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HANNA TERÄS

Design Principles of an Authentic Online Professional Development Program for Multicultural Faculty

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ACADEMIC DISSERTATION
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Perth, WA, September 2015
Hanna Teräs

Abstract

The aim of this study was to form design principles for an online professional development program for teachers in a multicultural, 21st century higher education context. The study was conducted using an educational design research approach and it involved piloting an online postgraduate certificate program for teaching in higher education in the United Arab Emirates. The learning design of the pilot program was guided by the pedagogical framework of authentic e-learning. This formed a hypothesis to be tested: how useful a design framework for an extensive online teacher professional development program does authentic e-learning provide? Four studies investigated the successfulness of the learning design, the adequacy of redesign, as well as issues contributing to the collaborative online learner experience.

The first study (Article 1) sought to find out whether the implementation of the authentic e-learning design had been adequate in the first module of the professional development program. The aim was to determine whether the intended learning design had been attained as well as identify elements that required adjusting. The findings indicated that the authentic e-learning design was very successful in parts, but also several difficulties and areas for improvement were identified. The study revealed that the open-ended and ill-defined nature of authentic learning might cause confusion for learners who are accustomed to a more didactic delivery. The identified redesign challenges all related to finding balanced ways of scaffolding authentic learning without oversimplifying the design and sacrificing the authenticity.

The aim of the second study (Article 2) was to describe the redesign measures undertaken as a result of the findings of the first study, as well as to evaluate the adequacy of the redesign. Extreme scenarios were identified for the areas in the learning design where balance needed to be sought. These areas included site design, facilitator's role and learning task design. The findings of the study indicated that all the redesigned areas had improved, although not equally. The study emphasized the crucial role the facilitator plays in the authentic e-learning

process. A central finding of the study indicated that being aware of the extremes in the learning design is helpful for finding the balance in the authentic learning design: authentic e-learning may be challenging for participants, and there is the danger of addressing learner feedback by taking the design to the other extreme.

The third study (Article 3) examined the implications of a multicultural learning context on the authentic learning process. Moreover, it investigated the impact of the authentic e-learning model on the development of the learning culture of the diverse group of learners. The study concluded that learning culture is an essential consideration with regard to multicultural, diverse groups of learners. While attempting to cater for different preferences and familiarities was deemed unfruitful if not impossible, the findings of the study suggested developing learning designs that promote dialogue, reflection and collaboration, thus forming a basis for the group to collaboratively create a learning culture that appreciates diversity.

The goal of the fourth study (Article 4) was to investigate the learning experiences of the participants in order to find out how they experienced the collaborative online learning process and how they perceived the impact of the program on their professional growth. The findings illustrated how each individual learner experiences a shared learning situation in a different way, at the same time affecting the experience of others. Nevertheless, all participants had felt they had benefited from the program. The ones who experienced great challenges had also experienced a clear conceptual change. This, however, required well-developed self-regulation skills, and therefore a learning design that promotes the development of these skills was recommended. The study concluded that fully accommodating to learning preferences will keep learners in their comfort zones instead of encouraging them to cross boundaries and grow professionally and personally.

Together these four studies indicate that authentic e-learning is a highly useful framework for online professional development for teachers in higher education that can potentially lead to profound professional growth and conceptual change, development of reflective practice, and cultural inclusivity. However, there are prerequisites for this potential to be unleashed. Scaffolding and coaching must be emphasized and improved, the design must support the development of self-regulation skills, and the balance between the familiar and the new and challenging must be found, which means that the two extremes must also be recognized and

actively avoided. The findings of the study offer insight into conducting balanced authentic e-learning designs that can be leveraged to achieve effective, transformational professional learning.

Keywords:

Learning design, authentic e-learning, educational design research, teachers' professional growth, conceptual change, multiculturalism.

Tiivistelmä

Tämän tutkielman tavoitteena oli muodostaa suunnitteluperiaatteet kansainväliselle, kokonaan verkossa toteutettavalle korkeakouluopettajien pedagogiselle täydennyskoulutukselle. Lähestymistapana oli design-tutkimus, ja siihen liittyi verkkopohjaisen täydennyskoulutusohjelman pilotointi Yhdistyneissä Arabiemiirikunnissa. Ohjelma suunniteltiin autenttisen verkko-oppimisen periaatteiden mukaisesti. Tästä pedagogisesta lähestymistavasta muodostui testattava hypoteesi: kuinka hyvin autenttisen verkko-oppimisen viitekehys soveltuu laajamittaisen täydennyskoulutusohjelman pedagogiseksi lähestymistavaksi? Lisäksi tutkimuksessa selvitettiin autenttisen verkko-oppimisen erityisiä haasteita ja mahdollisuuksia monikulttuurisessa oppimiskontekstissa, sekä tarkasteltiin koulutuskokonaisuuden vaikutusta osallistujien ammatilliseen oppimiseen. Tämän tutkielman neljä artikkelia tarkastelevat, kuinka ohjelman suunnittelu toteutui käytännössä, kuinka iteraatiot palvelivat tarkoitustaan, ja kuinka ohjelman osallistujat kokivat kollaboratiivisen verkko-oppimiprosessin.

Ensimmäisessä tutkimuksessa (artikkeli 1) selvitettiin, kuinka suunniteltu autenttinen verkko-oppimisprosessi toteutui käytännössä ohjelman ensimmäisen moduulin aikana, sekä tunnistettiin jatkokehitystä tarvitsevat osa-alueet. Tutkimustulokset osoittivat, että autenttinen verkko-oppiminen oli onnistunut paikoin erinomaisesti, mutta ne paljastivat myös useita ongelmakohtia. Tuloksista kävi ilmi, että autenttisen verkko-oppimisen väljä rakenne ja avoimuus tulkinnoille voi aiheuttaa hämmennystä osallistujille, jotka ovat tottuneita strukturoidumpaan ja didaktisempaan lähestymistapaan. Kehittämiskohteeksi tunnistettiin tasapainon löytäminen autenttisen verkko-oppimisen tukemisessa siten, ettei oppimisprosessia yksinkertaisteta liikaa ja näin vaaranneta autenttisuuden toteutumista.

Toisessa tutkimuksessa (artikkeli 2) kuvattiin ensimmäisen tutkimuksen tulosten pohjalta tehtyjä suunnittelun muutostoimenpiteitä, sekä arvioitiin niiden hyödyllisyyttä. Tätä varten hahmoteltiin äärimmäisiä skenaarioita liittyen tasapainotusta vaativiin elementteihin, jotka tunnistettiin ensimmäisessä tutkimuksessa. Näitä alueita olivat verkkoympäristön suunnittelu, fasilitaattorin

rooli, sekä oppimistehtävien suunnittelu. Tutkimustulokset osoittivat, että kaikki kehitetyt osa-alueet olivat parantuneet, joskin epäatasaisesti. Tutkimuksessa korostui fasilitaattorin keskeinen merkitys autenttisen verkko-oppimisprosessin onnistumiselle. Tutkimus osoitti, että autenttista verkko-oppimista suunniteltaessa äärimmäisyyksien aktiivinen tiedostaminen ja tunnistaminen mahdollistaa tasapainon löytymisen. Autenttinen verkko-oppiminen saattaa olla osallistujille haastava prosessi, ja suunnittelijalla on vaara sortua hätäisiin johtopäätöksiin osallistujapalautteeseen vastatessaan.

