also entails globalized, virtual and digital communities of learning (McLoughlin and Lee, 2010, Alexander, 2006).

2.3 Hypertextual curation

Third, Hatfield and Shaffer (2006) extend the notion of an epistemic frame, discussed above, to the idea of an epistemic game: "An *activity structure* (the things players do) and a computer-based *epistemic game engine* (the technology players use). The point of view opens new avenues of thinking beyond classrooms: As illustrated by Liestøl (2009), the notion of *epistemic game engine* can be understood as a prototyping of *meaning-making software;* a genre environment, interaction environment. Liestøl deploys his insight to *locationary media* and GPS-based outdoors exhibits. His insights are fundamental also to the design of classroom curatorship, content co-production, spontaneous and creative co-collaboration understood as *performance*.

The term "hyper-text" is central to Liestøl´s discussion and it refers of course to the structure of texts and images connected though electronic referencing and simulation, giving the reader a means of reorganizing the totality of text either by will or by serendipity (Piccoli, 2001) similarly notes that such phenomena alter the balance between the writer and the reader, the narrator and the audience,

mediated through a kind of text that we as educators do not quite yet know how to handle. The fragmentation of classical sequential reading, the re-embedding of text and visual communication, and the *reframing processes* inherent in hyper-textual narratives clearly is an aspect also of an emergent pedagogical paradigm whose relevance for education and education planning is still poorly understood (Tveiten, 2016). Reading and learning in a multi-narrative framework where one option it to ”click and change your direction“ may be analog to exploring knowledge in a library, the difference being that the“ library“ is everywhere and that it suggest where you ought to go through detailed monitoring og your search habits.

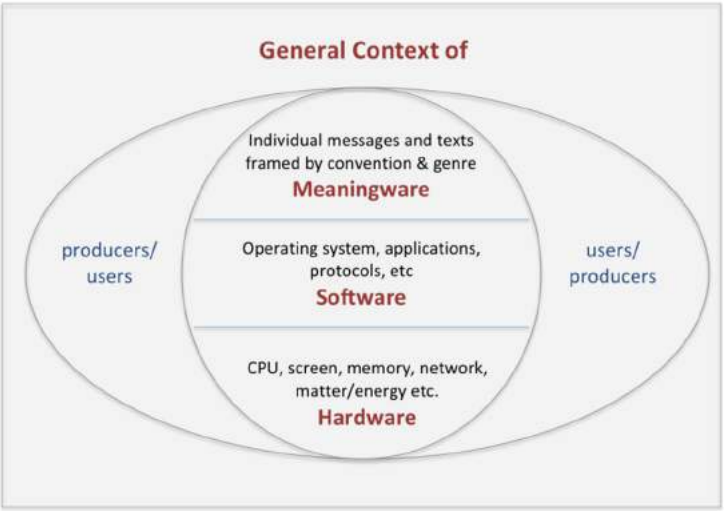

Fig. 1: A framework for co-creation in digital learning and application (Liestøl, 2009).

Hyperlinked texts introduce reader choice into sequential narrative, thus interfering with the revelatory nature of text-audience interaction. It creates a presence of *bifurcality,* leading in turn to concerns with contemporary pedagogy and basic understandings of how we read and write (Luke, 2009). The changing context of social media in education and learning (McLoughlin and Lee, 2008) leads to concerns as well with educational management (Dimmock and Walker, 2004). A hyperlinked text is a kind of narrative that constantly introduces Y-crossings where the reader must either go one way, or the other. It organizes images, sounds, objects and other inputs in the ways that differ from the narrative paradigm of Gutenberg and the book. While the Gutenberg revolution in a sense brought silence and individuality to the act of reading, the post-print revolution may by a stretch of the imagination be said to take us back to the

monastery where monks once read their text aloud, not realizing there was an alternative. We have yet to fully explore this emergent interactive, networked mode of reading, where learners pursue serendipity together (Tamin, 2011, Tveiten 2016).

2.4 Performative interaction

It would follow from the above that Contact Education as a concept of digital learning closely observes *explorative learning* as a communal, *cultural practice*; a mediation of meaning through mediums. A discussion point may be to assume with Carey (1987) that *communication* and *culture* are surprisingly unclear concepts, despite our everyday usage of them. He famously introduced a distinction between a *transmission view of communicaton* and a view of commmunication as *culturally embedded ritual*. One might understand *co-collaboration* and *co-creation* of learning as profoundly cultural and social modes of exchange, in which Carey´s critique of communication studies is equally relevant to a ciritique of learning studies. How do we approach the study of collaborative learning as the *co-production of meaning* – what does that term imply?

If we do not employ a transmission model of communication where ”meaning“ is transported sequentially from one place or person to another, then some other ”meaning-making“ model is implicitly assumed. If we do not study observable *effects of technology* use in behavior, what other aspects of effect are relevant? Digital learning by definition require that educators store, retrieve and disseminate information in a manner more akin to the functions of the librarian or archivist. With that comes a sense of place, a sense of role, routines, expectations and the effects or consequwnces of technologies in a much more profound and less easily quantified way. The emergent digital learning eco system in turn also means that educators have at their disposal tools for *curation* and *exhibition* that (a) are not yet central in educational curriculum planning and (b) not very well conceptualized in the social sciences or humanistic tradition where space, place and scale are not really key concepts in learning studies. The short version is this: To plan learning interaction as *performance* and *co-production of meaning*, requires a sense of curation, and a sense of place. To study it, may require what anthropologist Clifford Geertz famously once dubbed “thick description“ – the deeper layers of interpersonal and symbolic interaction.

3 Discussion: Exploring new leaning designs

From the Contact Education point of view, this emergent view becomes one of curating a more complex, open-ended kind of narrative. One aspect of this would observe *media ubiquity* as a basic precondition (Bachmair and Pachler, 2015). A second would perhaps emphasize *virtual* and *augumented reality* as locations of digital collaboration (Dunleavy et.al., 2008). A third would certainly address the basic distinction between learning as a cognitive proccess and learning understood more as a continuous process of nourishment (Hodgins, 2002). Co-creation is *distributive*: It connects and re-connects those present. Co-creation is *associational*: There is competition for attention, some pathways more open and levelled than others. How does one as an educator not become overwhelmed, caught in the maze of possibilities?

How does one parse the Gutenberg paradigm with what comes after? One aspect of it is the *multimodal* interaction invited by multimedia expressions. A framework placing emphasis on the dynamics of collaboration and interaction in digital learning designs, invites the networked world into the classroom. But how does one? What is the "digital learning revolution" all about, if not observing the fact of media ubiquity and how that reality is changing the fabric of learning institutions? Dede (2005) notes how the future of education is challenged to use "... these emerging technologies to deliver instruction matched to the increasingly "neomillennial" learning styles of their students". Note, also, that the date of publication was 2005. More than a decade later, one might still ask the same question.

One final discussion frame to collect these questions in a way that perhaps breakes down some of the fence between a more *orthodox* and emergent digital learning pedagogy, may be the concept of Problem Based Learning (PBL), a research framework sharing a common assumption: The emphasis on students solving real life problems, treated through both investigation and action (Barron et al. 1998). Needless to say, each subject taught and theme curated for media-rich learning interaction, will be different. What is shared is a narratological approach, observing the richness of interaction potential. Learning designs based on real life problems, mobilize engagement. Observing how gamers game, the lesson is simple: It´s the story that counts.

4 Conclusions

Contact Education inivites a number of frameworks and perspectives, coming together perhaps best in the the idea of *co-curation*. A short literature review does not offer the full prospect of any clear conclusion as to how to envisage that inter-discipinary co-curation space and agenda, but it does make room for reflection on some of the dimensions that would be in need of further pursuit.

In summary, research abounds on what motivates and engages students to learn on their own, in media rich environments. It would seem that a key challenge is to focus a great deal on counteracting our scholarly penchant for discipline thinking. In this paper, we have sought to outline some elements that point to ways and means of exploring the kind of collaborative learning designs and co-curation for which Future Learning Lab was set up.

5 References

Alexander, B. (2006). Going nomadic: Mobile Learning in Higher Education, *Formamente* 1, pp. 59-68.

Barbour, M.K,. and Reeves, T.C. (2008). The reality of virtual schools: A review of the literature, Computers and Education 562, pp. 402-416.

Barron, B. et.al. (1998). Doing with Understanding: Lessons from Research on Problem- and Project-Based Learning. *The Journal of the Learning Sciences*, 7(3/4), 271-311.

Binkley et al. (2012). Defining Twenty-First Century Skills. In P. Griffin & E. Care (Eds.) *Assessment and Teaching of 21st Century Skills*, 17–66.

Brennan, R., Horton, C., McNickle, C., Osborne, J., Scholten, K. (2003). Online Learning on Location: Perspecrtives from Regional Australia, *Australian National Training Authority*.

Bundsgaard, J. (2009). Krydsmodel for undervisningstilrettelæggelse, in: Dansk Universitetspædagogisk Tidsskrift 9, 2009.

Carey, J. (1992). *Communication as Culture: Essays on Media and Society*, New York: Routledge.

Casserley, C. (2017). Open Education Resources. *Keynote at the World Learning Summit*, Future Learning Lab, UiA.

Christensen, C.M. & H.J. Eyring (2011). The innovative university: Changing the DNA of higher education from the inside out. San Francisco, A: Jossey-Bass.

Dede, C. (2005). Planning for neomillennial learning astyles, *Educause Quarterly* 1, pp. 7-12.

Dunleavey, M., Dede, C. and Mitchell, R., (2009). Affordances and Limitations of Immersive Participatory Augmented Reality Simulations for Teaching and Learning, *Journal of Science Education and Technology*, 18, pp. 7-22.

Erstad, O. & J. Sefton-Green (2013). "Digital Disconnect? The Digital Learner and the School", in O. Erstad & J. Sefton Green (eds.), Identity, Community, and Learning Lives in the Digital Age, Cambridge: Cambridge Press.

Geertz, C. (1973) The interpretation of cultures. Selected essays, New York: Basic Books.

Hatfield, D., & Shaffer, D. W. (2006). Press play: designing an epistemic game engine for journalism. Paper presented at the Paper presented at the International Conference of the Learning Sciences (ICLS), Bloomington, IN.

Hill, JH.R. and Hannafin, M.J. (2001). Teaching and Learning in Digital Environments: The Resurgence of Resource-Based Learning, *Educartion Technology Research and Development* 49:3, pp. 37-52.

Hodgins, H.W. (2002). The Future of Learning Objects, *Proceedings of the 2002 eTEE conference*, Davos, Switzerland.

Iversen, O.S., Dindler, C. & Smith, R.C. (2017). *Digital teknologi og design i undervisningen, DAFOLO forlag*. Digital teknologi og design i undervisningen. In press.

Korakakis, G., Pavlatou, E.A., Palyvos, J.A., Spyrellis, N. (2009). 3D visualization types in multimedia applications for science learning: A case study for 8th grade students in Greece, Computers and Education 52, pp. 390-401.

Lave, J., & Wenger, E. (1991). Situated learning: Legitimate peripheral participation. Cambridge: Cambridge University Press.

Liestøl, G. (2009) "Situated Simulations: A prototyped augmented reality genre for learing on the iPhone", conference contriubution Amman, Jordan – also at Stanford University, April 2009, unpublished.

Luke, C. (2001). Pedagogy, Connectivity, Multimodality and Iterdisciplinarity, *Reading Research Quarterly* 38:3, pp. 397-403.

McLoughlin, C., and Lee, M.J.W. (2008) Future Learning Landscapes: Transforming Pedagogy through Social Software, Innovate: Journal of Online Education 4:5, pp.

Norvig, P. (2016).The Future Classroom, *Keynote address at the World Learning Summit 2016*, Future Learning Lab, University of Agder.

OECD (2014). TALIS 2013 results: an International Perspective on Teaching and Learning. Paris: OECD Publishing.

Ong, W. (1988). *Orality and literacy: The technologizing of the word*, London: Routlegde.

Sappa, V. and Aprea, C. (2003). Conceptions of Connectivity: How Swiss Teachers, Trainers and Apprentices Perceive Vocational Learning and Teaching Across Different Learning Sites, Vocations and Learning 7, pp. 263-287.

Shaffer, D. W., & Resnick, M. (1999). Thick authenticity: New media and authentic learning. Journal of Interactive Learning Research, 10(2), 195-215.

Shaffer, D. W. (2006). Epistemic frames for epistemic games. Computers & Education 46(3), 223-234.

Tamin, R.M. (2011). What Forty Years of Research Says about the Imnpoactr of Technology on Learning: A Second-Order Meta-Analysais and Validation Study, *Review of Educational Resaearch* 8:1, pp. 4-28.

Tveiten (2016). Smart Universities. Welcome remarks to the 2016 World Learning Summit, *Future Learning Lab working papers*, UiA.

Tveiten, (2008) Contact education, old and new media: Reflections on a peace building initiative in Norway, *Communication and Conflict Online* 2008, vol. 2, Konstanz, Germany.

Viteli, Jarmo (2017). Nordic Center of Excellence for Learning in the Digital Society. *Unpublished proposal to NordForsk*.

Wenger, E. (1998). Communities of Practice. Learning, Meaning, and Identity. Cambridge: Cambridge University Press.

The Quality of Open Online Education and Learning: A Quality Reference Framework for MOOCs

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Abstract: Societal, educational and personal changes are shaking economies, working and living conditions as well as the whole world. The raise of the world-wide internet and social media including online communities is affecting societies and people's lives as well as personal learning. Open (Online) Education has experienced a major development raising awareness amongst all actors including global grass-root movements, events, communities and associations as well as international policies and implementations in national and regional educational systems. During the last years Massive Open Online Courses (MOOCs) became very popular: Since the year 2008 with the first MOOC the number of MOOCs is constantly increasing. The year 2012 was considered as the "Year of the MOOCs" leading to a global debate about their quality as an educational tool that is increasing since then. To address the quality issues, MOOQ, the European Alliance for the Quality of MOOCs was initiated. Based on a literature review and analysis of existing quality approaches and indicators for MOOCs, the first Global MOOC Survey was designed and conducted for three target groups (MOOC learners, designers and facilitators) with the support by the leading international associations and institutions. Afterwards the results from the survey were complemented by qualitative and semi-structured interviews with MOOC designers, facilitators and providers to gain more in-depth details and insights. The final objective is the development of the Quality Reference Framework (QRF) with quality indicators and tools in close collaboration with all interested stakeholders worldwide. This paper presents the first QRF draft for further discussion.