Kolmannessa tutkimuksessa (artikkeli 3) tarkasteltiin toisaalta monikulttuurisuuden vaikutusta autenttisessa verkko-oppimisessa, sekä toisaalta autenttisen verkko-oppimisen vaikutusta oppimiskulttuurin muodostumiselle monikulttuurisessa oppijaryhmässä. Tutkimustulokset painottivat oppimiskulttuurin keskeistä merkitystä monikulttuurisissa oppimistilanteissa. Tulokset osoittivat, että erilaisten oppimiskulttuurien, mieltymysten, ja tuttujen oppimistapojen huomioiminen oppimisen suunnittelussa on usein paitsi mahdotonta, myös hyödytöntä. Sen sijaan tulosten pohjalta suositeltiin sellaisten oppimisympäristöjen suunnittelua, jotka edistävät dialogia, reflektiota ja yhteisöllistä oppimista.

Neljännessä tutkimuksessa (artikkeli 4) tutkittiin osallistujien kokemusta autenttisesta, yhteisöllisestä oppimisprosessista, sekä selvitettiin kuinka he kokivat ohjelmaan osallistumisen vaikuttaneen heidän ammatilliseen kasvuunsa. Tutkimustulokset osoittivat, että jokainen osallistuja kokee jaetun oppimikokemuksen omalla yksilöllisellä tavallaan, ja vaikuttaa samalla omien valintojensa ja toimintansa kautta toisten oppimiskokemukseen. Kaikki tutkitut kokivat hyötyneensä ammatillisesti ohjelmaan osallistumisesta. Ne osallistujat, jotka olivat kokeneet erityisiä vaikeuksia ja joutuivat kauimmaksi mukavuusalueeltaan, kokivat myös suurimpia konseptuaalisia muutoksia. Tämä vaati hyvin kehittyneitä itsesäätelytaitoja, ja siksi tulosten pohjalta suositeltiin oppimisympäristösuunnittelua, joka tietoisesti pyrkii näiden taitojen kehittämiseen. Tutkimustulokset osoittivat, että liiallinen pyrkimys huomioida osallistujien mieltymyksiä pitää heidät mukavuusalueen sisäpuolella, jolloin rajoja ylittävää ammatillista kasvua ei pääse tapahtumaan.

Yhdessä nämä neljä tutkimusta osoittavat, että autenttinen verkko-oppiminen on erittäin hyödyllinen viitekehys verkkopohjaiselle korkeakouluopettajien täydennyskoulutukselle, joka hyvin suunniteltuna voi johtaa merkittävään

ammatilliseen kasvuun ja konseptuaaliseen muutokseen, reflektiotaitojen kehittymiseen, sekä kulttuuriseen ymmärrykseen ja vuorovaikutustaitoihin. Jotta tämä toteutuisi, tiettyjen edellytysten on täytyttävä. Fasilitointiin ja oppimisen tukemiseen on kiinnitettävä erityistä huomiota, oppimisympäristön on tuettava itsesäätelytaitojen kehittymistä, ja äärimmäisiä skenaarioita suunnittelussa on aktiivisesti vältettävä. Tutkimustulokset lisäävät ymmärrystä autenttisen verkko-oppimisen mukaisen opettajien täydennyskoulutuksen tasapainoisesta suunnittelusta, sekä autenttisen verkko-oppimisen hyödyntämisestä ammatillisen kasvun tukena.

Avainsanat:

Verkko-oppimisen suunnittelu, autenttinen verkko-oppiminen, design-tutkimus, opettajien ammatillinen kasvu, konseptuaalinen muutos, monikulttuurisuus opetuksessa.

Contents

LIST OF ORIGINAL PUBLICATIONS

I. Teräs, H., Teräs, M., & Herrington, J. (2012). A reality check: Taking authentic e-learning from design to implementation. In T. Amiel & B. Wilson (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2012* (pp. 2219-2228). Chesapeake, VA: AACE.

II. Teräs, H., & Herrington, J. (2014). Neither the frying pan nor the fire: In search of a balanced authentic e-learning design through an educational design research process. *The International Review Of Research In Open And Distance Learning, 15*(2). Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/1705/2835

III. Teräs, H., Leppisaari, I., Teräs, M. & Herrington, J. (2014). Learning cultures and multiculturalism: Authentic e-learning designs. In: T. Issa, P. Isaias & P. Kommers (Eds.) *Multicultural Awareness and Technology in Higher Education: Global Perspectives.* Hershey, PA: IGI Global.

IV. Teräs, H. (2014). Collaborative online professional development for teachers in higher education. *Professional Development in Education,* DOI: 10.1080/19415257.2014.961094.

Contributions by the authors:

I. H. Teräs has collected and analysed the data, interpreted the results and written the major part of the manuscript. M. Teräs has participated in discussing the implications of the findings for the instructional design of the 21st Century Educators program. Prof. Herrington has provided theoretical and methodological guidance during the research process.

II. H. Teräs has conducted the literature review, collected and analysed the data, interpreted the results and written the major part of the manuscript. Prof. Herrington has provided theoretical and methodological guidance during the research process.

III. H. Teräs has conducted the literature review, collected and analysed the data concerning Case 1 (21st Century Educators), interpreted the results and written the major part of the manuscript. Dr. Leppisaari has collected and analysed the data and interpreted the results concerning Case 2 (KOR-EU KE-LeGE) and provided theoretical and methodological guidance during the research process. M. Teräs has participated in discussing the implications of the findings for the instructional design of the 21st Century Educators program. Prof. Herrington has provided theoretical and methodological guidance during the research process.

IV. H. Teräs is the sole author of the article.

1 INTRODUCTION

To work as a teacher in higher education in the early 21st century can be a demanding and turbulent place to be. As the world around us changes due to phenomena such as globalization, technological developments and the emergence of the knowledge economy, higher education providers are faced with challenges unparalleled in the history of the university. The role of the university as the guardian and distributor of knowledge is evolving when all the information of the world is only a click away, the leading universities of the world share study material online for free exploration of anyone with an internet connection, and educational mega-trends such as massive open online courses bring university courses and the expertise of leading professors into anyone's reach - for free. At the same time, student and staff mobility has increased rapidly, universities offer their programs internationally and higher education working and studying environments are becoming ever more multicultural. Questions like student recruitment and retention as well as graduate competencies and employability are steering emphasis towards improving the learning experience of the students. Many universities strive to enhance student engagement by adopting education technology and active learning methods instead of the traditional content driven delivery. These developments place a growing pressure on teaching faculty to develop their teaching practice, stay on top of latest educational trends and acquire new technological and pedagogical skills in an increasingly multicultural contexts – often with little or inadequate support.

Many universities tackle the issue by offering *professional development* opportunities for staff. Professional development is a wide concept, used here to refer to different formal professional learning programs and initiatives offered for teachers in order for them to develop their professional skills and knowledge. (See e.g. Hill, Beisiegel & Jacob, 2013; Dabner, Davis & Zaka, 2012). However, research shows that these efforts have not always resulted in a sustainable improvement in practice, let alone profound *professional growth*. Professional growth refers to the process of learning and change that takes place within the individual. As Ruohotie (1999) points out, ideally this is a continuous process that builds throughout the entire professional career of the individual. Whereas professional development is a

process that exists outside the individual and is being targeted at and designed for them, professional growth is the intrinsic phenomenon that the professional development activity hopes to support. Unfortunately, even though professional development is high on the agenda of universities, the impact of these programs is often less than ideal. (Salmon & Wright, 2014; Dabner et al., 2012; Hill et al., 2013; Borko, 2004; Liu, 2011; Ruohotie, 1999). Given the identified shortcomings of professional development and the fact that university teachers are typically highly qualified experts in their field but have received little or no pedagogical training, the expectations for teaching and learning transformation may be unrealistically high when compared with the resources, support and professional development opportunities available.

Earlier research indicates that effective professional development is typically long-term, offers opportunities for practical application, is integrated in the educators' daily practice, includes collegial sharing, is project or action research based, and is well supported (Ling and MacKenzie 2001). What is missing, however, are well-researched real-life examples of designing and implementing such professional learning in practice. Rienties, Brouwer and Lygo-Baker (2013) point out that there is very little research that addresses how integration of daily practice into formal teacher development can be effectively established.

The present study finds its place in this landscape. This study is a design research effort that sets to identify what makes an online teacher professional development program effective in the evolving 21st century higher education environment, and seeks learning design guidelines for implementing such programs. Being a design-based study, the research process involved the development and implementation of an actual educational intervention. This dissertation describes the journey starting from the theoretical foundations of the first prototype, all the way through implementation and redesign to evaluating the success and impact of the program.

1.1 Research task and structure of the study

The main aim of this study is to answer the question: "What are the design principles of an effective authentic online professional development program for multicultural teaching faculty in the 21st century higher education context?" This

task is approached with the help of three sub-questions that examine the problem from more focused perspectives. The sub-questions are:

1) How adequate is the authentic e-learning model as a learning design framework for online professional development aimed at teachers in higher education? What are the shortcomings/ strengths of the model in such a context?
2) What are the special considerations of authentic e-learning in a multicultural learning context?
3) What is the impact of the authentic online professional development program on the professional learning and growth of the participants?

While the overarching research question was clear from the beginning of the journey, others emerged along the way. As Phillips, McNaught, and Kennedy (2012) point out, e-learning is a complex process and the phenomenon under investigation is an ill-defined problem. Therefore, the research problems and goals may be hard to define in the beginning; instead, they crystallize while the process proceeds and the researcher digs deeper into the phenomenon. The iterative nature of a design research process also brought forth new questions along the way; the results of the formative evaluations along the way directed the investigation.

The key research findings are design principles for an effective online teacher development program for multicultural teaching faculty. However, I believe the results are also relevant from the point of view of any other type of cohort-based, facilitated online learning. The significance of this research thus arises especially from the ability to provide implications for practice in the areas of online teacher professional development, online collaborative learning, multicultural e-learning and authentic e-learning. Moreover, it offers insight for both learning designers and online facilitators and moderators.

This dissertation is organized into eight chapters. The introduction is followed by a description of the background of the study and the context where the research took place. Chapter 3 introduces the key theoretical concepts relevant for the study and sets the scene for how the study relates to the research field. Chapter 4 outlines the research methods and research design and explains how the educational design research process proceeded. Chapter 5 focuses on validity, reliability and the ethical considerations of the study, and Chapter 6 provides a summary of the original articles that form the empirical part of the study. Chapter 7 features a discussion on general findings, narrowing down to the design principles drawn based on the

findings. Finally, Chapter 8 concludes the dissertation before moving on to representation of the original articles.

2 BACKGROUND AND RESEARCH CONTEXT

In my work as Senior Lecturer in vocational teacher education in Finland, I was appointed to lead the development of an international online postgraduate certificate program that would effectively support the professional growth of teachers in higher education in the 21st century knowledge society. The fundamental question I was facing with this challenge formed the primary research task for this study: How to design an effective online teacher development program for teaching faculty with multiple cultural backgrounds, in order to promote deep professional growth and conceptual change that leads to pedagogical and technological innovation and change in teaching and learning? I adopted the iterative approach of educational design research (Reeves, 2006; Plomp, 2007; McKenney & Reeves, 2012) to guide the research process, and the original articles that this dissertation consists of are based on data collected and analyzed at different stages of this process. The knowledge gained at these different research stages directly informed the redesign and further development of the program. All this has been done "on the go" in a rapid prototyping manner. This means that the schedule of the program's implementation also set the pace for research activities. Playing a double role as the lead developer and program director as well as the researcher made the three years it took from early prototyping to the moment of writing this extremely intensive for me.

My previous experiences with designing online learning for Finnish vocational teacher education, which is compulsory for teachers of vocational subjects, provided a starting point for the design work. Based on earlier positive results with inquiry-based collaborative online learning and social technologies in Finnish vocational teacher education (e.g. Teräs & Myllylä, 2011; Myllylä, Teräs, Kaihua, Mäkelä, & Svärd, 2011; Myllylä & Teräs, 2011) and research literature, the principles of authentic e-learning defined by Herrington, Reeves, and Oliver (2010) were chosen as the framework for the program's learning design. The pedagogical model of authentic learning provides a practical and comprehensive model of operationalizing pedagogical ideas deriving from situated cognition and cognitive apprenticeship. It identifies nine elements that characterize an authentic technology-based learning environment (Herrington et al., 2014). The model is

long established and researched, and has been found to be effective for example in supporting advanced knowledge acquisition (Herrington & Oliver, 2000); developing skills and attitudes (Herrington & Herrington, 2007) and working-life oriented learning (Leppisaari, Maunula, Herrington, & Hohenthal, 2011). However, it has not been researched in the context of a full-scale learning design implementation in a postgraduate level, fully online certificate program. Regarding the primary research question, the framework of authentic e-learning thus formed a hypothesis to be tested: how useful a design framework for an extensive online teacher professional development program does authentic e-learning provide?

Whereas online teacher professional development programs have become increasingly common, at the time of commencing the design process no examples of using authentic e-learning as the pedagogical framework for designing online teacher professional development were available. In 2013, Parker, Maor and Herrington described the design and implementation process of a more concise authentic professional development course for higher education practitioners (Parker et al. 2013). The objective of their course was specifically for the participants to learn to use the authentic e-learning model in designing their own online courses. In Finland, Leppisaari et al. (2014) have studied authentic e-learning model integrated with mentoring, and Kiviniemi, Leppisaari and Teräs (2013) have discussed the usefulness of the authentic learning framework in the context of professional development of adult learners. However, the key aspects that differentiate this study from previous research in the area of online teacher professional development and authentic e-learning include studying the following:

1. Authentic e-learning in an extensive postgraduate certificate program context
2. Authentic e-learning in a multicultural learning context
3. A detailed analysis of the design and implementation principles regarding all the nine elements of authentic e-learning.
4. The impact of the authentic e-learning based program on the professional growth of the participants.

2.1 21st Century Educators in the United Arab Emirates

The postgraduate certificate program that plays the central role in this research was developed at Tampere University of Applied Sciences (TAMK) to be internationally piloted in the United Arab Emirates (UAE). I had been involved in research and development going on at TAMK for the past decade in order to find more engaging and authentic ways of conducting online pedagogical qualification studies for in-service teachers. We had previously explored collaborative knowledge construction in online discussions (Myllylä, Mäkelä, & Torp, 2009a), digital narratives (Myllylä, Mäkelä, & Torp, 2009b), dialogic assessment with the help of social media (Torp & Myllylä, 2010) and the use of Web 2.0 tools in teacher education (Teräs, Myllylä, & Nevalainen, 2010). (To assure that I am not attempting to take credit for other people's work, I might need to mention that my former surname is Torp). The results were encouraging and in 2010-2011, TAMK was looking at internationalizing the pedagogical training developed and refined as a result of the research and development work. At the same time, a major provider of higher education in the Middle East was looking for ways of supporting the professional development of its teaching faculty in the areas of teaching and learning, assessment, and innovative use of new pedagogies and technologies. In April 2011 it was agreed that TAMK would offer an online postgraduate certificate program for teaching in higher education in the UAE, starting in September 2011.