Key words: Open Education, Online Learning, MOOCs, Quality Reference Framework, MOOQ

1 Introduction

The societies and their economies, working and living conditions are facing global challenges and changes. They are affecting all parts of our lives including the ways how we learn and educate. Even though that the individual process of learning is not changing completely, the circumstances and modes of learning and education are becoming more diverse (Stracke, 2018). In particular the educational systems are challenged by moving objectives and development targets (Nyberg, 1975, Stracke, 2018). Citizens have to acquire and develop much different skills and competences due to competing businesses and interests at national, regional and international scales are demanding for new work forces. That requires a shift towards core horizontal competences including new kinds of literacy and many public authorities in education are accepting and following this request (OECD, 2016). It is claimed that new economies and jobs are emerging that are not yet existing or fully developed and public education should prepare for it by personality and competence building.

On the other hand there are also considerable changes of the individual lives and conditions, not only related to labour market opportunities and increasing workload pressure but also regarding individual communication, collaboration and learning. Internet and social media were appearing like a star introducing online communities and service that are affecting people's lives as well as personal learning. Even though the limitations of technology and Internet access are still avoiding balanced and equal situations mainly in Southern countries, online learning and collaboration have been established and many new opportunities for online education and learning were developed and are available for many interested people all over the world (Stracke, 2017a & 2018). Therefore it can be called a global movement given the continuous deployment of technology and Internet access and use worldwide (World Bank, 2016).

All these societal, educational and personal changes have led to the growth of Open (Online) Education that has experienced a major increase of raising awareness amongst all levels and stakeholders (European Commission, 2011, Stracke, 2015). Global grass-root movements, events, communities and associations and international policies and implementations in national and regional educational systems were successfully created and sustained. Major milestones were the UNESCO declarations on Open Education and in particular the policy on Open Educational Resources (OER) (UNESCO, 2012). In Europe, the European Commission is strongly supporting it by the communication on "Opening Up Education" (European Commission, 2013) demanding a change and improvement in European education and society.

Within Open Online Education the phenomenon MOOC (short for: Massive Open Online Courses) became very popular: The first MOOC was provided in the year 2008 and since then, the number of MOOCs is constantly growing (Gaskell & Mills, 2014, Stracke, 2017a). A first peak could be discovered in the year 2012 that was labelled as the "Year of the MOOCs": It introduced a debate that is questioning the quality of MOOCs and their value as learning experience and educational tool (Daniel, 2012). The drop-out rates as the typical measure in traditional distance education courses and in all formal education settings are discussed in MOOCs as they are very low and often below 10 %: Therefore first demands for re-booting the design of MOOCs and their research and quality are formulated (Margaryan, Bianco & Littlejohn, 2015, Onah, Sinclair & Boyatt, 2014, Reich, 2015). But this discussion results is mainly based on an improper use of drop-out rates as a formal evaluation concept of face-to-face education for MOOCs that allow mostly non-formal learning experiences (Onah, Sinclair & Boyatt, 2014). Thus, alternative evaluation measures have been proposed for MOOCs and are discussed to address better the learners and their personal intentions and goals (Stracke, 2017a, Teixeira & Mota, 2014).

To directly focus these quality issues, MOOQ, the European Alliance for the Quality of MOOCs was initiated and is taking up several key aspects of the 2011 EU Modernization Agenda such as digital skills and competences orientation (European Commission, 2011). The founding partners of MOOQ are: The Open University of the Netherlands (OUNL, NL) as the MOOQ coordinator, Hellenic Open University (HOU, GR), National Quality Infrastructure System (NQIS, GR), Universidade Aberta (UAb, PT) and Ecole Normale Supérieur (ENS, FR). In close collaboration with leading European and international associations and institutions (including: UNESCO IITE, ITCILO, FAO, UNITAR, ICDE, CoL, ICORE, EADTU, EDEN, EATEL, OEC, Contact North, EAPRIL) the MOOQ alliance aims to improve the adaptation and quality of future Open Education and MOOCs (Stracke, 2017b).

2 How to improve Open Online Learning and MOOCs?

The vision of MOOQ is to improve and to foster the quality in Open Online Education and Learning and in particular in MOOCs that it will lead us to a new era of learning experiences. MOOQ's mission is to develop a Quality Reference Framework (QRF) for the adoption, the design, the delivery and the evaluation of MOOCs in order to empower MOOC designers and MOOC providers for the benefit of MOOC learners. The main goal of MOOQ is therefore the development

and the integration of quality approaches, new pedagogies and organisational mechanisms into MOOCs with a strong focus on the learning processes, methodologies and assessments.

To enhance the unique digital market in Europe, MOOQ will introduce a new "Q-generation of MOOCs" that will be designed, organized and tested as "qMOOCs". This is done in close collaboration with all interested partners and stakeholders in Europe and beyond. Therefore MOOQ commits to help providers to design and deliver better MOOCs in close collaboration with all interested stakeholders worldwide. The particular needs addressed by MOOQ are:

- Massive offerings of MOOCs, stimulated by unprecedented publicity, will soon lead to ranking of courses and Universities offering the courses: Ranking will rely on the increased quality of offerings as perceived by both learners and educational professionals. Thus, there is a need for a QRF for MOOCs with a focus on sustainability by way continuous improvement.

- Learning effectiveness will be the ultimate test for the MOOC education model as it was for the classic distance learning approach. Alignment of learning objectives, measurement and assessment, educational materials, interaction and engagement of learners, and course technology to ensure achievement of desired learning outcomes is essential. Hence there is the need for the development, application and testing of criteria, indicators, methods and tools for measuring achievement in MOOC learning.

- The MOOC educational model is being shaped as courses are offered, and so far, most initiatives still use traditional pedagogical techniques, although emerging pedagogic models in Europe bear much promise. There is a lack of really innovative practices particularly in crowd learning, personalization equity and inclusion in a massive context. Hence, the need for creative use of the new learning tools for flexible and responsive education and application of the principles, criteria and standards of quality.

- Educational professionals and HE institutions are lacking support for designing, deploying, managing and assessing high quality MOOCs. Dissemination of techniques on the appropriate use of learning outcomes when describing and defining qualifications, parts of qualifications and curricula in massive learning is vital. Consequently MOOQ addresses the need for tools and courses on MOOC learning

scenarios, content design, quality assessment and organizational development.

Next to design patterns and best practices of MOOCs, two multilingual MOOC pilots and a pre-standard for a European MOOC Quality Framework, the main result of MOOQ is a Quality Reference Framework (QRF) for the design, comparison, evaluation and improvement of MOOCs (Stracke et al., 2017).

The QRF will provide an organisation-wide system to help Higher Education Institutions and external stakeholders to design, develop, monitor, evaluate and improve the effectiveness of MOOCs along with the quality management practices. The QRF will define the requirements for the formation and enactment of internal and external evaluation mechanisms of processes and content. Based on flexible, configurable quality criteria and indicative descriptors, monitoring and reporting is adapted to organisational needs.

The QRF will be practical to encompass a wide range of approaches to quality assurance emphasizing that it is the quality of the outcomes (in terms of internal and external stakeholder satisfaction) that matters most in the design of MOOCs. Therefore, it will use a multi-facet approach with quality indicators and tools for the design of future MOOCs to achieve fitness of purpose and improve them for better learning experiences by MOOC learners. To this end, MOOQ will use and apply the first international ISO quality standard for e-Learning ISO/IEC 40180, the revision of ISO/IEC 19796-1 approved and published in the year 2005. The QRF will cover the five phases adapted from the quality standard: analysis, design, implementation, learning process plus evaluation that embraces all other four phases for their continuous improvement.

3 Quality Reference Framework for MOOCs - A first draft

The Quality Reference Framework for MOOCs is the main objective and result expected and planned by MOOQ, the European Alliance for the Quality of MOOCs as mentioned above. First, an in-depth literature review and analysis of existing quality approaches, evaluation instruments and quality indicators for MOOCs were conducted and their findings are currently under publication. Based on them, the first Global MOOC Survey was designed in two steps: First, a small pre-survey with set of potential questions was realized for a short period of time (n=45) revealing that many MOOC learners do not share the intentions of the MOOC designer and have got their own goals (Stracke, 2017a). Afterwards the big international survey (www.survey.MOOC-quality.eu) was conducted for three

target groups (MOOC learners, designers and facilitators) with the support by the leading international associations and institutions and over a period of three months. More than 500 participants shared their experiences and expertise (n=584) and most of them reported positive experiences with MOOCs.

Afterwards the results from the survey were enriched by complementary qualitative and semi-structured interviews with MOOC designers, facilitators and providers to gain more in-depth details and insights. In parallel several interactive workshops for feedback and discussions were and will be organized at European and international conferences (such as OE Global 2016 and 2017, EC-TEL 2016, DRDC 2016, IEEE EDUCON 2017, LINQ and WLS 2017) to facilitate the close collaboration with all interested stakeholders worldwide for the development of the Quality Reference Framework with its quality indicators and tools.

The first draft of the Quality Reference Framework is outlined in the following for further discussions that was developed by MOOQ and updated after the interactive workshops at European and international conferences. Currently the QRF consists of five phases (Analysis, Design, Implementation, Learning Process and Evaluation) as illustrated in the figure below:

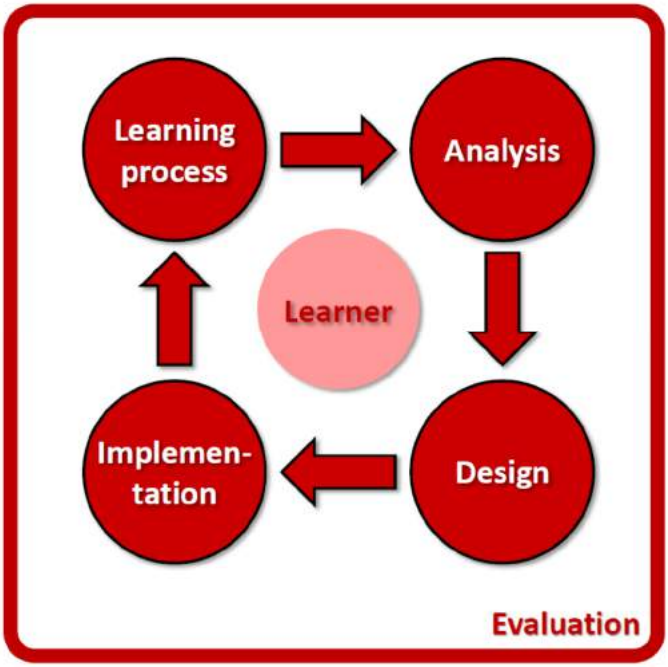

Figure 1: The phases of the Quality Reference Framework for MOOCs

The five phases will cover and be applied on all three levels (micro, meso and macro) of education and will address the relevant target groups as shown in the following figure:

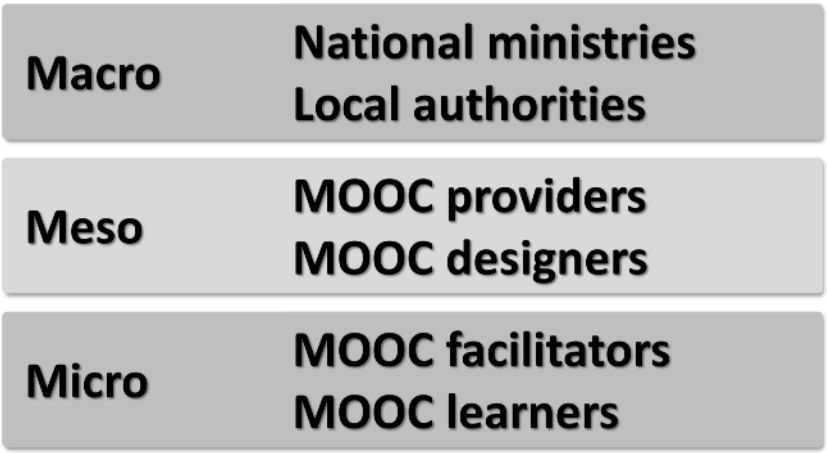

Figure 2: The target groups of the Quality Reference Framework for MOOCs

Next step towards the Quality Reference Framework will be the identification of the tools and instruments valuable and relevant for these different target groups.

4 Future work and outlook

MOOQ will intensify the efforts to develop the Quality Reference Framework and related tools and instruments and to involve all interested organizations and people: Next to the two planned MOOCs, the MOOQ alliance is developing a MOOC on the quality of Open Education in close cooperation with many stakeholders worldwide to join forces for facilitating and increasing high quality Open Education. In addition a renewed version of the first Global Survey on the Quality of MOOCs is planned for the year 2018 to allow comparison of the results and analysis of potential progress. And also the MOOC on the Quality of Open Education will be updated and repeated in the year 2018.

Finally new drafts and versions of the Quality Reference Framework will be published for online discussion at the MOOQ website (www.MOOC-quality.eu) next to the other results from the surveys, interviews and interactive workshops. All these publications will be published online under an open and free license of course.