The model used at the online pedagogical qualification studies for vocational teachers in Finland was used as the starting point for the development of the program. However, the context in the UAE was in many ways different from the one in Finland and it was clear that the original program as such was going to have to be developed further. The model in Finland had been delivered through a blended learning approach whereas the program in the UAE would be fully online. The participants in the UAE represented various different nationalities and cultural backgrounds and they had received their school and university education in different countries around the world, which suggested that they had been accustomed to very different learning cultures and would therefore probably have very different approaches to and conceptions of teaching and learning. Also, the scope of the program was to be somewhat different. Whereas the vocational teacher education programs in Finland serve the purpose of providing the required pedagogical qualification to teachers of vocational subjects, the program in the UAE was to be implemented as a postgraduate certificate that would be optional for the participants and involved a tuition fee. Content-wise, the emphasis in the

UAE program was to be not only in pedagogical understanding, but also in education technology and understanding of the 21st century learning and working environment and their implications to higher education.

In accordance with these goals, the postgraduate certificate program was named "21st Century Educators" (21stCE). In order for the program to practice what it preached, there were certain principles we found important to follow:

1. The learning environment would extend beyond a conventional learning management system to take advantage of social technologies such as blogs, wikis and social networking sites as the primary learning environments.
2. The study material would consist exclusively of openly available online resources, such as creative commons licensed online books and journal articles, YouTube and TED talk videos, influential blogs and current news.
3. Traditional assessment methods such as exams and written essays would be replaced with authentic projects implemented in the participants' own classrooms, portfolio-type reflections and collaboratively created digital artifacts.
4. The program would not be a self-study program, nor would it be possible to complete it at one's own pace. Instead, it would be fully facilitated and cohort-based.

To support studying alongside work and to fully appreciate the classroom of the participants as an elemental part of the learning environment, the pace of the program had to be set accordingly. The program was divided into three modules, each of which runs for one semester. Each module was designed to be worth 10 European Credit Transfer System credit points (ECTS). The structure was designed to be modular so that it was possible only to complete one module, but the full certificate would be awarded upon the completion of all three modules (30 ECTS). Each module introduced a different perspective into the work of an educator in the 21st century higher education context. The learning objectives of the modules are introduced in Table 1.

1. Teaching and Learning in the 21st Century	2. Education Technology: Why and How?	3. Learning Outcomes and Assessment
• Apply learning theories in practice • Gain understanding on how people learn • Become aware of and analyze your own practical theory for teaching • Become aware of the characteristics of the 21st century society and what they mean in your classroom • Learn about 21st century skills and how you can help your students acquire them • Find ways towards more authentic and working-life oriented education	• Find and test new tools and technologies to support learning • Understand the pedagogical foundations of successful and efficient e-Learning • Learn to facilitate online collaboration in different environments • Apply authentic e-Learning in your own work • Find how you can promote digital literacy of your students • See how social technologies can be used in education	• Gain understanding of different levels of thinking and how they can be addressed by assessment • Find out how assessment can become a fruitful learning experience • Learn to use peer and self- assessment efficiently • Find ways to assess 21st century skills • Use evaluation and feedback constructively to support learning outcomes

Table 1. Modules and learning objectives of 21st Century Educators.

When designing the online learning environment, the development team was aware of the common problem also described by Herrington et al. (2010) who argue that traditional learning management systems (LMS) are typically not promoting innovative interactive collaborative e-learning. Instead, they "tend to promote thinking of online course design as a process of replicating traditional classroom instructional practices such as lecture notes, readings, quizzes, term papers, exams, and the like (p. 11). Therefore, the learning environment was designed using a LMS that functioned as a hub with all the official documentation and participant information, instructions, schedules as well as links to the open online study materials, but the student work, interactions and collaboration took place in different Web 2.0 environments. Each participant regularly updated her or his own personal blog, which served as a platform for reflection and discussion with team members. Moreover, Google Documents were used for collaborative writing and Google+ was introduced as a channel for networking internally and

externally, as well as for sharing additional resources and introducing topics for discussion. The result was what Tenno (2011) refers to as a "pedagogical infrastructure"; a complex environment that extends beyond institutional learning platforms and blends in personal and informal spaces of learning.

The core of each module consisted of an authentic task/project that allowed for immediate application of theoretical pedagogical knowledge and new technologies into practice. The authentic task was broken into project milestones and the introduction of study materials was paced with it so that the readings, videos and other resources fed directly into the authentic task. Parallel to this process, reflection, articulation and discussion took place in participant blogs and the discussion forum, feeding back to the implementation, supporting and enriching it with multiple perspectives and feedback. The end product of the process was a shared digital artefact where the participants presented, summarized, evaluated, analyzed and interpreted the entire process and its outcomes.

While the content analysis and basic structure of the program were things my earlier experiences and research literature could guide with, there were many questions that were new and could not be as easily answered. One of them was the new context and the amazing cultural diversity of the participants. Similarly to Andrea Edmundson, the CEO of eWorld Learning (2007), I found myself asking how I would best design an online study program for learners in other cultures. What instructional strategies would be most effective? Would the participants adapt to my Western style of designing, teaching and learning, or would I have to do something differently? I realized there was no way of trying to adapt the learning design to any given cultural context - the participants were all expatriates from all four corners of the Earth, and they represented too many different cultures, religions, traditions and learning histories for me to be able to pick any and attempt to design accordingly. They were a fantastically diverse group of people of women and men, different age groups and different disciplines. Some of them had decades of teaching experience, whereas some had only recently taken up teaching. Some were experienced in using technology; some had mostly used email before. The international context and the great cultural diversity of the participants thus added a significant new layer to the design challenge as well as to the research task at hand.

3 THEORETICAL FRAMEWORK AND CORE CONCEPTS

A common criticism of e-learning research is that it is often not based on a solid theoretical foundation. Perhaps one of the reasons is that while most structured empirical research builds on a theoretical framework, in the case of educational research, theories in the strict sense of the word are less common than in natural sciences. This is not to say that they are non-existent or unimportant. However, as Phillips et al. (2012) point out, phenomena that are being investigated in the educational domain are often difficult to measure and too complex to be fit in a formula, which makes the construction of generalizable and predictive theories in the area extremely difficult. This is also the case with the present study. However, it is not without theoretical basis, but instead of an established educational theory, this study builds on a conceptual framework; the authentic e-learning framework developed and researched by Herrington et al. (2010). A conceptual framework differs from a theory in that it is less strictly defined and is not expected to offer predictability. Instead, conceptual frameworks "expose, describe, categorize and make order" of phenomena (Phillips et al., 2012; p.91) and highlight key elements that should be considered with regard to a given phenomenon.

The aim of the current study is to formulate the design principles of effective teacher professional development for multicultural faculty. It addresses three related sub-questions: it sets out to evaluate the suitability of *authentic e-learning* as the *learning design framework* in online professional teacher education, examine the special considerations of authentic e-learning necessitated by the *multicultural learning context*, and investigate the impact of the authentic online professional development program on the *professional learning* of the participants. In this section, these central concepts of the study are introduced in more detail. I first discuss previous research around teacher professional development and professional learning in order to situate the present study in the research context and identify the gaps this study sets to fill. Secondly, I will take a closer look at the role of learning design in e-learning, as well as introduce commonly used approaches to learning design. This is followed by an introduction to the authentic e-learning as a learning design framework. I discuss the origins and theoretical underpinnings of the framework

and contrast it with other learning design approaches in order to illustrate the arguments for using it in the program. Finally, I move on to multicultural learning and learning cultures, especially the more specific context of multicultural e-learning.

3.1 What is effectiveness in teacher professional development?

The research task at hand concentrates on finding out how to design effective teacher online professional development. The idea of "effectiveness" is of course very abstract and can be interpreted in various ways, depending on the perspective. The way I use the term in this study is qualitative: effective teacher professional development leads to identifiable positive outcomes, such as professional growth and improved student experience.

It is important to start by acknowledging that the concepts of *professional development* and *professional learning* are not interchangeable but they in fact refer to two very different processes. Webster-Wright (2010) points out that professional learning as experienced by the professionals is largely an ontological question of professional identity, rather than merely epistemological, dealing with professional knowledge. This observation highlights the distinction between professional development and professional learning. The former is a process that exists outside the professional and is being targeted at them, whereas professional learning is an intrinsic phenomenon. Offering or even attending professional development does not necessarily lead to professional learning. Alsop (2013) differentiates between lifelong learning and professional development in a similar manner: lifelong learning is a self-driven, desired activity that fulfils a more personally meaningful purpose than a need to confirm an ongoing fitness to professional practice. Consequently, Webster-Wright points out that professional learning "…cannot be mandated, coerced or controlled, but can be supported, facilitated and shaped" (2010, p. 12).

Paradoxically, the mandating and controlling is increasingly taking place at universities worldwide. During the past years, teaching quality has become an important area for improvement in many higher education institutions worldwide (Knight, Tait, & Yorke, 2006). Teaching quality has been spotlighted as a response to global trends, such as technological development, economic instability, and the changing world of work and workplace requirements. These trends have provoked higher education providers worldwide to consider issues such as student

engagement, active learning, and more authentic ways of teaching, learning and assessment. As a result, teachers in higher education are under increasing pressure to upskill, innovate and develop their teaching practice in order to meet these challenges. As teachers in higher education typically lack in-depth pedagogical background, it is often up for the professional learning opportunities offered by universities to support teachers in these endeavors.

The impact of teaching on the quality of student learning cannot be undermined. Prosser and Trigwell (1999) have demonstrated that different teaching approaches evoke different approaches to learning. A teacher-centered, knowledge transmission based strategy is likely to encourage a surface learning approach, whereas student-centered teaching tends to lead to deep learning strategies. Therefore, as Prosser and Trigwell (1999) emphasize, students' approach to learning is fundamentally related to their learning outcomes. Deep learning strategies have a connection to better learning outcomes as well as improved learner satisfaction (Prosser & Trigwell, 1999). It is therefore not surprising that opportunities for teaching faculty professional development are both offered and researched with increasing interest.

Despite growing understanding of what constitutes quality professional learning, professional development programs for educators still often fall into the pitfalls many researchers have identified earlier. They often come in the form of decontextualized workshops that Borko (2004) rather bluntly characterizes as "fragmented and intellectually superficial" (p.3). They tend to have a pragmatic focus and they aim at changing teaching practice by introducing teaching techniques, however, they often lack theoretical basis and in concentrating on "tips and tricks" they fail to develop the pedagogical understanding of the participants (Gibbs, 1995). Participation to these workshops is often compliance-driven, and as Liu (2011) observes, they may be perceived either as additional extra burdens or, alternatively, time off for teachers. What they hardly ever succeed in is a profound change in teaching approaches that would have an impact in student learning strategies (Prosser & Trigwell, 1999), which in turn could lead to deeper learning and improved readiness to face the world after graduation.

Attempts to up-skill teachers for the 21st century learning environments tend to concentrate on developing teachers' technical skills with specific technologies (Dabner et al., 2012). In these unfortunately rather frequent cases technology is perceived as synonymous to teaching and learning innovation and teachers are offered workshops where they learn how to electronically do the same things they have previously done in the classroom: teachers may learn how to upload content

in a learning management system, how to record a video lecture or how to mark student assessments online. Even in the case of more learner-centered technologies, it is not seldom that the professional development programs offered for teachers focus on surface level usage of a given software or application. Increasingly often, professional learning programs designed for teachers are also offered online. This has not necessarily improved the quality and effectiveness of these endeavors; areas that are often lacking are interaction and collaboration between participants and evaluation of the online program's impact in the classroom and teaching practice (Liu, 2012).

Different teaching approaches derive from deeper sources than the arsenal of techniques and tricks the teacher has at their disposal. Norton et al. (2005) point out a connection between the underlying conceptions of teaching and learning and the actual teaching approach a teacher demonstrates. Similarly, Vermunt and Endedijk (2011) emphasize that teachers' beliefs are a strong determinant of teachers' behavior. Therefore, truly transforming teaching and learning involves the acquisition of more sophisticated conceptions, instead of acquiring more information, learning to use technologies, or developing new teaching techniques. Conceptual changes often involve fundamental assumptions about knowledge and knowing, and they may feel threatening (Posner, Strike, Hewson, & Gertzog, 1982). Therefore, conceptual change is not something that will take place automatically or lightly as a result of a professional development workshop.

Traditionally, conceptual change has been seen as a process where erroneous conceptions are found unsatisfactory in a new situation and, consequently, they are replaced by the correct ones (Posner et al., 1982). However, this classical view reflects a rather content-centered conception of learning and is inconsistent with the ideas of constructivism in that it has a black-and-white approach to "right" and "wrong" conceptions. Pintrich, Marx and Boyle (1993) criticize the classical approach for being overly rational and focusing merely on student cognition, without taking into account factors such as motivation, self-efficacy, and the impact of the learning community. Before Pintrich and colleagues' article, most of the research in the field was conducted in laboratory environments. It was only after they put the importance of classroom context into spotlight that the research focus shifted toward a more holistic direction (Sinatra, 2005).

The definition of Jonassen, Strobel and Gottdenker (2005) is more helpful for the purpose of the present study. They characterize conceptual change as a conception of meaningful learning, and see conceptual change as "changes in the conceptual frameworks (mental models or personal theories) that learners

construct to comprehend phenomena" (p.15). Hatano and Inagaki (2000) argue that these conceptions, mental models or prior knowledge in human development and learning are largely affected by sociocultural factors, because "the growth of the human mind is achieved by incorporating experiences accumulated in earlier generations in the form of culture" (p.271). This idea is well applicable in what comes to both educators' and learners' conceptions of teaching and learning.

Conceptual change requires raising awareness of one's conceptions, assumptions and attitudes - a process of transformative learning as described by Mezirow (1997). Vosniadou (2013) also argues that conceptual change requires fundamental ontological and epistemological changes and that it is a result of an ongoing process, rather than a single "light bulb moment". diSessa (2013) refers to scientific concepts when he writes about the complexity and extended construction associated with conceptual change, but the same ideas are applicable in conceptions of teaching and learning as well. As he points out, simplicity and claims that have easy practical implications are attractive, but "attractiveness has little to do with validity (2013, p. 40). Therefore, simplified "tips and tricks" and "toolkit" approaches to professional development are highly unlikely to result in a conceptual change. Transformative learning is a process of professional growth that cannot be achieved through professional learning delivered in the workshop style. Indeed, Guskey (2002) believes that the reason why most teacher professional development programs fail is because they tend to ignore the process by which the change in teachers' attitudes, beliefs and perceptions occurs. Teacher professional development programs typically attempt to achieve change on three levels: teachers' attitudes and beliefs, teachers' classroom practices and students' learning outcomes. However, as Guskey (2002) suggests, the change does not take place in this order. Attempts to change teachers' conceptions of teaching and learning in a one-day professional development workshop, hoping that this will result in changed classroom practice and improved student learning outcomes, tend to yield to nothing. Instead, the changes in attitudes result from successful classroom practice and observed positive results in students' behavior and learning (Guskey, 2002).