5 References

Daniel, J (2012). Making Sense of MOOCs: Musings in a Maze of Myth, Paradox and Possibility. [see: http://sirjohn.ca/wordpress/wp-content/uploads/2012/08/120925MOOCspaper2.pdf]

European Commission (2013). *Opening up Education: Innovative teaching and learning for all through new Technologies and Open Educational Resources*. [COM(2013) 654 final] [see: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013DC0654&from=EN]

European Commission (2011). *Supporting growth and jobs – an agenda for the modernisation of Europe's higher education systems*. [COM/2011/0567 final] [see: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52011DC0567]

Gaskell, A., & Mills, R. (2014). The quality and reputation of open, distance and e-learning: what are the challenges? *Open Learning*, Vol. 29 (3), pp. 190-205.

Margaryan, A., Bianco, M., & Littlejohn, A. (2015). Instructional quality of massive open online courses (MOOCs). *Computers & Education*, 80, pp. 77–83.

Nyberg, D. (1975). *The philosophy of open education*. London: Routledge and Kegan Paul.

OECD (2016). Education at a Glance 2016: OECD Indicators. Paris: OECD Publishing.

Onah, D. F., Sinclair, J., & Boyatt, R. (2014). Dropout rates of massive open online courses: behavioural patterns. *EDULEARN14 Proceedings*. pp. 5825-5834.

Reich, J. (2015). Rebooting MOOC research. *Science*, 347 (6217), pp. 34–35.

Stracke, C. M. (2018). How can Open Education improve learning quality and achieve impact for learners, organizations and in society? In T. Amiel (Ed.), *Utopias and Dystopias in Education*. Sao Paulo: UNICAMP. (in print)

Stracke, C. M. (2017a). The Quality of MOOCs: How to Improve the Design of Open Education and Online Courses for Learners? In P. Zaphiris and A. Ioannou (Eds.), *4th International Conference, Learning and Collaboration Technologies 2017, Part I, LNCS 10295* (pp. 285–293). Berlin, Germany: Springer. DOI: 10.1007/978-3-319-58509-3_23 [online at: http://www.opening-up.education]

Stracke, C. M. (2017b). Open Education and Learning Quality: The Need for Changing Strategies and Learning Experiences. In *Proceedings of 2017 IEEE Global Engineering Education Conference (EDUCON)*. IEEE Xplore. pp. 1044-1048. DOI: 10.1109/EDUCON.2017.7942977

Stracke, C. M., Kameas, A., Vassiliadis, B., Sgouropoulou, C., Texeira, A. M., Pinto, M., & Vidal, G. (2017). The Quality of Open Online Education: Towards a Reference Framework for MOOCs. In *Proceedings of 2017 IEEE Global Engineering Education Conference (EDUCON)*. IEEE Xplore. pp. 1712-1715. DOI: 10.1109/EDUCON.2017.7943080

Stracke, C. M. (2015). The Need to Change Education towards Open Learning. In C. M. Stracke & T. Shamarina-Heidenreich (Eds.), *The Need for Change in Education: Openness as Default?.* Berlin: Logos. pp. 11-23. [online at: http://www.learning-innovations.eu]

Teixeira, A., & Mota, J. (2014). A Proposal for the Methodological Design of Collaborative Language MOOCs, In E. Martín-Monje & E. Bárcena (Eds). *Language MOOCs: Providing Learning, Transcending Boundaries*. Berlin: De Gruyter Open. pp. 33-47. [online at: https://www.degruyter.com/downloadpdf/books/9783110422504/9783110422504.3/9783110422504.3.pdf]

UNESCO (2012). *2012 Paris OER Declaration*. 2012 World Open Educational Resources (OER) Congress. Paris: UNESCO. [online at: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/Events/Paris%20OER%20Declaration_01.pdf]

World Bank (2016). *World Development Report 2016: Digital Dividends*. Washington, DC: World Bank.

Mobile Technologies as tools for Learning in Non-formal contexts. Experiences with Smallholders farmers in Resource Limited Settings

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Abstract: Recent developments in mobile technologies offer promising opportunities in combating the chasm of educational inequalities, especially in developing regions. Although relative studies trace mobile learning in informal and non-formal contexts; there limited attempts to situate mobile learning in non-formal contexts with farmers. Yet, in the face of changing climate, farmers could benefit from frequent updates about learning for livelihoods which mobile technologies like mobile phones can support. This paper attempts to account for the learning experiences as they evolve when smallholder farmers interface with mobile phones as tools for learning. This exploration traces learning in resource limited settings where marginalisation and limited inclusion in most learning provisions characterise such locations. A qualitative study with Grameen Foundation-Community Knowledge Worker (CKW) project in Uganda was adopted. A total of fifty smallholder farmers and ten key informants was used through data collection techniques like informal interviews, focused group discussions, and participant's observation. Experiences in form of farmers narratives showed that mobile phones allowed learning to take place in the farmers' usual environment, and strongly nurtured farmer engagements. Given their peculiar characteristics; farmers' learning on mobile phones was tailored to address livelihood challenges where knowledge and the knowing process was highly situated, and contextualised. Despite learning being transformative and empowering, negative experiences like; intermittent network, cultural hindrances, limited capital, negative bonds, and unstable weather patterns affected the use of attained knowledge.

Key words: Mobile learning, Resource limited settings, Community of Practice, Smallholder farmers

1 Introduction

“Underlying many gaps in the current educational framework is the fact that is fails to address education in a holistic and integrated manner. More achievable goals are privileged, and others, such as adult literacy, are relegated to lower priority. The goals are also not adequately targeted to reach the poor and marginalised, thus underserving those in hard to reach” (UNESCO & UNICEF, 2013 P.7-8).

As every month goes by it becomes increasingly clear that there are new technological inventions we need to exploit as educationists. Such exploitation is inclusive of how we can make mobile technologies meaningful, and impactful to the less privileged in society. The post 2015 Sustainable Development Goals (SDGs) came forth after realisation that most communities in developing regions need adaptive strategies to strengthen their resilient capabilities and enhance livelihoods. This study is situated in the SDG Goal 4: ‘Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all’ (United Nations 2015). The current global society needs an empowering and transformative type of education that does not only focus on education in formalized environments but rather inclusive of education in non-formalized contexts; like the case with smallholders in resource limited settings . Smallholders who constitute the majority in most developing regions heavily rely on agriculture at a substance scale; yet their livelihoods are greatly affected by impacts of climate change (Norad, 2013; Wright et al., 2016). These farming communities however have access to mobile technologies like mobile phones that can provide bridges to support learning for secure livelihoods. Mobile learning allows learning to take place in the learners’ usual environment, fosters people engagement, promotes learner centeredness, knowledge centeredness, and community centeredness (Sharples, Taylor, & Vavoula, 2007). To attain equitable education and promote learning for all, emergent technologies like mobile devices need to embrace learning for the marginalised in society. Thus, by exploring the nature and type of learning supported by mobile technologies, this study attempts to show case farmers’ mobile learning experiences in non-formal contexts. This exploration also recounts for the negative experiences associated with the use of mobile phones for learning in resource limited settings.

The first section of this paper briefly explains the applicability of mobile technologies in non-formal learning contexts, with an overview of mobile learning. The discussion about farmers’ mobile learning experiences in non-formal contexts in light with the community of Practice - social learning theory then follows. The paper ends with a conclusion that appreciates the impact of

mobile technologies use in non-formal learning contexts. It suggests that appropriating mobile learning in resource limited settings is not only justifiable in such contexts with limited access to better infrastructure, but rather an ethical undertaking in increasing access to educational opportunities; a driver to attaining the lifelong learning opportunities to smallholder farmers in developing regions.

2 Mobile Technologies in Non-Formal Learning Contexts

Mobile technologies are considered to bring educational and learning opportunities to even marginalised populations (Grimus & Ebner, 2013) in developing regions. Such technologies have supported the transformation of traditional societies into knowledge societies (Oladele, 2011). In this study, the mobile technologies used are (smart) mobile phones, as these are amongst the fastest technological diffusion in communication history (Castells, 2011). 6 billion people out of the 7 billion on earth have a working mobile phone according to recent global statistics (UNESCO 2014). Mobile technologies are effective tools to support learning and communication to broad range of learners in a variety of contexts (Kukulska-Hulme, 2010), as the case with learning in non-formal contexts. 'Mobile technologies support learning in different contexts and are particularly beneficial in informal and semi-formal learning contexts' (Jones, Scanlon, & Clough, 2013, p. 1). Mobile learning is learning that is personalised, informal, contextual, with the aid of mobile devices (Kukulska-Hulme & Traxler, 2005). Mobile learning is not only restrictive to learners' mobility, but also incorporates an appreciation of active involvement of learners in different contexts (Brown, 2010). Winters (2007) for example has broadened the term to not only focus on the affordances of the mobile device, but rather, capture mobility affordances in multiple contexts. To clearly exemplify how learning on mobile technologies unfolds among smallholder farmers, the case study below depicts the situation in rural Uganda, Greater Bushenyi Region.

3 Research Context and Methodology

Uganda is a land locked Country located in Eastern Part of Africa with a population of 38 million. The country is predominantly agrarian, with agriculture (75%) the main provider of peoples' livelihoods. In the country, mobile phone subscriptions have reached up to 19.5 million mobile users, where mobile

coverage is up to 90% even in rural areas (Mwesigwa, 2016; UCC, 2014). Despite the low literacy levels, with English as the formal language, the mobile economy in the country is blossoming than ever before. This study was conducted in western Uganda, in the Districts of Lubirizi and Mitooma (Katerera and Mitooma sub counties), greater Bushenyi region. Agriculture (smallholder) is the main economic activity, supporting 80% of rural households. In the country, the agriculture extension system is at its low performance which makes farmers lack the necessary agricultural information. The ratio of extension officers to farmers is 1:18,000 (Balasubramanian, 2013) where, over 30 per cent of smallholder farmers are unreached.

The Grameen Foundation - CKW project sees the proliferation of mobile phones as a way to get information and services to and from poor communities in rural Uganda. Launched in 2009, the project serves farmers in remote communities through a network of peer advisors (locally termed Community Knowledge Workers - CKWs). The initiative combines mobile technology and human networks to help smallholder farmers get accurate and timely information to improve their businesses and livelihoods. The programme considers phones as a powerful two-way communication device and the organisation puts emphasis in generating innovative ways to collect and disseminate information (Nampijja & Birevu, 2016). CKWs who are often farmers themselves, are trusted local intermediaries serving farmers who frequently lack basic access to up-to-date information on best farming practices, market conditions, pest and disease control, and weather forecasts. By creating a network of CKWs throughout Uganda, Grameen aims to revolutionize agricultural knowledge-sharing and, in turn, improve yields, reduce losses, and increase incomes of poor smallholder farmers. In addition, CKWs collect agricultural information from farmers, providing a vital link between farmers, government programs, non-governmental organizations and other entities focused on improving agriculture in Uganda (Grameen Foundation, 2015).

Qualitative methodology through an interpretivist and social constructivist perspective from multiple case sites of CKW project in Katerera, and Mitooma parishes in western Uganda was adopted. Data collection was aided through interviews, informal discussions, Focused Group Discussions (FGDs), note taking, and participant observations. Primary data collection entailed series of semi-ethnography interactions where the research team stayed and lived with the communities to clearly analyse the nature of learning and learner interactions with the mobile phones. Secondary data sources included organisational reports, local government reports, and locally generated materials from the different parishes. To obtain primary data, 50 farmers and 10 key informants were

included. The farmers included the CKWs, both men and women aged (25-60 years) with access to smart phones fully installed with agricultural content. The 60 participants were a representative sample in a purely qualitative study given emphasis on thick and deep data with socially constructed analyses. NVivo tool aided the analysis through code classification themes like, nature and type of learning, and farmers' experiences (both positive and negative), regarding the use of mobile technologies. To ascertain reliability and validity of information obtained, several follow up discussions with study participants, and feedback meetings with the CKWs were conducted.

4 Nature and Type of Learning on Mobile Technologies

UNESCO views learning as a lifelong process and a central aspect in addressing the global challenges like, for instance, poverty and food insecurity. The Commission emphasizes four pillars of learning: 'learning to live together', 'learning to know', 'learning to do', and 'learning to be' (UNESCO, 2011, p. 6), which are elements visible in the CKW project. Taking the non-formal learning perspective, learning is embedded in practice based context where learning becomes a problem-solving initiative. As Ngaka et al claims, ''opportunities for integrating formal and non-formal education are not ubiquitous, but (rather) deliberate efforts to respond to communities' identified and expressed needs'' (2012, p. 116). Although the CKW project aim was to alleviate poverty through access to actionable information, from an educational point of view, non-formal learning takes. Learning here is informed by ways of managing pest and diseases, how to manage crops, and animals, market and weather knowledge sharing; as aspects of extension education.

Based on the findings, smallholder farmers learn through face to face individual and group meetings, as well as online interactions. The mobile phones carry agricultural content which they use to ignite further discussions. The mobile phones act as digital libraries which facilitate a spiral over effect in information access and sharing with other farmers in the community. Mobile phones also support conversational learning where learning becomes a process of coming to know and the ability to share knowledge with others in the network. For smallholders, 'learning is not just acquiring skills and information; it is becoming a certain person-a knower in a context where what it means to know is negotiated with respect to the regime of competence of a community' (Wenger 2000, p. 2). Mobile learning in this context places learning in people's environment and context which the social learning theory agitates for. Here, learning is

participation in the social world where farmers experiences are integrated in learning.

5 Farmers' Learning Experiences on Mobile Technologies

To situate learning as a lifelong process, the communtiy of practice theory was used. "Communities of practice are a group of people who share a passion for something they do and learn how to do it better as they interact regularly" (Wenger, 2006:1). The CKWs are a 'community of practice' in their locality. These possess a shared passion of learning together with other fellow farmers who have no access to mobile content. In this social learning theory, individuals and social institutions are not a focus of analysis, but rather; communities of practice. The theory explores systematic intersection of learning components: community, practice, meaning, and identity which provide a conceptual framework of analysing learning as a social process (Wenger, 1998). Figure 1 exemplifies the community knowledge worker - community of practice as viewed from project interventions in the rural community visa vie farmers' day to day learning experiences.