Vermunt and Endedijk (2011) argue that most of the literature on teacher learning is prescriptive rather than descriptive: what is presented are models about how teachers *should* learn best, rather than exploring how they actually learn. The authors recommend that "theories about how to promote teacher learning should be based on sound scientific knowledge and models about how teachers learn naturally" (2011, p. 294). Bakkenes, Vermunt and Wubbels (2010) studied teacher

learning in the context of educational innovation and change and found four types of learning outcomes reported by the teachers: 1) changes in knowledge and beliefs; 2) intentions for practice; 3) changes in teaching practice; and 4) changes in emotions. Changes in knowledge and beliefs were reported most frequently, whereas changes in teaching practice (defined as a more permanent change than experimenting in a few lessons) were the least frequent ones. The most common types of learning activities that the teachers naturally engaged in included experimenting, considering one's own practice, getting ideas from others and experiencing friction (discrepancy between what is intended and what happens in the classroom in reality). Different learning activities led to qualitatively different learning outcomes.

Many researchers agree that impactful professional development for teachers, be it online of face-to-face, calls for opportunities for implementation, sustained reflection and collegial sharing, multiple perspectives and collaborative learning (e.g. Lawless & Pellegrino, 2007; Ling & MacKenzie, 2001; Liu, 2011; Löfström & Nevgi, 2007). Despite the growing understanding of the factors that contribute to the effectiveness of professional development programs, there is a far less clear understanding of the design principles that can be used to translate this knowledge into impactful practice. Implementing the identified elements of successful professional learning in an online learning design is easier said than done and research-based examples in the field are few.

3.2 Common approaches to online learning design

The concept of learning design does not have one universal definition and it is sometimes used interchangeably with the term *instructional design*. In fact, learning design can be distinguished from instructional design and seen as its own, very new, field of research that has its origins in different simultaneous e-learning projects in Australia and Europe (Dalziel, 2011). In practice, however, the use of the terms is not well defined and established. As Kanuka (2006) points out, different descriptions of the terms abound in literature, which makes providing definitions somewhat challenging. In an extensive literature review, Dobozy (2013) was surprised to find out that out of the numerous research papers that used the term "learning design" in their titles, very few of them were able to provide a clear definition of the concept. Although the concepts of learning design and instructional design definitely overlap and are sometimes defined very similarly,

learning design tends to carry more learner-centered and constructivist connotations. Dalziel (2011) argues that the field of learning design "has a particular focus on collaboration using technology and scaffolding of learning, and hence has much to offer a richer view of e-learning" (p. 42). According to Dobozy (2013), learning design attempts to provide educators with frameworks that can guide them to "incorporate current understandings of constructivist pedagogy through the use of a specific sequence of activities that foster active consideration of the topic and collaborative knowledge production by students" (p. 65). Dobozy () also observed in her literature review that even the authors who failed to define the concept, associated learning design with social constructivist pedagogy.

Instructional design is an older field of research that, until recently, has been solely based on a systemic and instructivist philosophy and tightly linked with behaviorism (Kanuka, 2006). However, these views have more recently been challenged by the social constructivist perspective, and the use of the concept 'instructional design' has been diversified. A number of "constructivist instructional design" models have emerged (Kanuka, 2006; Karagiorgi & Symeou, 2005). Constructivist instruction, however, is almost an oxymoron, as instruction is unavoidably a teacher-centric, top-down phenomenon. Furthermore, as Karagiorgi and Symeou (2005) aptly point out, constructivism is a learning theory, not an instructional design theory.

The terminology usage can indeed be confusing, when 'learning design' and the oxymoronic 'constructivist instructional design' refer to more or less the same thing, while at the same time others maintain the traditional definition of instructional design. Kanuka (2006) defines an instructional designer as a professional who provides consulting to teaching faculty in the production of curriculum development for e-learning activities, involving the analysis, design, development, implementation and evaluation of solutions, course materials, learning elements and assessment. Her definition leaves room for different pedagogical approaches, whereas others continue to limit instructional design to the systems view. For example, Martin (2011) defines instructional design as - and stresses the importance of - the process of aligning a set of very clearly defined and sequenced instructional elements, which focus almost solely on content delivery and testing, and do not include any reference at all to collaboration or knowledge construction. To add to the confusion around terminology, many definitions of all types of instructional design reflect the Northern American vocabulary and practices, whereas in the Australian context, "learning design" is more frequently used. On that note, while working in Australia, I have also had my job title change

from Learning Designer to Educational Designer during a university restructure process, without any major changes in the areas of responsibility. In my native country Finland, however, it is not unusual for the teaching faculty themselves to conduct the learning design in their online units, and as the leading developer of 21stCE, I adopted both the role of the content expert and the learning designer.

The purpose of learning design is to intentionally help students learn more effectively than they would do on their own. This becomes especially important in a fully online environment where students and facilitators never meet face to face. Therefore, a good learning design must go well beyond the regrettably common practice of merely publishing content through a learning management system - simply gaining access to content is hardly adding value to independent, unguided learning. In this study, I use the term *learning design* to refer to choosing, planning, developing and arranging elements of an educational intervention in a way that aims at aiding the process of student learning. This definition is related to the idea of *pedagogical usability* (Nokelainen, 2006; Tenno, 2011). Nokelainen's model introduces ten dimensions to be used as criteria in assessing the pedagogical usability of e-learning solutions. These include the following:

1. Learner control instead of structured and predefined "one-size-fits-all" approaches
2. Learner activity encouraged by interesting, real-life based assignments
3. Cooperative/collaborative learning to reach a common learning goal; participation instead of acquisition
4. Goal orientation that allows for students to pursue their own interests in relation to the learning goals
5. Applicability of the knowledge and skills in real world situations
6. Added value instead of merely doing the same thing electronically that could have been done in a traditional manner
7. Motivation to support the direction of behaviors, intrinsic goal orientation
8. Valuation of previous knowledge and opportunities to take advantage of it during studies
9. Flexibility through free navigation, adaptable and broad assignments that allow combination with individual needs, student contribution to learning resources
10. Feedback from people, not only the computer, to support reflection.

The criteria of pedagogical usability take a leap away from the traditional instructional design, toward learning design or constructivist instructional design by placing the emphasis on the learner as the key player, and on learning that is a result of the activity of the learner, supported by a pedagogically usable educational intervention.

At times I use the term *instructional design* instead of learning design. I do this when it is the terminology used by the author(s) referred to in that context. Historically, instructional design has its roots in cognitive and behavioral psychology. Much of today's online learning design has been influenced by elements of the cognitive load theory (Sweller, Merrienboer, & Paas, 1998; Sweller, Ayres & Kalyuga, 2011) and Robert Gagne's instructional theory (Gagne, 1970; Gagne, Wager, Colas and Keller, 2005). To understand the learning design choices made in the development of the 21st Century Educators program and the context of this study, it is necessary to first examine these two influential models in more detail.

Sweller and his colleagues' work is based on using knowledge about human cognition and its evolution to form instructional design principles. A central idea in the theory is working memory: the authors point out that the "implications of working memory limitations on instructional design can hardly be overestimated" (Sweller et al., 1998, p. 252). The cognitive load theorists' approach to learning is highly naturalistic. They treat evolution by natural selection and human cognition as "natural information processing systems" (Sweller, Ayres, & Kalyuga, 2011). In the cognitive load model, the purpose of instructional design is to reduce cognitive load and thus facilitate learners to develop schemas. This involves strategies such as eliminating extraneous and unnecessary information from the instruction and breaking new and potentially difficult schemas into more manageable subschemas to first be taught in isolation and later combined back to a whole (Sweller et al., 1998). Sweller et al. (1998) believe that the working memory load plays such a central part in human learning that any "instructional designs and instructional recommendations that require learner to engage in complex reasoning processes involving combinations of unfamiliar elements are likely to be deficient" (p. 254). Sweller, Ayres and Kalyuga (2011) make a distinction between "biologically primary" and "biologically secondary" knowledge; the former refers to skills that we acquire naturally and effortlessly, such as recognizing human faces, speaking our first language and physically interacting with our environment, whereas the latter describes skills that need to be explicitly taught within a culture. Sweller and his colleagues explain this distinction with evolution and believe it has implications

for teaching and learning. According to them, it would not be beneficial to leave students to learn "by constructing their own knowledge while immersed in an appropriate environment" in what comes to secondary, human-invented knowledge. They argue that "we have not evolved to specifically acquire such knowledge", which is why different techniques that "require highly explicit guidance" are necessary in order to assist learners. (Sweller et al. 2011, p. 8). These ideas are widely reflected in contemporary e-learning designs: it is common to deliver information in manageable chunks, give very detailed and explicit instructions for assignments, as well as to design clearly defined learning paths where the learner is taken through a predefined route in a logical sequence.