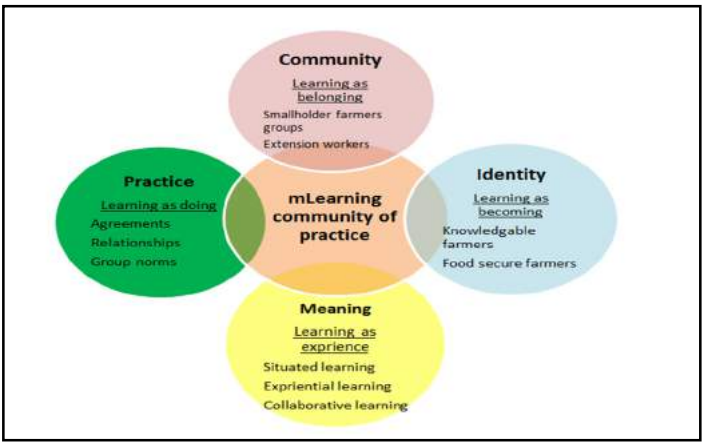

Fig. 1: Community Knowledge Worker - Community of Practice adapted from Wenger (1998)

The farmers in Katerera and Mitooma sub counties where the study was conducted deal in similar enterprises like banana and coffee plantations, at a subsistence scale. These similar enterprises situate farmers in the community and identify them as farmers with sameness. 'Knowledge here is about

competence with respect to valued enterprises' (Wenger, 1998, p. 4). Learning in this case is defined as 'belonging' and as 'becoming' for the community and identity components respectively. Farmers here want to become not only knowledgeable farmers; but also, food secure farmers who broadly look at farming both for subsistence and as a business. For the 'practice' and 'meaning' strands, ''Knowing is about active engagement in the process of learning where meaning is ultimately what learners produce'' (Wenger, 1998, p. 4). In Practice, learning is about doing and in meaning; learning is about experience sharing. The CKWs share this information with farmers in different villages in form of one-on-one and through group meetings where learning is a shared and highly coordinated process.

In group meetings, the content on mobile phones ignite further discussions which is tailored to local circumstances and takes into account other farmers experiences. The more experienced farmers discuss and agree with the CKWs on what works and what cannot work depending on availability of farm inputs, indigenous resources and money. This working relationship amongst farmers is possible with the availability of agreements, relationships and group norms agreed upon by the community of farmers. For example, each group (usually of 50 farmers) decides to agree on when to meet, where and on whose farm land. These meetings are rotational where at the end of the season; each participant must have had a chance to host a group learning. Quite interesting is that as these relationships advance, they give birth to newer relationships. 'When I host a group meeting, I feel empowered since learning comes to my plantation. This makes me invite my other friends who are not part of the project, but can also benefit from the discussions' said a farmer. Here, learning transcends beyond project boundaries, to benefiting others in the community. Such learning organised non-formally in rural contexts needs to map and maximise the available assets in rural learning ecologies (Hlalele, 2013). In doing this, Hlalele claims the need to exploit the available community assets where innovative technologies like problem solving learning and high level of volunteer support from significant others in communities is vital. In the project, not all farmers have access to smartphones with mobile content. This by implication means that team work and strong bonds facilitate the learning process. 'I am not part of the Grameen farmers, but during group meetings, I asked the CKW to join. So, I have gained farming knowledge and my plantations are looking healthy' said a non-project farmer . Here, learning is a process of coming to know and the ability to share knowledge with others in the network. Learning involves change in knowledge and attitudes, which leads to acquisition of new skills and new ways of relating to practice (Ekanayake & Wishart, 2014).

Authentic learning was visible as farmers interacted with the mobile phones. In this learning, learning tasks are practical and in real-world contexts'(Herrington, Reeves, & Oliver, 2014). Learners are given a chance to use their experiences, where learning is problem solving. 'We used not to have extensionist reach down in our plantations, but with the CKWs, I can learn from my plantation with others which makes learning practical and more meaningful', said a female farmer in Katerera parish. During group discussions, farmers engage in real life hands-on activities that is, learn by doing. Access to expert performances and modelling is central in authentic learning (Herrington et al., 2014). The CKWs, farm experts, researchers, and model farmers show different farming techniques which make it possible for other farmers to model behaviours and replicate on their farms. Reflections, coaching and scaffolding are all available techniques employed in the CKW project which in turn facilitate deep learning among farmers. Also, given that the project had farmers whose livelihoods relied on farming, these came with vast experiences which the project upheld. From a focused discussion with the CKWs, many attested to the fact that, some farmers in their groups had very experienced information, which they too utilised to strengthen learning in group meetings. This is in line with Paul Freire's thinking that 'whoever teachers learns in the act of teaching, and whoever learns, teaches in the act of learning'. Learning amongst CKWs and farmers was reciprocated and highly interactive with other farmers in the community of practice.

However, it is important to note that while as mobile phones supported learning for livelihoods, it is only one element amongst the different technologies and interactions (Kukulska-Hulme, Sharples, Milrad, Arnedillo-Sánchez, & Vavoula+, 2009). Mobile technologies do not replace existing technologies like desktop computers, pens and print, but rather, it complements them by adding something additional (Kukulska-Hulme 2010). The mobile phone was not the sole igniter of learning, other factors like organisational scaffolding, social capital and internal motivation of farmers facilitated the learning process. Although Castells, re-echoes mobile communications as the fastest growing technology in world history, he further highlights that ''alongside the development of trends in mobile communication that could be considered global, other trends unique to individual ethnic, cultural, or national characteristics are also found'' (Castells et al., 2007, p. 74). Some negative experiences like unstable weather patterns, and mobile phones creating more digital divide were visible. Those CKWs who had phones were elevated, which left many grumbling as majority felt left out. Internet and telecommunications networks was intermittent in some location, hindering some from access. The older CKWs who had smart phones found it hard to ably trouble shoot them in case of problems, which in away hampered productivity. Also, capital for the farmers to use the attained knowledge was a

challenge. “I have gained knowledge on how to manage my banana and coffee plantations, but being a window, I cannot afford to apply all the necessary techniques to improve on my yields’’ said a female farmer. Other factors like female headed households, cultural and religious hindrances negatively impacted on mobile phones for learning.

6 Conclusions

‘The widespread diffusion of mobile and wireless technologies, although on a global scale, is certainly not uniform and independent of economic and cultural factors, and offers an opportunity to develop education policies aimed at increasing participation in education…’ (Seta, Kukulska-Hulme, & Arrigo, 2014, p. 162).

The integration of mobile technologies in development comes with challenges which if not well addressed, might impact on mobiles for development discourse. By implication, as we analyse mobile learning, the context, local and societal considerations must be thought through. Mobile learning in developed countries cannot be the same mobile learning in developing regions. In Uganda for example, the context of mobile learning for development presuppose other affordances that mobile technologies can offer to communities in such locations. Religion, culture, policy and infrastructure availability are factors that impact on the uptake of mobiles in resource limited settings; thus, the need to appreciate diversities in contexts visa vie unveiling opportunities to increase access to educational for all. However, if such factors are addressed, mobile technologies like mobile phones which majority possess can be upfront in ensuring increased access to educational opportunities; an avenue for lifelong learning amongst farming communities. Despite heavy appropriation of mobile learning in formal settings, non-formal learning contexts can also benefit from these technologies, where the highly excluded and marginalised like smallholder farmers can attain actionable information to stay resilient and secure their livelihoods. Such a view places mobile learning intervention justifiable and ethically upfront in taking learning to where ‘those in need are reached’.

7 References

Balasubramanian K. (2013). Mobiles in Lifelong Learning for Farmers (L3F). Retrieved 04/03/2015, from CoL http://m4d.colfinder.org/sites/default/files/Slides/M4D_Week6_l3f.pdf.

Brown, E. J. (2010). *Education in the wild: contextual and location-based mobile learning in action. A report from the STELLAR Alpine Rendez-Vous workshop series.* Paper presented at the Education in the wild: contextual and location-based mobile learning in action.

Ekanayake, S. Y., & Wishart, J. (2014). Integrating mobile phones into teaching and learning: A case study of teacher training through professional development workshops. *British Journal of Educational Technology*.

Grameen Foundation. (2015). The Community Knowledge Worker Programme. from Grameen Foundation http://www.grameenfoundation.org/what-we-do/agriculture/community-knowledge-worker

Grimus, M., & Ebner, M. (2013). *M-Learning in Sub Saharan Africa Context-What is it about.* Paper presented at the World Conference on Educational Multimedia, Hypermedia and Telecommunications.

Herrington, J., Reeves, T. C., & Oliver, R. (2014). Authentic learning environments *Handbook of research on educational communications and technology* (pp. 401-412): Springer.

Hlalele, D. (2013). Sustainable rural learning ecologies-a prolegomenon traversing transcendence of discursive notions of sustainability; *TD: The Journal for Transdisciplinary Research in Southern Africa: Special edition: Sustainable learning environments and social justice, 9*(3), 561-580.

Jones, A. C., Scanlon, E., & Clough, G. (2013). Mobile learning: Two case studies of supporting inquiry learning in informal and semiformal settings. *Computers & Education, 61*(0), 21-32.

Mwesigwa, A. (2016). Poor lag behind as rich enjoy ICT - WB report *The Observer Uganda*.

Nampijja, D., & Birevu, P. M. (2016). *Adoption and use of mobile technologies for learning among smallholder farmer communities in Uganda.* Interactive Mobile Communication, Technologies and Learning (IMCL)

Ngaka, W., Openjuru, G., & Mazur, R. E. (2012). Exploring Formal and Non-formal Education Practices for Integrated and Diverse Learning Environments in

Uganda. *The International Journal of Diversity in Organizations, Communities and Nations, 11*(6).

Norad. (2013). *Food Security in a Climate Perspective. Annual Report 2013*.

Seta, L., Kukulska-Hulme, A., & Arrigo, M. (2014). What have we learnt about mobile LifeLong Learning (mLLL)? *International Journal of Lifelong Education, 33*(2), 161-182.

Sharples, M., Taylor, J., & Vavoula, G. N. (2007). A Theory of Learning for the Mobile Age.

UCC. (2014). Communications Sector performance. Retrieved 4/03/2015 http://www.ucc.co.ug/files/downloads/Communications%20Journal%20-%203.0.pdf.

UNESCO. (2011). ICT Competency framework for teachers. Paris: UNESCO.

UNESCO. (2013). UNESCO, Policy Guidelines for Mobile Learning: Paris, France: UNESCO.

UNESCO & UNICEF (2013 P.7-8). Making Eduaction a priority in post 2015.

Wals, A. E., & Corcoran, P. B. (2012). *Learning for sustainability in times of accelerating change*: Wageningen ub.

Wenger, E. (1998). *Communities of practice : learning, meaning, and identity*. Cambridge: Cambridge University

Wenger, E. (2000). Communities of practice and social learning systems. *Organization, 7*(2), 225-246.

Wright, H. J., Ochilo, W., Pearson, A., Finegold, C., Oronje, M., Wanjohi, J., Rumsey, A. (2016). Using ICT to Strengthen Agricultural Extension Systems for Plant Health. *Journal of Agricultural & Food Information, 17*(1), 23-36.

MOOCING journalism education: Notes on the emergent learning technology industry

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Abstract: This paper is a first report from a project on designing online journalism education resources. Framed within the MOOC discussion of recent years, the focus is acritical review on the two Os: Open and online. How can a media-rich "open, on-line journalism education" be conceptualized and also critiqued from the point of view that the converging technologies now disrupting journalism, reflects on the same technology eco system employed to network and globalize journalism education? It is argued that journalism has been challenged by three developments in recent decades: (1) Networked interactivity, (2) hyptertextual virtualiity (3) and user-defined information flow. How do we gauge these "disruptions" in designing open online education resources in journalism education?

Key words: Globalization, journalism, education, journalism education, flipped classroom, MOOCs, curriculum design

1 Introduction

Journalism has been challenged by three developments in recent years, largely unforeseen two to three decades back: (1) Networked interactivity, (2) hypter-textual virtualiity (3) and user-defined information flow. Journalism education programs worldwide now generally reflect these challenges, too. Parallel to the "media disruption" critique that now envelops journalism are the ongoing at-tempts in journalism education to also explore the uses of "disruptive" digital and global learning technologies. The MOOC format – or Massive Open Online Courses – represent an emergent globalized and networked education eco system. That eco system also embodies journalism education. Students of tomorrow need 21st century skills, it is often said: A set of competencies that emphasize problem solving and self-paced life-long learning. In the future, journalism jobs will increasingly require multimedia tools. And they will require

of the critical student a sense of both perspective and ambiguity: The technologies that disrupt journalism as a social institution and give rise to quite fundamental communications critique, are also the technologies employed in the transformation of journalism education – as we know it.

In taking up these perspectives, the question in this paper is very simple: What are the implications for journalism education of MOOCs as reflected in the contemporary research literature and general debate on education´s digital future? Can we use that framework and concept to structure a critical discussion of what is on hand in the design of open online journalism education resources? The paper first presents a general perspective, proceeding to an outline of some key critical issues now facing journalism education, finally pointing to a set of design issues aimed at continued study of critical course design in journalism education. The paper does not address the M – massive, nor the C-courses. It´s emphasis is on O-open and O-online: As to MOOCs, one could of course exchange the M with an N: Networked Open Online courses. The challenge would essentially be the same: Why and how to employ technology for scaling out and networking the educational dialog and interaction. The paper cannot do justice to the full scenario, but it can outline (1) education disrupted, (2) the challenge for journalism education, and (3) at least some commentary on how to understand the future of journalism education – online and open – on the basis of our origins and pasts.

2 A note on disrupted education

On websites, in social media dialogues, in research and in the news media we read about MOOCs, “flipping the classroom” and “self-paced learning”. We read about “big data”, “student engagement” and “motivation”. Issues such as these may be familiar to many educators also in journalism studies. When Time Magazine in December 25th. 2006/January 1st. 2007 voted YOU “Man of the year” (an annual ritual at TIME for decades), the argument was this: You control the information age. Welcome to your world”. From the web link, we can read this:

“It's a story about community and collaboration on a scale never seen before. It's about the cosmic compendium of knowledge Wikipedia and the million-channel people's network YouTube and the online metropolis MySpace. It's about the many wresting power from the few and helping one another for

nothing and how that will not only change the world, but also change the way the world changes."[1]

This is, in short, the "disruption" that came onto the agenda a little more than a decade ago. Social media, Web 2.0 and "the future" seemingly coincided to crystallize two different beliefs in the future of journalism: One is the new networked information flow, seen as an extension of an open, participant public sphere. Whether it emanates from Silicon Valley companies or from other sources in the EdTech industry, the general view is one of optimism and entrepreneurial vision. On the other end is the brave new world of surveillance, information control and a new knowledge divide, deepened by the forces from Silicon Valley. A general point of view could be summarized like this: Whatever the questions in education and education politics are, technology is not the answer.

Two pivotal events in the "disruption of education" lead us to our assessments of disrupted *journalism* education. The first is the establishment of *Khan Academy* and the engagement that led Salman Khan to world fame. While the idea of flipped classrooms is not original to Khan, it may be argued that the approach to learning taken by the Khan Academy is the great popularizer of the idea. A second perspective might be illustrated by a reference to the first MOOC and the one that really set the avalanche in motion: In 2011, Peter Norvig and Sebastian Thrun at Stanford University set up an online course in AI, never expecting that 165 000 students would signed up worldwide. About a year later, Norvig appeared on a *Ted Talk* event in Los Angeles, where he related the story about this course and his reflections on the potential for education institutions.

The rest is – as the say – *history*. What came out of this was not only a recognition that a 165000 student classroom is possible, but also a first design of how that kind of virtual class room interaction could unfold. The *future* of learning suddenly became a hot topic for debate, research, policy-making and entrepreneurship. Since then, US EdTech companies and course providers like Udacity, Udemy, Coursera, edX and EdCast have changed the way a growing number of people look on education. In the UK, *FutureLearn* was established in 2013, in part as a counter-move to the US domination of the MOOC market. The European Union followed suit with the establishment of *EMMA* in 2013, where a key component is the securing a viable European alternative. Meanwhile,

[1] http://content.time.com/time/magazine/0,9263,7601061225,00.html

classrooms were “flipped” all over the world. An aspect of this development is the increased awareness of the “flipped” design and methodology.[2]

3 Globalized journalism and journalism education

Behind these developments lies our key concern for and with global journalism education: A MOOC has the potential not only of teaching global journalism as subject matter. It is, in fact, also an arena for student-based open online journalism *practice*. Unlike many other subject areas and disciplines, journalism studies are embedded in the very technology development that it both employs and critiques. With students practicing online interaction, networking, and media-based studies as well as student research on contemporary global journalism issues, one might well argue that boundaries are to an extent erased between networked journalism and networked journalism education. With the wealth of videos available online, teachers and students alike have choices they never before had. With the wealth of virtual spaces and networked education platforms, journalism education might echo both the title and the content of Clay Shirkey´s book (2008) *Here comes Everybody*.

Who is “everybody” in journalism these days? In the epilogue to that book Shirky asks what is likely to happen in the world as a consequence of the now ridiculously easy tools we have to create groups, networks and new information flows? Likely, we will have more groups, more networks and more information flows than ever before, he notes (pp. 295-296). This is why we argue in this paper that good parameters for a critical and reflective discussion of open online journalism education, perhaps ought to start with the fact that media based journalism education – like other media educations – are deeply embedded in the pasts and futures of communication technology and how they network the media industry – including the learning media industry. Like journalism organizations and institutions have passed through stages of global networking and concentration; perhaps there is reason to reflect on similar dynamics in online journalism education?

[2] This paper does not offer the space for extensive scholarly referencing, but two good general reference to the debates outlined here would be:
1: https://www.class-central.com/report/mooc-providers-list/
2: http://www.eduventures.com/about-eduventures/

A research paper can only do justice to a few select avenues of thought, but first comes perhaps the idea that journalism is a *distinct kind of knowledge*, a set of organizational arrangements, a set of philosophies, a form of institutionalized power and a canon of established genres – all of which we too often take for granted (Schudson, 2005; Splichal, 1999, Rosen, 1993). Ultimately, the idea of journalism as a particular kind of epistemology lead to a concern with the realities and possibilities of education traditions, paradigms, and institutions moving forth or morphing into something new and less known (Spyridou and Veglis 2008; Tumber 2005, Scott, 2005). Like journalism research is marked by paradigms, developments and disagreements put to the empirical test, might it be that journalism education too is headed for a critique of the media being ut to use? This is very much an aspect of contemporary journalism education. Parsing media convergence critique with the practical concern of designing online open courses, is anything but easy.

Second, prior to the developments described above there have been other fundamental transformations in the media industries during recent decades. TV morphed into Cable and Satellite-based TV during the 1980´s, with the result that the world "shrunk" and English was catapulted to the forefront for many new user groups (Karam 2009; Briggs 2007). TV went online in the 1990´s, with early experimentation using internet browsers when they came on the market (the first was *Mosaic*, developed by Mark Andreesen and his team). In rapid order, we were introduced to a deeply rooted convergence of technologies. Arguably, YouTube may have been the most transformative one before Facebook. No longer a question of *mass media* (one sender to a large heterogeneous audience), the new eco system emerging is a system of *mass distributed networked media (Scott, 2005)*. It took a century to establish *BBC*. It took less than a decade to establish *Huffington Post*.

Critiquing journalism education and course development would in other words seem to connect with the familiar critical discourse on news, networked media, the public sphere and public journalism (as for instance in Moyers, 2009 or a decade earlier in Glasser and Craft, 1998). To paraphrase Anthony Giddens, the "double hermeneutics" of this can be overlooked, it can be considered an enigma, or it can become the basis for critical design thinking.

4 Discussion

In further work on the design of open online journalism education resources and critique of it, one might note how journalism education historically has come

into being in three distinct waves: 1) Post WW2, and right into the Cold War, 2) 1960's and postcolonial developments, 1990's and the reconfiguration of the world as a digital place. In fact. journalism education started in the United States at Columbia University where *journalism* from the very beginning was a pseudo-term not quite deserving of its own intellectual status or teacher capacity. It evolved from vocational courses given unwillingly in departments of English, into its first and still premier academic program at Columbia University, where most of the first-year students in 1912 in fact were foreign (Williams 1912; Yarros 1922; Vance 1930). That was a decade before Walter Lippmann published his classic book *Public Opinion* (1922) and where he essentially argued against John Dewey's idea of a participatory public sphere – by heralding journalists as a new class of scientifically guided "tutors" of public opinion.

What then of the Open and the Online in journalism education? How does one counter pose the critical with the practical? In the sense that globalized journalism education is an aspect of globalized communication more generally, we might emphasize some points for further elaboration – beyond this paper, and with particular reference to journalism education:

There is first of all an *erosion argument* at work (Nolan, 2008; Splichal, 1999; Rosen, 1993): How do we bring it into the critical evaluation of online and open journalism education? Values and normative tenets in journalism have been challenged under the pressures of commercial competition, long before the current technological "revolution" was key to the debate. We need more public service journalism according to key journalism critics (Moyers, 2009). In short, the *commercial* and the *open* are sometimes seen as being at odds: But if that is the case in journalism, then what about journalism education? In choices of technologies to employ, should we avoid the global monopolizing monoliths like Google and Apple, for instance? Should we embrace a policy to actively pursue independent and small vendors? Ought this to be a concern, at all? Certainly, if one were to understand online open journalism education as an aspect of cultivating an open, globalized, and networked public sphere; one would understand current global learning technology convergence as a kind of digital feudalism.

There is in light of the research literature also *an implosion argument* at work (Moyers, 2009; Keen, 2009; Deuze, 2004;). It is conceivable from the vast array of debates on "the future of journalism" that journalists, critics and journalistic institutions no longer believe clearly in their own capacity to deliver necessary information scope and depth to serve the democratic ideals (Fallows, 1997). That discussion runs prior to the coming of Web 2.0 journalism education, but it addresses that same concern (c.f. Lewis, 2012; Beers, 2006; Deuze, 2003).

Accordingly, one will have to ask how the use of the very technologies that are seen as the conduits of erosion, can also be seen as vehicles for critical, practical use?

Third, there is also an *explosion argument* at work (Castells, 2000, Deuze, 2004): As the argument goes, there is more information available than at any time in human history, leaving professional news institutions with a no-win situation: No one wants to pay for what they can get for free elsewhere. To an extent one might say that this scenario is mostly relevant to our understanding of US media and conditions for journalism, but it does not take much imagination to see that after a decade of Web 2.0 it also encompasses the rest of the world and will continue to do so at an increasing pace. New advertising platforms, new business models, a globalized economic news market and an increasing familiarity around the world with news journalism scaled to global information flows – it all leads to a rather ambiguous reflection on what promise the coming of convergent global education technology has when it is fundamentally a part of that same disruption that journalism as a social institution is confronted with?

5 Conclusions

This paper has outlined some perspectives on "disrupted education" from the point of view that what disrupts education is fundamentally the same technology that disrupts journalism. As the student of culture Raymond Williams once pointed out, technology IS culture, and a critical design practice can be articulated in that perspective. The challenge for educators and students of journalism alike, comes from Rorty (1989, quoted in Glasser; 1998). It is the challenge of becoming "reflective practitioners". Critical journalism education balances the critique in subject matter with critical reflection on platform, framework, and purpose.

In sum, media critique is an integral part of journalism education seeking an open and online future; but how do we scope it? The critical is often elusive, or easily confined to ideological positions. The issue of Web 2.0 multimedia reporting techniques is no longer new for journalism education and educators. Today's journalism students work in multiple modes, with text, still photos, moving images, and sound laid out on multiple platforms using a diversity of software. It is critical for students to understand how multiple modes and platforms affect narrative and reception. Accordingly, we understand that storytelling has to be adapted for specific platforms and software suites, addressing more networked and segmented audiences than what used to be the case. This being said, a broader media-critical scope might be called for to

examine how this multimedia dimension of doing practical journalism relates to more critical issues of scaling, networking, and access – in both the positive and negative balance.

6 References

Beers, D. (2006) "The public sphere and online, independent journalism", *Canadian journal of education* 26/1.

Briggs, M. (2007) *Journalism 2.0 How to survive and thrive. A digital literacy guide for the in- formation age*, downloadable pdf from Knight Citizen News Network.

Carey, J.W. (1992). *Communication as Culture: Essays on Media and Society*, New York: Routledge.

Castells, M. (2000/1996) *The Rise of the Network Society (The Information Age:*

Christensen, C. M. & H.J. Eyring (2011). The innovative university: Changing the DNA of higher education from the inside out. San Francisco, CA: Jossey---Bass.

Cottle, S. and Rai, M. (2008) "Global 24/7 news providers. Emissaries of global dominance or global public sphere?" *Global media and communication* 4/2.

Deuze, Mark (2004) "What is multimedia journalism?", *Journalism studies* 5/2.

Glasser T. L. and Craft, S. (1998) "Public Journalism and the Search for Democratic Ideals", in: Liebes, T. and Curran, J. (eds.) *Media, Ritual and Identity*, Routledge.

Moyers, B. (2009) *Moyers on democracy*, Anchor Books.

Fallows, J. (1997) *Breaking the news. How the media undermine American democracy,* Vintage Books.

Karam, F. J. (2009) "Journalism in the age of the information society, technological convergence, and editorial segmentation, *Journalism* 10/1.

Khan, S. (2012) *The One world school house: Education reimagined*, London: Hodder.

Klinenberg, E. (2005) "Convergence: News production in a digital age", *ANNALS- AAPPSS* 597/January.

Lewis, S.C. (2012) The tension between professional control and open participation. Journalism and its boundaries, *Information, Communication and Society,* Vol. 15, p. 0836-866).

Lippmann, W. (1922) *Public opinion*, Macmillan.

Nolan, D. (2008) "Journalism, education, and the formation of 'public subjects'", *Journalism* 9/6.

Norvig, P. (2016).The Future Classroom, *Keynote address at the World Learning Summit 2016*, Future Learning Lab, University of Agder.

Rosen, J. (1993) *Community-connectedness: Password for public journalism*, Poynter institute for media studies.

Schudson, M. (2005) "The virtues of an unlovable press", Cook, Timothy E. (ed.;) *Freeing the presses. The First Amendment in Action*, The Louisiana State University Press.

Scott, B. (2005) "A contemporary history of digital journalism", *Television and new media* 6/1.

Shirky, C. (2008) Here comes everybody, New York: Penguin Books.

Splichal, S. (1999) *Public Opinion. Developments and Controversies in the Twentieth Century*, Rowman & Littlefield.

Thurman, N. and Lupton, B. (2008) "Convergence calls", *Convergence* 14/4.

Tumber, H. (2005) "Do the study of journalism and the education of journalists matter?, *Gazette* 67/6.

Vance, E. L. (1930) "Training for journalism teachers", *The English Journal* 19/9.

Williams, R. (1958/1983) *Culture and Society*, New York: Coumbia University Press.

Williams, T. (1912) Opening ceremony of The Columbia School of Journalism October 30. 1912, *Science, New series* 36/928.

Yarros, V. S. (1922) "Journalism, Ethics, and Common Sense", *International Journal of Ethics* 32/4.

Project Presentations

Nordic EdTech: Vision, Evolution, Challenges & Opportunities

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Abstract: This paper is a first report from a project on designing online journalism education resources. Framed within the MOOC discussion of recent years, the focus is acritical review on the two Os: Open and online. How can a media-rich "open, on-line journalism education" be conceptualized and also critiqued from the point of view that the converging technologies now disrupting journalism, reflects on the same technology eco system employed to network and globalize journalism education? It is argued that journalism has been challenged by three developments in recent decades: (1) Networked interactivity, (2) hyptertextual virtualiity (3) and user-defined information flow. How do we gauge these "disruptions" in designing open online education resources in journalism education?