During the 1960-1970's, Robert Gagne rose to challenge the earlier conceptions of instructional design that were based on establishing connections between stimuli and responses and emphasized the importance of repetition to increase the strength of the learned connections (Gagne, 1970). Instead, Gagne (1970) suggested that learning consisted of complex processes taking place in the nervous system of the learner, and that better retention could be promoted by ensuring that the learner has the requisite capabilities for the task at hand and by stimulating the use of the skills and capabilities that the learner already has. According to Gagne, "modern conceptions of learning tend to be highly analytical about the events that take place in learning, both *outside* the learner and *inside*" (p. 469, author's italics). The implications to instruction had some similarities with the cognitive load theory: learning would occur best when information was appropriately chunked and presented in the right order. Gagne, Wager, Colas and Keller define instruction as "a set of events external to the learner designed to support the internal processes of learning" (2005, p. 194). Gagne et al. (2005) base their model of instructional design on nine instructional events that Gagne (1969) originally identified as typically occurring in the order presented in Table 2 (Gagne et. al. 2005, p. 195). The table illustrates the events of instruction and their relation to the process of learning.

Instructional event	**Relation to learning process**
Gaining attention	Reception of patterns of neural impulses
Informing the learner of the objective	Activating a process of executive control
Stimulating recall of prerequisite learned capabilities	Retrieval of prior learning to working memory
Presenting the stimulus material	Emphasizing features for selective perception

Providing learning guidance	Semantic encoding: cues for retrieval
Eliciting performance	Activating response organization
Providing feedback about performance correctness	Establishing reinforcement
Assessing the performance	Activating retrieval, making reinforcement possible
Enhancing retention and transfer.	Providing cues and strategies for retrieval

Table 2. Events of instruction and their relation to processes of learning.

This sequence of events continues to be widely used for lesson planning and will undoubtedly be familiar and bring memories from school days to many a reader. It is also a commonly used model in many e-learning programs and it renders itself relatively easily to automation: a short introduction to the topic is followed by presenting material, either textual or, increasingly often, a video, which in turn is followed by a multiple choice test with automated formative feedback and final assessment, the role of which is to measure whether the student is able to retrieve the learned knowledge and exhibit correct performance.

While the traditional approaches to instructional design have their merits in certain circumstances, they were found to have some severe shortcomings regarding the context of this study and the 21st Century Educators program. Both models described above are based on a conception of learning that emphasizes delivering, processing, memorizing and testing content knowledge. This conception becomes problematic at two levels. Firstly, the goal of the 21st Century Educators is not primarily to increase the knowledge base of the educators and convey information to be stored in learners' memory systems, but to support and promote a transformative professional learning process (Mezirow, 1997) that enables professional growth and conceptual change (Norton et al., 2005). The reason behind these aspirations is the paradigm shift in working life and society in general. With regard to employability, graduates are expected to develop skills such as critical thinking and problem-solving skills, advanced communication skills, as well as leadership and self-regulation skills (Moses & Trigwell, 1993). These types of skills are sometimes referred to as 21st century skills (e.g. Trilling & Fadel, 2005) or *Employability skills* (Australian Chamber of Commerce and Industry & Business Council of Australia, 2002) and they are seen as elemental prerequisites for participation in global knowledge economy. However, Ruohotie (1999) believes that these types of skills cannot be directly "taught", but they are acquired when

the learning environment supports their acquisition and rewards from it. This notion puts learning design in the spotlight. Also Leberman, McDonald and Doyle (2006) emphasize the importance of learning design and recommend that in order to reach better transfer of learning, "the learner needs to be prepared to draw on a range of resources and to adapt learning to complex and ill-structured workplace problems" (p.117). According to Leberman et al. (2006), knowledge must be encoded for use in authentic problem solving, not for short-term retrieval in composing essays or sitting exams. The latter is a typical scenario in a learning event designed using the traditional instructional design methods, such as the instructional events or cognitive load theory. The problem of systems models like the ones described above is that they are rather mechanistic and it is quite easy to use them to reinforce dated pedagogical practices instead of transforming learning. Used as a sole guideline for learning design, the cognitive load theory or Gagne's nine instructional events do not provide very useful design principles for designing and implementing complex and realistic learning tasks, learning environments that support the acquisition of 21st century skills, or learning that aims at transformation and conceptual change.

3.3 Authentic e-learning as a learning design framework

Authentic e-learning (Herrington et al., 2010) is an approach to learning design that differs fundamentally from the traditional instructional design frameworks. It derives from situated learning, anchored instruction and cognitive apprenticeship, and it stresses engagement in the learning process over content delivery.

Authenticity of learning can be understood in various ways, and the picture becomes even less clearly defined when adding the "e" to the learning. Examples of what is commonly understood as authentic learning include site visits, projects conducted for external stakeholders, field trips or hands-on practical tasks in a realistic setting, such as laboratories or workshops. When talking about authentic learning in an online environment, one might think of simulations or extremely multimedia-rich environments that attempt to replicate a real world setting as accurately as possible. In all these examples, authenticity is understood as synonymous to real or realistic, and criticisms toward it include lack of feasibility in a classroom, difficulty to arrange work with real clients, or costliness of developing authentic simulations. Moreover, it is often thought that authentic learning suits the practical environments of vocational education but cannot be done in a more

theoretical university setting or online. Herrington et al. (2010) strongly disagree with these perceptions and argue that authentic learning can very well be accomplished in university and classroom settings and that it is, in fact, ideally suited to online and computer mediated learning.

Instead of the aforementioned concerns, the change-resistant climate of higher education can be seen as a more significant hindrance to the "courageous and imaginative thinking that is required to promote authentic learning" (Herrington et al., 2010, p.2). Herrington and Herrington (2006) lament that the reality of learning in universities continues to consist of chunks of information being delivered by experts on stage to students who passively receive this information, memorize it, and reproduce it the best they can in an exam. These observations in their part point towards the topic of this study: teachers resort to the traditional ways of instruction largely because they are simply copying the way they were taught (Herrington & Herrington, 2006). Therefore, effective and transformative teacher professional development is much needed in the tertiary sector. The authentic e-learning framework was chosen for the learning design of the present educational intervention for the very reason that it inherently acknowledges and addresses the need for a vastly different pedagogical approach for the 21st century.