Key words: Globalization, journalism, education, journalism education, flipped classroom, MOOCs, curriculum design

1 Introduction

The presentation had the following objectives:

- Familiarizing the conference attendees with the work we have been doing—via two projects funded by Nordic Innovation (see below)—since 2013.
- Describing and summarizing the evolution of edtech in the Nordics and where things stand today
- Pointing to some of the key opportunities as well as challenges that lie ahead, especially in the context of building a Nordic edtech community

- Setting the context for the edtech track sessions that would follow during Day 2 and 3 of the conference

In addition, I also wanted to use the presentation to make the point that we should avoid viewing "edtech" too narrowly (and one could argue that "LearnTech" would be a more appropriate term that would be make it clear that we are talking not only about (formal) education but technology in the context of learning in many different contexts, both formal and informal.)

Edtech or LearnTech should be viewed in the context of Digital Transformation which is now taking place across all sectors, in some cases slowly and gradually, and in other sectors/industries, in a more disruptive and radical way. And the potential exists to use (digital) technology in ways that make education and learning more effective and efficient, and extending the reach of learning processes and learning content to people who before did not have access. And in the corporate world, learning can become a key enabler of sustainable, competitive advantage.

2 Nordic EdTech: Two Nordic Innovation-Funded Projects

The first of the two Nordic edtech projects—entitled "Nordic Edupreneuring"—was proposed to Nordic Innovation after observing an explosion in edtech entrepreneurship in Silicon Valley in 2012-13. This development raised questions about the extent and nature of the Nordic edtech industry, and whether we could help build a Nordic edtech community and accelerate cross-border knowledge sharing about national, regional and global edtech developments, and to help accelerate the growth of Nordic edtech companies.

A Nordic team, including Professor Oddgeir Tveiten and Vidar Mortensen of University of Agder, and myself, led the project which was completed during 2013/14, and consisted for the following major elements:

- Identification of about 50 Nordic edtech companies (mainly "early stage" companies)
- Analysis of the companies—including leadership, products and services, target customers, and so on—was done as part of an online survey that was conducted.
- An "acceleration workshop" was held at World Learning Summit 2014 in Kristiansand (one of the companies, the Norwegian Kahoots! (which has developed a platform for game-like quizzes to make learning more

engaging and fun)—and today has over 50 million monthly users of its products (mostly in the US)—attended the workshop.

The 2013-14 project gave us some good, initial data and insights into the Nordic edtech industry, but we felt we had only "scratched the surface" and felt a "deeper dive" was required, not only to identify more of the companies we felt that we were not able to identify in the first project. And we felt that much more work was needed to try to build cross-border collaboration and knowledge sharing. We therefore continued to meet with Nordic Innovation and argued that a second project was needed to extend the work done in the Nordic Edupreneuring project.

The second project—Nordic Virtual Edtech Acceleration Forum (NVEAF), soon replaced by a simpler acronym of NEN (Nordic Edtech Network)—was finally given the green light in June 2016, and project "owner" was Silicon Vikings (a 20 year-old organization with HQ in Silicon Valley, and which has always promoted the Nordic brand and encouraged Nordic collaboration, including vis-à-vis Silicon Valley).

The main elements of the new NEN project were the following (illustrated in the presentation by screenshots of the project website pages that focused on the deliverables noted below):

- **NEN Home Page, and Website** [http://net.futurelearninglab.org/]. We designed and started populating the pages with data and information in accordance with the project deliverables promised in the proposal to Nordic Innovation—and to share and disseminate information as the project evolved. The "About the Project" included a project description, Project Team identification (with brief bios and pictures) and similarly for the Country Teams (3 people on the Finnish team, two on the teams for Sweden, Norway and Denmark, and one for the Icelandic country team)

- **Discussion Forum** [http://net.futurelearninglab.org/project-update-forum/]. We organized the discussion forum into themes and topics we felt would help simplify and organize the discussion which we hoped would emerge on the site: (1) Nordic edtech pain points (what friction exists in Nordic education and learning that would reveal need for new (edtech) solutions?; (2) Nordic edtech market segment leaders (we hoped to hear community perspectives on leading players in different education and learning segments); (3) Innovative tech in Nordic edtech (i.e. what are some of the emerging technologies—such as game-based tech, AI, VR/AR, and Blockchain, for example—that Nordic edtech

companies are starting to explore); (4) Nordic edtech market developments (i.e. what types of opportunities, challenges, and growth have been observed in K12, Higher Education and Corporate segments, for instance?); (5) Nordic edtech community (i.e. what needs and new developments have started taking place in each country's edtech ecosystems, and what might this mean for the broader Nordic edtech community?). Unfortunately, despite our efforts to seed the discussion and stimulate dialog and discussion, we found that the approach of "build it and they will come" did not work, despite considerable prodding and marketing efforts on our side.

- **NEN Resources**:
    - **Country Lists of Edtech Companies**. A major part of the project was to use the country teams, their networks and use social media, etc to identify edtech companies in each of the Nordic countries. The lists—with company name, URL, and names of company leadership team—are updated regularly as new information comes in. We have also spend months doing analysis of the Nordic edtech landscape, mainly using two different approaches: (1) review and analysis of the websites of all the companies we have on our lists; and (2) a survey and analysis of answers to the questions posed in the online questionnaire (which 50 companies responded to). The analysis of this work was posted in a number of blog posts (see below).
    - **Company Profiles for Investors**. We had intended to create a simple one-page form for companies to fill out, for use by investors, and thus help match investors with companies they might be interested in. However, after testing out a potential template form and discussing it with a number of Nordic edtech companies, we concluded that such an online form would not meet the needs of most investors, and they typically get higher quality (and specific, needed information/intelligence) via informal channels and contacts they have in the Nordics. So we concluded that creating such online forms to post on the NEN website would not work in the way we had initially thought. We therefore decided to not go ahead with these online company profiles.
    - **Event Calendar**. The event calendar was seen as a way to highlight and provide easily accessible information about

upcoming edtech events, both in the Nordics and in other countries. EdSurge—a US edtech media organization—provides good information about events in the US, but no good single place existed for Nordic edtech events at the time we launched the project. In recent months, however, the excellent newsletter of Swdish Edtech Industry—the only Nordic edtech industry association (led by Jannie Jeppesen)—provides good information for upcoming events, especially in Sweden but also in other Nordic countries.

- **Webinars** [http://net.futurelearninglab.org/webinars/]. We have held two webinars, in cooperation with Oulu EduLab at Oulu University of Applied Sciences: (1) An "outreach" seminar to Nordic academia (students and faculty) who are now starting to gain interest in edtech; and (2) A webinar on Purpose-Driven Business Ecosystems, by Kim Wilson, the author of *They Will Be Giant: 21st Century Entrepreneurs and the Purpose-Driven Business Ecosystem*, in an effort to educate Nordic edupreneurs about the importance of ecosystems as a means for finding resources and as means for accelerating growth.
- **Podcasts**. We have done 12 interviews with VCs, edtech experts in the Nordics and Silicon Valley, and Nordic edtech executives, as ways to gain insights into edtech developments and hear "lessons learned" by edupreneurs. These podcasts can be listed to online or downloaded.

- **Blog** [http://net.futurelearninglab.org/blogposts/]. This has been our main communications channel, both about to disseminate the results of our work and our analysis of data collected on the Nordic edtech industry. Some of the blog posts also address issues and developments emerging in other countries, which we felt needed to be put in a Nordic context, raising questions and issues and stimulating comparative analysis and thinking.

3 Current Status and Future Perspectives on Nordic EdTech

- The Nordic edtech industry has come a long way since our first project, and a number of companies—including Kahoots! referred to earlier—have gained international attention. In recent weeks, a number of

Nordic edupreneurs have also been successful in gaining entry into prestigious accelerator programs in Silicon Valley, including Y Combinator, Singularity Univeristy's Accelerator, SCALEit (the accelerator of Innovation Center Denmark), and GSV Lab's accelerator for edtech (in Redwood City). This will likely mean a better chance to find needed investors and capital needed for scaling operations and gaining market traction and growth.

A summary of the situation in each of the Nordic countries follow:

- **Sweden**. Reference was made earlier to the role of Jannie Jeppesen in creating the first Nordic edtech industry association—Swedish Edtech Industry (http://swedishedtechindustry.se/ --SEI, currently with 65 member organizations). Prior to launching SEI, Jannie led Edtech Sweden (http://www.edtechsweden.se/), a non-profit, edtech ecosystem player that played a leading role in promoting edtech in Sweden and helping generate interest and awareness of edtech issues. As seen in the country list of Nordic edtech companies, Sweden is number 2 after Finland, in terms of the number of Nordic edtech companies, and the Swedish parliament has also taken a growing interest in edtech issues, and has hosted an edtech breakfast seminar (in which I spoke). I also hosted a 4-person delegation of the Swedish Educational Committee (led by Maria Stockhaus) of the Swedish Parliament, which came to SRI in Silicon Valley for a meeting on November 3, 2016.

- **Finland.** Because of its very high ranking in PISA (Program for International Student Assessment-- http://www.oecd.org/pisa/) for many years, Finland has gained a very strong reputation for its educational system, something Finnish companies, including its edtech companies, have been able to leverage internationally (to "get in the door" for meetings). Finnish edtech companies, as well as academic researchers interested in edtech, have long benefited from significant and generous financial and other support from Tekes (the Finnish Funding Agency for Research). Finland also became the first Nordic country to set up an edtech accelerator, xEDU [https://www.xedu.co/], and the Oulu EduLab at Oulu University of Applied Sciences is also unique in its program that supports potential edupreneurs as they move from ideation to product identification to company building.

- **Norway**. Norway has a strong edtech ecosystem centered around Oslo: Oslo Edtech Cluster [http://osloedtech.no/en/], led by Hege Tollerud,

which has benefited from public sector support and being part of the Startup Lab at the University of Oslo. The cluster organizes event and provides various support services for Norwegian edtech companies, and stimulates networking and collaboration across the Norwegian edtech industry. Other emerging edtech activities are found in Tronheim (the home of NTNU, Norway's leading technical university), and Tromso (with a strong edtech research base). Norway recently completed an LMS procurement process which led to the choice of Canvas/Instructure being the "LMS of choice" in most of the Norwegian universities. Norway also is the only country that has had a MOOC Commission to examine various issues around MOOCs (Massively Open Online Courses) but unfortunately, relatively little action—in terms of new digital education and learning initiatives—have resulted.

- **Denmark**. So far, Denmark is lagging behind Sweden, Finland and Norway in terms of an "official" (publicly supported) edtech ecosystem, but efforts are now underway to catch up and at least have more informal meetup events where Danish edupreneurs can meet.
- **Iceland**. Based on recent feedback from Icelandic edupreneurs, very little, if any, formal edtech ecosystem has been created of the sort that exists in Sweden, Finland and Norway. This may be at least partly a function of the size of the country and the small number of Icelandic edtech companies (around a dozen or so companies are currently operating).

4 Opportunities and Challenges

At the initiative of Jannie Jeppesen of Swedish Edtech Industry, two meetings were organized in early 2017 to explore and discuss how the edtech ecosystems in each country could achieve greater collaboration and thus gain greater "scale benefits," including by taking advantage of the "Nordic brand" (which a number of initiatives within Nordic Innovation is pursuing, which could also benefit Nordic edtech companies). The hope and plan is to launch a Nordic Edtech Alliance (NEA), which in part may be able to continue and expand the work, activities and vision of the Nordic EdTech Network project.

In the presentation I identified some of the opportunities and challenges that NEA may see if and when it launches and starts its work:

- Leveraging and taking advantage of the growing interest in “digital transformation” across the Nordic region. This is being addressed both a the Nordic Council of Ministers, as well as in the governments (ministries) of each country, but so far relatively few specific action items have come out of all of this, and very little has yet been seen in terms of Nordic collaboration around digital education and learning agendas.
- Finding win-win projects—like university-industry (startups) pilot collaboration where edtech startups can benefit from the research strengths of universities, and university researchers can gain real world edtech expertise from edtech companies.
- Organize Edtech For a—for K12, Higher Ed and Corporate. These could bring together edtech companies and researchers, as well as policy makers, to share lessons learned and try to coordinate new policy initiatives across the Nordic region.
- Building better market intelligence, through research, about the Nordic edtech industry. The NEN project started this work, but much more needs to be done.
- Build deeper insights into commonalities and differences across edtech segments: (1) toddlers/preschool; (2) Direct-to-consumers (including life-long learning); (3) K12 (elementary and secondary schools); (4) Higher Education; and (5) Corporate/Government. Very often, when edtech is discussed, the presumption is that one is talking about K12, and an estimated 50-75% of Nordic edtech companies focus on K12, leaving many and significant opportunities in other sectors/segments unexploited.

ALC: Measuring Learning Impact on Minority, Underserved & Disadvantaged Students participating in Active Learning Classroom Modality vs Traditional Lecture Modalities

Aim and objectives of the project:

The aim & objective of the CSUDH ALC project is after two years of practical learning experience how going forward can we measure the effectiveness of *Pedagogical Methodologies, Retention* factors, and *Impacts on Learning* for underserved and disadvantaged students?

Main target groups of the project:

CA State University Dominguez Hills was founded after the Los Angeles Watts Riots in 1965 to serve an underserved local community and a disadvantaged, minority student community with 70% women, 60% Latino, mixed races and 85% First Generation students. Disadvantaged students are those whose family, social, or economic circumstances hinder their ability to learn at school. The school has 6 colleges and 15,000 students.

How does the project contribute to learning innovations and learning quality?

At CSUDH, the adoption of ALC pedagogy is in line with the vision and core values outlined in the Strategic Plan 2014-2020. The creation of an innovative learning environment has been tasked with a goal for all Divisions to achieve; the charge for the Divisions is "to analyze, recommend and implement a plan for the renovation, innovation, and building of effective classrooms, labs, studios and other learning spaces." (CSUDH Strategic Plan 2014-20120:9). We are proud to join with many other leading universities across the nation in building innovative, technology-enhanced active learning classrooms for our students and faculty.

What are the main outcomes of the project?

The main outcomes will be to develop appropriate survey and measurement tools to determine if the students & faculty will experience a more collaborative and empowering way of learning, while faculty develops more creative

approaches to teaching. These cutting-edge classrooms provide an opportunity for our faculty to engage in rich, intense and lively problem-solving classroom interactions where all students communicate and test their knowledge with the support of their peers and faculty, The classrooms can be used for any kind of instruction. The professors must learn to adjust their mindsets to teach in this way because their lectures should be designed to learn by doing. Education in new engaged and flipped classroom learning and teaching techniques is proceeding in cohorts of 8 professors every quarter with seasoned and experienced educators leading the workshops. Students are constantly engaged in the process to help make the feedback and modifications meaningful to our mission.

A short quote: What is most important for learning innovations & quality today?

This project is not just about changing the classroom environment; it is also about changing how instructors approach teaching“ – Dr. Hamoud Salhi

More information about the CSUDH ALC project:

http://www.csudhnews.com/2015/09/active-learning-classrooms/

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EBE-EUSMOSI: Evidence-Based Education European Strategic Model for School Inclusion

Aim and objectives of the project:

Creating a model for the validation of the quality of school inclusion according to the principles of Evidence-Based Education (EBE) that will be disseminated, together with its outcome, through Open Educational Resources (OERs) and staff mobility; founding a European Research Network; researching in different countries on the topic of school inclusion according to the model's line, analyzing the shared guidelines' impact on beneficiaries.

Main target groups of the project:

Teachers and headmasters in (inclusive) schools,

but also policy makers, researchers, pupils, family

How does the project contribute to learning innovations and learning quality?

Combining two relevant concepts such as the EBE approach and *school inclusion* with a focus on special educational needs (SEN) will lead to the development and implementation of a totally new model, since similar operational models shared at European level do not exist yet, able to answerthesequestions:*How to assess the inclusiveness in school?An inclusive schoolisalso an efficientschool?How to improve the quality of inclusion?*

What are the main outcomes of the project?

Increased awareness of inclusion in an EBE perspective; increased influence on policy and practice; positive reputational effects for the participating institutions.

A short quote: What is most important for learning innovations & quality today?

Inclusion is the way to the future of quality education

More information about the EBE-EUSMOSI project:

www.inclusive-education.net

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The ETH EduApp project

Aim and objectives of the project:

The EduApp is an interactive smartphone application for academic student life and classroom interaction at ETH Zurich. It was developed specifically to integrate with the student management system enabling automatic student enrolment in the correct EduApp channel. Due to the stringent European data privacy laws, using existing commercial webbased apps was not an option.

Within classrooms it functions as an audience response system which increases interaction in large classes. It also has a backchannel where student can post requests and feedback to the lecturer as well as access peer help (black wall). Furthermore this app has additional benefits for students such as displaying their academic schedule, providing campus navigation assistance and showing available study spaces.

Main target groups of the project:

Students of our university

How does the project contribute to learning innovations and learning quality?

There are three levels where this app contributes to better learning quality:

- Students have instant access to important learning information like personal academic schedule, learning materials, available student study space, navigation to and inside the buildings, "clicker" questions and communication channels.
- Lecturers have an easy to use classroom response System (“clicker”) which allows them to get quick feedback on content and teaching processes. It also has several add-ons not existing in commercial alternatives, like the possibility to insert images and equations which is extremely important at our institution (technical university). In comparison to known commercial products the questions are provided

to the mobile device (incl. formulas and pictures) which students can answer anywhere, anytime. This enables new possibilities like mobile homework tasks, distributed group work, and asynchronous learning.

- ETH Zurich has an evaluation service called semester feedback. With EduApp, student representatives can gather feedback from their peers and pass the summary to the lecturer.

What are the main outcomes of the project?

- Well functioning app for all the three purposes mentioned above
- If a project is accepted widely in different target groups cross benefits can enlarge the success significantly (e.g. students appreciate time table > common app for ETH students > higher return rate in evaluation.
- Involving student and lecturer feedback during the planning phase of a new service increased the quality of the result and the acceptance.

A short quote: What is most important for learning innovations & quality today?

For learning quality: immediate feedback from lecturers to students

For learning innovation: look at student's needs (become a student's coach)

More information about the ETH EduApp project:

https://www.ethz.ch/en/the-eth-zurich/education/innovation/eduapp.html

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ICORE - The International Community for Open Research and Education

Aim and objectives of the initiative:

ICORE is the globalinitiative to connect the two worlds of Open Research (OR) and Open Education (OE) for mutual benefits. ICORE promotes, supports, and enhances Open Research and Open Education and their recognition, progress and application worldwide in close cooperation with international organizations. ICORE is completely non-profit, requires no membership fees, and is open to all sharing the same objectives of openness in research and education worldwide.

Main target groups of the initiative:

Interested experts and stakeholders from open education and open research

How does the initiative contribute to learning innovations and learning quality?

ICORE aims to support the design and implementation of innovative strategies, instruments and services for facilitating Open Research and Open Education.

What are the main outcomes of the initiative?

- ICORE aims to promote Open Research and Open Education as a fundamental social objective.
- ICORE aims to foster co-operation among all relevant stakeholders in Open Research and Open Education.
- ICORE aims to facilitate the continuous and rapid transfer of results from Open Research and Open Education into the deployment for future research and education and for the benefits of the global society.
- ICORE aims to foster research and development leading to innovation.

A short quote: What is most important for learning innovations & quality today?

To connect open education with other sectors, in particular with open research

More information about the ICORE initiative:

www.ICORE-online.org

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MOOCs and TORQUEs at ETH Zurich

Aim and objectives of the project:

In the context of the global debate concerning MOOCs (Massive Open Online Courses), ETH Zurich decided to pick up the topic and adapt it to our needs. As an on-campus university we are focused on a comparably small group of students. The term 'TORQUE' (**T**iny, **O**pen-with-**R**estrictions courses focused on **QU**ality and **E**ffectiveness) was adopted as ETH's variation on 'MOOC'. But they are not opponents, both of them serve now their own purposes at ETH: TORQUES (on Moodle) focus on ETH courses. The small number of ETH MOOCs (on EdX) are focused on international collaboration and building reputation. Both of them consist of many short videos followed by questions or tasks. These can be set to deadlines. They are complemented by communication tools such as forums.

With the presence of TORQUEs and MOOCs, teaching and learning at ETH has become generally more visible. TORQUEs have enabled a different approach to teaching, allowing lecturers to flip their learning and have more discussion time in lectures.

Main target groups of the project:

Students worldwide and students and lecturers at ETHZ

How does the project contribute to learning innovations and learning quality?

The project increased the use of video in teaching significantly. TORQUES and MOOCs changed the pedagogical approach. Subsequently the underlying concept of flipped classroom spread widely at our university due to this project.

What are the main outcomes of the project?

- Several MOOCs were produced. These specially focussed courses found a broad echo on its platform EdX. TORQUEs became a common format for blended learning courses at ETH.
- The flipped classroom concept was established at ETH resulting in an increased demand for special courses focused on flipped learning.

- Infrastructure for producing short learning videos was developed. This included a video studio as well as the purchase of several devices distributed around the campus allowing lecturers to record themselves.

A short quote: What is most important for learning innovations & quality today?

For learning quality: immediate feedback from lecturers to students

For learning innovation: look at student's needs (become a student's coach)

More information about the MOOC and TORQUE project:

https://www.ethz.ch/content/dam/ethz/main/eth-zurich/education/lehrentwicklung/files%20EN/Concept_TORQUE_ETHZ.pdf

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MOOQ: For the Quality of Open Education and MOOCs

Aim and objectives of the project:

MOOQ is the European Alliance for Quality of Massive Open Online Courses, called MOOCs. The vision of MOOQ is to foster quality in MOOCs leading to a new era of learning experiences.

MOOQ's mission is to develop a quality reference framework for the adoption, the design, the delivery and the evaluation of MOOCs in order to empower MOOC providers for the benefit of the learners.

The main goal of MOOQ is therefore the development and the integration of quality approaches, new pedagogies and organisational mechanisms into MOOCs with a strong focus on the learning processes, methodologies and assessments.

MOOQ promises: We will make MOOCs better!

Main target groups of the project:

All learners, designers, facilitators and providers of Open Education and MOOCs

All decision makers in educational systems, regional and national ministries

How does the project contribute to learning innovations and learning quality?

MOOQ focuses scientific research to improve the quality of the learning practice. Therefore MOOQ has launched the first Global MOOC Survey: Its importance is highlighted through the broadest recognition and backing by foremost international associations and institutions including the International Council for Distance and Open Education (ICDE), Open Education Consortium (OEC), International Community for Open Research and Education (ICORE), Commonwealth of Learning (COL), European Association of Distance Teaching Universities (EADTU), European Distance and E-Learning Network (EDEN), European Association of Technology-Enhanced Learning (EATEL), Contact North (CN) and many more.

MOOQ will develop the Quality Reference Framework (QRF) for Open Education and MOOCs leading to a new Q-generation of MOOCs that will be designed, organized and tested as qMOOCs. This will be done in close collaboration with all interested partners and stakeholders in Europe and beyond.

What are the main outcomes of the project?

- The first Global MOOC Survey supported by leading international associations and institutions
- The Quality Reference Framework (QRF) for Open Education and MOOCs

A short quote: What is most important for learning innovations & quality today?

The quality of Open Education and MOOCs as well as of learning and education in general has always to be adapted to the specific needs and preferences of the target groups: That requires diverse pedagogical methodologies, learning designs and personalization that learners can select their own pathways.

More information about the MOOQ project:

https://www.MOOC-quality.eu

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Universal Design for Leaning Network (UDLnet)

Aim and objectives of the project:

To create a Framework to address learner variability by creating:

- **A detailed and systematic methodology** to identify best inclusive practices
- **A web-based Inventory,** including collected, categorized best practices
- **A sustainable network** of inclusive educational communities
- **Innovative, relevant, multilingual content** to support inclusive approaches
- **Development of educational stakeholders' skills and attitudes**
- A "**Pathway to Universal Design for Learning**" to support deployment of accessible educational e-content
- **Policy recommendations** for regional, national and international levels

Main target groups of the project:

Learners excluded by reason of disability, but also any other ground based on historic discrimination or prejudice.

How does the project contribute to learning innovations and learning quality?

UDL is an educational extension of the universal design movement in architecture. Originally formulated by North Carolina State University, Universal Design had a key objective: to build innately accessible structures by addressing mobility and communication needs of individuals with disabilities at design stage. Designs that increased accessibility for individuals with disabilities—those typically "in the margins"—yielded benefits that made experiences better for everyone. Universal Design for Learning is based on decades of research into the nature of learner differences, the capacities of new media, the most effective teaching practices, and assessments that, while based on high standards, are fair and accurate measures of student learning. A key issue in understanding and application of UDL is the emergence and impact of new technologies that make

new ranges of educational initiatives possible. Application of advanced digital applications has completely transformed what is possible in the field of learning. As an example, provision of customized, multimedia content—or even just digital text as an entry point—can reduce barriers to learning for many students. Beyond reducing barriers, it improves learning by allowing for multiple representations of meaning that may be used for clarity, complementarily for enhanced meaning, or even discordantly for multiple meanings. UDL uses technology and innovation to explore alternatives, to test curriculum design and to provide spaces for inclusion for as broad a range of students as possible. It is a practical tool to ensure more vibrant and creative educational offers. It is a key resource in designing a more participative and socially inclusive society by addressing the rights of all to learn as they wish. This contains huge benefits for teachers, students and families as well as educational policy makers.

What are the main outcomes of the project?

UDLnet collected and demonstrated ways to use the UDL framework effectively. The network promotes community building between educational institutions all over Europe and empowers them to use, share and exploit accessible learning materials from a variety of educational resources. In addition, it demonstrated the potential of eLearning resources within the context of the UDL approach. The UDLnet Inventory and a social platform were developed where teachers, students, parents and other community members are able to find and adapt accessible UDL eLearning resources on their topics of interest and needs. Finally, it assessed the impact of inclusive tools, practices and teaching materials and documented the whole process in the UDLnet Best Practice Guidelines. The project has promoted conferences and publications, most notably the *'Pathway to Universal Design for Learning'*.

A short quote: What is most important for learning innovations & quality today?

Universal Design for Learning, both as a field of inquiry and practice, proactively designs course content intended to be as accessible to as wide an audience as possible enhancing inclusion and learning quality by addressing learners' needs.

More information about the MOOC and TORQUE project:

http://www.udlnet-project.eu

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The Conference Co-Chairs thank the
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WLS and LINQ 2017 Keynote Speakers

Cathy Casserly (Independent Policy Adviser)

Catherine M. Casserly, Ph.D. is passionate about learning eco-systems that support high quality education experiences for all. Cathy is a pracademic, working at the nexus of research and practice as catalyst for openness, innovation and leadership.

Currently, Casserly is a Research Affiliate with the Institute for the Future. She is a Senior Advisor for the Carnegie Foundation for the Advancement of Teaching. For the Lumina Foundation she is analyzing the risks and benefits of whether the organization should establish a presence in Silicon Valley to leverage its technological innovation, thought leadership and capital to increase the proportion of Americans with high quality degrees, certificates and other credentials. She is a member of the Advisory Council for the National Science Foundation, Directorate of Education and Human Resources, chairing its subcommittee on Open Licensing.

Previously, Casserly was a Fellow with the Aspen Institute. She was Vice President of Learning Networks at EdCast, a Stanford StartX company that advances life long social collaborative learning at scale. She was CEO of Creative Commons, a global nonprofit dedicated to sharing educational, scientific, data and cultural assets. A founding architect of the open educational resources (OER) field, Casserly managed a complex 100M global portfolio for The William & Flora Hewlett Foundation as the Director of the OER Initiative. Early in her career, Casserly taught mathematics in Kingston, Jamaica.

Casserly was a member of the Technical Working Group for the development of the 2015 National Education Technology Plan. She was a founding advisory board member for MIT OpenCourseWare and University of the People. Casserly earned her Ph.D. in the economics of education from Stanford University, BA in mathematics from Boston College, and was awarded an honorary doctorate from the Open University UK.

Stamenka Uvalić-Trumbić (Formerly Head of Higher Education, UNESCO)

Former Chief of the Higher Education Section of the United Nations Organization for Education, Science and Culture (UNESCO), Ms. Uvalić-Trumbić is an international leader in education reform, innovation, quality assurance and accreditation with more than 20 years of higher education experience.

Ms. Uvalić-Trumbić's first senior role in higher education was as Secretary-General of the Association of Universities in Yugoslavia. In the early 1990s, she joined UNESCO's European Centre for Higher Education in Bucharest with the goal of enhancing the quality of higher education throughout a more integrated Europe. Ms. Uvalić-Trumbić was quickly promoted to lead the unit managing higher education at the UNESCO headquarters in Paris. Her major achievements include developing the 2005 UNESCO-OECD Guidelines for Quality Provision in Cross-Border Higher Education, launching the Global Forum on International Quality Assurance, Accreditation and the Recognition of Qualifications and initiating the UNESCO-World Bank partnership for capacity-building in quality assurance for developing countries.

Inspired by her work with innovative providers of higher education in a world of huge unmet demand, Ms. Uvalić-Trumbić collaborated on the A Tectonic Shift in Higher Education paper with Sir John Daniel and Asha Kanwar.

Ms. Uvalić-Trumbić was voted International Higher Education Professional of the Year 2009 by her peers in the International Community of Higher Education. That same year, she was centrally involved in the organization of UNESCO's 2009 World Conference on Higher Education as Executive Secretary. Over 2,000 ministers, officials and institutions from countries all over the world attended the conference.

Ms. Uvalić-Trumbić continues to be a consultant to UNESCO on issues related to the Recognition of Degrees and Qualifications in Higher Education. In the past year, she was a Senior Consultant to the Commonwealth of Learning in a project that resulted in the 2012 UNESCO Paris Declaration on Open Educational Resources adopted by acclamation. She is the Education Master with the DeTao Masters Academy in China and was recently named Senior Consultant to the U.S. Council for Higher Education Accreditation (CHEA) for the creation of its International quality group. She joined Academic Partnerships as a senior advisor in February 2013.

Ms. Uvalić-Trumbić studied at the Universities of Belgrade and the Sorbonne.

Sir John Daniel (Contact North | Contact Nord: Canada)

Sir John Daniel was educated at Christ's Hospital and pursued his full-time university studies in Metallurgy at the universities of Oxford and Paris. Later he demonstrated his commitment to lifelong learning by taking 25 years to complete a part-time Master's degree in Educational Technology at Concordia University. The internship for that programme, which took him to the UK Open University in 1972, was a life-changing experience. He saw the future of higher education and wanted to be part of it.

This quest took him on an international odyssey with appointments at the École Polytechnique, Université de Montréal (professeur assistant/agrégé, 1969-73); Télé-université, Université du Québec (Directeur des Études, 1973-77); Athabasca University (Vice-President for Learning Services, 1978-80); Concordia University (Vice-Rector, Academic, 1980-84); Laurentian University (President/Recteur, 1984-90); The Open University (Vice-Chancellor, 1990-2001); UNESCO (Assistant Director-General for Education, 2001-04); and the Commonwealth of Learning (President, 2004-12).

His non-executive appointments have included the presidencies of the International Council for Open and Distance Education, the Canadian Association for Distance Education and the Canadian Society for the Study of Higher Education. He also served as Vice-President of the International Baccalaureate Organisation. He now works on various international projects: as Education Master in the Beijing DeTao Masters Academy, China; Senior Advisor to Academic Partnerships International; and Chair, pro bono, of the UWC (United World Colleges) International Board.

Among Sir John's 370 publications are his books Mega-Universities and Knowledge Media: Technology Strategies for Higher Education (Kogan Page, 1996) and Mega-Schools, Technology and Teachers:

Sir John is an Honorary Fellow of St Edmund Hall, Oxford University (1990), the College of Preceptors (1997) and the Commonwealth of Learning (2002). He won the Symons Medal of the Association of Commonwealth Universities in 2008 and his 32 honorary degrees are from universities in 17 countries.

The three countries where he has lived and worked have each recognised his contributions with national honours: France – Ordre des Palmes Académiques : Chevalier 'pour services rendus à la culture française en Ontario' (1986); Officier : 'pour services rendus à la culture française au Royaume-Uni' (1991); United Kingdom – Knight Bachelor 'for services to higher education' (1994); Canada –

Officer of the Order of Canada 'for his advancement of open learning and distance education in Canada and around the world' (2013).

Dr. Joseph Press (Center for Creative Leadership)

Dr. Joseph Press is Global Innovator and Strategic Advisor to the CEO at the Center for Creative Leadership, Zürich, Switzerland. Collaborating with leadership across CCL globally, he champions innovation, digital transformation and creative leadership with our clients, in support of delivering engaging and innovative experiences that accelerate personal and organizational impact. As an experienced business consultant and passionate digital innovator, he is deeply committed to co-creating meaningful experiences that transform people, organizations and society. His creative mindset helps unleash client creativity to co-design innovative business models, products, and services in design thinking-inspired workshops. With over five years of online teaching experience, He also design and deliver high-impact developmental experiences in synchronous and asynchronous virtual environments.

He was previously the Director of Deloitte Digital Switzerland, capping a 16 year career as a digital transformation consultant. Working with global clients, he was responsible for consulting companies on digital transformation and innovation initiatives to achieve business results and accelerate organizational evolution. He was also responsible for designing the Deloitte Switzerland Greenhouse, an innovation space for exploring business challenges with clients. This work leveraged his prior career as an architectural designer. For 10 years, he designed workplaces in France, Germany, Israel and the U.S.

Joseph completed his B.S. in Managerial Economics at Carnegie Mellon, and SMArchS + Ph.D. in Design Technology at MIT. He is a guest lecturer at IMD, Parsons The New School For Design in the Strategic Design & Management Masters Program, and the Design Thinking program at St. Gallen, where he teaches graduate courses on design, digital business models and innovation. He previously held teaching and research positions at MIT, Delft Technical University, and Bezalel Design Academy.

Dr. Brian Magerko (Georgia Tech)

Dr. Brian Magerko is an Associate Professor of Digital Media and head of the ADAM Lab at Georgia Tech, where he studies creativity as a formal sociocognitive phenomenon and how it can influence and be expressed through computational media. The philosophy behind Magerko's work is that an authentic combination

of technical and artistic / creative research can yield results that are greater than the sum of their parts and characteristically different than if one field were privileged over the other. This research trajectory has yielded nearly $12 million in research funding, an online computer science learning environment (called EarSketch) that has over 85,000 individual users and has been adopted as part of the national high school computer science curricular guidelines for AP courses; a 2016 White House press release concerning how EarSketch (co-founded by Magerko) has influenced federal education policy as a cornerstone of contemporary CS education efforts; and tech/arts experiences that have been showcased at conferences, learning institutions, galleries, and museums around the world.

Outputs of Dr. Magerko's research and studio work with students has yielded outputs such as: AI-based interactive artwork, interactive narrative and digital game experiences, educational digital media used worldwide, and empirically-based sociocognitive theories of creativity

Magerko earned his B.S. in Cognitive Science from Carnegie Mellon University in 1999 with a senior thesis on studying cognition in jazz expertise with Dr. Herbert A. Simon. He earned his Ph.D. in Computer Science and Engineering in 2006 from the University of Michigan, advised by Dr. John Laird, where he conducted research on employing predictive models in interactive narratives. Since joining the Georgia Institute of Technology in 2008, Dr. Magerko's research has been published via conferences affiliated with major organizations such as ACM, AAAI, and IEEE yielding over 1500 citations. He has authored over 100 peer-reviewed publications in computational media, cognition, and learning sciences-related conferences, books and journals. His computational media work has been featured in museums, science centers, and news outlets such as CNN, The New Yorker, USA Today, and Digital Trends.

WLS and LINQ 2017 Invited Speakers

Jane-Frances Agbu (National Open University of Nigeria)

Jane-Frances was until recently the Head of the Open Educational Resources – Massive Open Online Courses (OER-MOOC) Unit at the National Open University of Nigeria (NOUN).

She was the Head of NOUN-OER from 2014 till July 2016. Currently, she is the Dean of Faculty of Health Sciences of NOUN, which gives her the opportunity to focus on OER-Health. She is also an Associate Professor of Clinical Psychology. She works closely with UNESCO and with the Openup Ed initiative.

Marques Anderson (World Education Foundation)

Marques Anderson is a visionary who asks "why not?" Why not Make a Difference in the world, why not Change the world and why Stop until WE have? Marques is a former American Football safety in the National Football League. He received his BA from UCLA in American Literature and a Masters of Education in Adult Learning and Global Change from Linköping Universitet, Sweden. Having the opportunity to travel extensively throughout North and South America, as well as Europe and Africa, Marques began to develop strategies to address some of the most critical social problems we currently face as a global community. Following his dream to do more, Marques created the World Education Foundation. Through this platform, work is focused to create a new dynamic of sustainable growth in the areas of, Education, Health, Infrastructure and Sports.

Peter Jenner (Independent Music manager)

Peter Jenner comes from the music industry. He has been a regular commentator on copyright and the music industry for many years. He has managed Pink Floyd, T Rex, Ian Dury, Roy Harper, The Clash, The Disposable Heroes of Hiphoprisy, Robyn Hitchcock, Baaba Maal, Sarah Jane Morris, Denzil and Eddi Reader (Fairground Attraction). More recently Jenner has been involved in efforts to build a music rights registry at European Union level, and has argued for an international music registry, supported by the World Intellectual Property

Organisation (WIPO). According to Jenner, "we don't know who owns what and where" and this holds back the copyright licensing of music online. Jenner now wants to see a wide variety of creative industry services and business models being licensed, through a mixture of blanket licenses and individual licences. He argues that copyright, and intellectual property more generally, is a system which ensures that people get paid. The digital eco system challenges creative industries to rethink their models, and this also includes academic institutions.

Anjum Malik (Alhambra US Chamber)

Anjum Malik is a global professional with 35+ years of experience in the fields of international education, educational consulting, business development both in the US and internationally. She has built an extensive network of global contacts, which she leverages on behalf of her clients, connecting people and organizations for success. She was the Director of International Marketing and Public Relations for the University of Texas at Austin's Global Initiative for Education and Leadership, advising the initiative on international strategy, identifying opportunities for collaborative projects and negotiation of bi and multi-lateral agreements. Due to her leadership in education delivery and development, her organization The Alhambra Chamber was invited to become a member of President Obama's Partners for a New Beginning Initiative. The organizations she has created and managed have enhanced the global competence of more than 150,000 students and hundreds of professionals. Within her most nurtured passion - international education - Anjum constantly seeks innovative tools to improve teaching, learning, and access. In all her endeavors, she strives to advance the empowerment of women and their increased participation in the workforce. She consults and trains on a wide variety of issues related to international education -accreditation, gap analysis, leadership and professional development, cross cultural training, empowering women, franchising and strategic planning.

Janet Walkow (University of Texas)

Janet Walkow, PhD., joined the faculty of the University of Texas in 2008, building on a successful career in the pharmaceutical industry, where she led efforts ranging from R&D to Corporate Strategy. Leading the Drug Dynamic Institute, Janet brings together scientists and investigators to work on novel solutions for disease and healthcare issues. The institute fosters collaborations with university, medical, industry and community leaders to develop therapeutics and eliminate

barriers to commercialization. Janet is known in academic circles for developing cutting-edge ways of engaging and educating students, researchers and the general public. Her successful edX MOOC, Take Your Medicine explores how new drug therapies are developed and how to be a savvy consumer. A leader in efforts to empower entrepreneurs and women, Janet has developed programs, courses and facilities that foster entrepreneurs. Janet works with a variety of local and global organizations that support and empower people around the world. As a Same Sky Ambassador, Janet works to educate people about its trade initiative to create employment opportunities for women in America and Africa. She has served as a mentor for the Livestrong Foundation, Cherie Blair Foundation for Women and serves on the Board of Directors for the Health Promotion Council, Ann Richards School for Young Women Leaders, BookSpring and Harvard Kennedy School Women's Leadership Board.

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World Learning Summit is hosted by the Future Learning Lab

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Institutions of learning at all levels are challenged by a fast and accelerating pace of change in the development of communications technology. Conferences around the world address the issue. Research journals in a wide range of scholarly fields are placing the challenge of understanding „Education's Digital Future" on their agenda. The World Learning Summit and LINQ Conference 2017 proceedings take this as a point of origin. Noting how the future also has a past: Emergent uses of communications technologies in learning are of course neither new nor unfamiliar. What may be less familiar is the notion of „disruption" , found in many of the conferences and journal entries currently.

Is the disruption of education and learning as transformative as in the case of the film industry, the music industry, journalism, and health? If so, clearly the challenge of understanding future learning and education goes to the core of institutions and organizations as much as pedagogy and practice in the classroom.

One approach to the pursuit of a critical debate is the concept of Smart Universities educational institutions that adopt to the realities of digital online media in an encompassing manner: How can we as smarter universities and societies build sustainable learning eco systems for coming generations, where technologies serve learning and not the other way around? Perhaps that is the key question of our time, reflecting concerns and challenges in a variety of scholarly fields and disciplines? These proceedings present the results from an engaging event that took place from 7th to 9th of June 2017 in Kristiansand, Norway.

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