The authentic learning framework researched, developed and adapted to an online learning setting by Jan Herrington, Anthony Herrington, Thomas C. Reeves and Ron Oliver provides learning design guidelines for translating the pedagogical ideas of situated learning and cognitive apprenticeship into practice. It contextualizes knowledge and thus facilitates transfer of learning and supports the development of more complex problem-solving skills. (Herrington et al., 2014; Leberman et al., 2006). Instead of physical realism, the framework emphasizes cognitive realism (Herrington & Herrington, 2006). In a nutshell, this means that the authenticity of the physical setting where the learning takes place is less important than employing similar cognitive processes as the applying of the knowledge in a real-world setting would require. It is thus possible to reach a high level of authenticity of learning in an online learning environment, even without developing costly simulations and multimedia elements. Gulikers, Bastiaens and Martens (2005) also came to this conclusion when they studied the effectiveness of what they described as an "authentic" e-learning environment, compared to a "less authentic" one. The "authentic" environment simulated an actual workplace context with media-rich content, whereas the "less authentic" one was a simple, text-based e-learning environment. In both cases, students were given a similar authentic task. The findings refuted the hypothesis of the "authentic" environment

being more effective; measured both by student performance and their perceptions of the learning environment, there was no significant difference. As Gulikers et al. (2005) conclude, the authenticity of the task is a more important design feature than the realism of the learning environment. As Herrington and colleagues (2014) describe it, the physical verisimilitude is not equally significant in creating an authentic learning experience, as is cognitive realism that arises from students being able to immerse in engaging, complex tasks.

In the context of a professional development program that aims at supporting professional growth and at enabling conceptual change, it is therefore crucial to bear in mind the "natural" learning processes and activities that teachers engage in at the workplace (see Vermunt & Ededijk, 2011). As teachers naturally learn by experimenting, considering their own practice, sharing ideas with others, and by being exposed to classroom situations where not everything goes as planned (Bakkenes et al., 2010), an authentic professional development program based on cognitive realism should support these processes rather than introducing something completely different. For example, Bakkenes and colleagues found out that the traditional content and reproduction-oriented learning did not occur in teachers' learning at all.

The framework of authentic e-learning suggests that learning is most efficient in learning environments that feature the following nine elements (Herrington et al. 2010):

1. Authentic context
2. Authentic tasks
3. Access to expert performances and the modeling of processes
4. Multiple perspectives
5. Collaborative construction of knowledge
6. Reflection
7. Articulation
8. Scaffolding and coaching
9. Authentic assessment.

None of these elements is new as such; instead they are based on a myriad of earlier research and literature. For example, Brown, Collins and Duguid distinguished between *authentic* and *school activities* as early as in1989 and argued that authentic activities were necessary in order for students to experience the

meaningful and purposeful actions of practitioners. They also introduced the idea of collaborative problem solving and displaying multiple roles needed to carry out a cognitive task (Brown et al., 1989). Jonassen (1995) described seven qualities of meaningful learning with technology: active, constructive, collaborative, intentional, conversational, contextualized, and reflective. McLellan, (1996) introduced a situated learning model that consists of stories, reflection, cognitive apprenticeship, collaboration, coaching, multiple practice, articulation of learning skills, and technology. Many of the elements have also earlier been identified as success factors of professional development programs for teachers. However, the authentic e-learning model combines them to a practical learning design framework that was used to guide the learning design of the 21st Century Educators pilot program.

Providing an **authentic context** goes well beyond providing real world examples to illustrate a concept or a phenomenon. As Herrington et al. (2010, p.19) define it; an authentic context "needs to be all-embracing, to provide the purpose and motivation for learning, and to provide a sustained and complex learning environment that can be explored at length". An authentic context must reflect the way the knowledge will be used in real life. Therefore, quite contrary to the ideas of the cognitive load theorists and traditional instructional designers, the authentic learning design should be non-linear and preserve the complexity of the real life setting. This view aligns with the identified success factors of teacher professional development. For example, Rienties et al. (2013) emphasize that it is particularly important that "professional development is embedded into the academic's daily practice and not just concentrated upon in one particular context" (pp. 122-123). Borko (2004) argues that due to the sociocultural nature of learning, professional learning should take place in the multiple contexts where work happens, including the classroom and the different interactions with the professional community.

Authentic tasks are a central feature of an authentic learning design. According to Herrington et al. (2010), these are activities that not only have a strong real life relevance, but they are also equally ill defined, open-ended and complex as real world problems tend to be. Authentic tasks are long-term efforts and result in a polished product that has value in its own right, not only as a course assessment. The importance of such tasks was found critical in teacher professional development already more than a decade ago: Ling and MacKenzie's (2001) research indicated that successful professional development is a long-term process that offers opportunities for practical implementation. The same has later been

confirmed in other studies. (E.g. Guskey, 2002; Lawless & Pellegrino, 2007; Garcia & Roblin, 2008).

Expert performances and the modeling of processes is an idea that originates from apprenticeship learning, where newcomers to a certain field hone their skills under the guidance of an expert or senior colleagues. Translated into a 21st century online learning context, this means providing students with access to expert thinking, allowing them to observe how experts solve problems, and enabling learning from colleague students with various levels of expertise. The idea of apprenticeship can also be found behind Lave and Wenger's influential and widely studied ideas of situated learning, legitimate peripheral participation and communities of practice (Lave & Wenger, 1991). Along with the development of information and communication technologies, digital networks and virtual reality technologies, the question of online communities of practice has gained considerable attention and the difficulties associated with it have been identified widely (see Liu, 2012 for an extensive review).

Promoting **multiple roles and perspectives** ensures that students are exposed to controversies, debates and discussion that are relevant to the content area. Students must be encouraged to express their own perspectives, explore issues from different points of view, and they should have access to various sources of information rather than a single textbook or teacher's lecture notes. As Herrington et al. (2010) point out, "simple accumulation of practice from a single perspective is not sufficient to ensure expertise…complexity can help to enhance a student's understanding of the subject area" (p.26). The benefits of an atmosphere that allows different perspectives, promotes dialogue and encourages interdisciplinary collegiality have been identified in different online professional development studies worldwide. For example, Garcia and Roblin (2008) found that participants benefited from the "convergence of multiple viewpoints, opinions and experiences" (p. 107). Löfström and Nevgi (2007) similarly observed the advantages of providing teachers with the opportunity to learn from each other's work as it offered new and refreshing points of view that enhanced one's work.

Collaborative construction of knowledge is another key characteristic of the authentic learning model, and the benefits of collaborative learning have been widely acknowledged. However, as any education professional will observe, simply putting students into groups and asking them to work together will not necessarily lead to collaboration. Herrington et al. (2010) make a distinction between collaboration and simple cooperation, and list measures that will promote collaboration, such as learning design that requires pair or group work, and

appropriate incentive structures for group achievement. The advantages of collaborative learning have been widely discussed in the context of online professional development. The success factors of professional development identified in earlier research include, for example, collegial sharing (Ling & MacKenzie, 2001), interdisciplinary teamwork (Garcia & Roblin, 2008), as well as interaction and collaboration between participants (Liu, 2012). On the other hand, online collaborative learning is not easy. Liu (2012) observes that online professional development programs are often completely lacking collaborative elements. In an international benchmarking study, collaborative construction of knowledge was identified as the least strongly implemented element of authentic learning in many online programs (Leppisaari et al., 2013).

In order for meaningful **reflection** to happen, Herrington et al. (2010) suggest that the authentic context and authentic tasks must first be in place. They argue that typical prompts to reflect and questions about the content are insufficient because reflection does not take place in a vacuum but because the situation calls for it. Therefore, an authentic learning design encourages and promotes reflection by requiring students to make decisions about how to complete the tasks, by presenting materials in a non-linear fashion that allows students to return to them and act upon reflection, and by offering opportunities to compare one's thoughts to the ideas of other learners, experts, and the teacher. The opportunity for sustained reflection has been widely recognized as a feature of quality professional learning (e.g. Lawless & Pellegrino, 2007; Garcia & Roblin, 2003; Clegg, Tan, & Saeidi, 2002). Schön (1983) introduced the distinction between reflection on and in action. The first takes place when one contemplates on their performance afterwards, whereas the latter refers to conscious reflection during the performance. According to Schön (1983), the latter should be an integral part of professional development. However, in order for this to happen, the activity must be a process – an authentic task - rather than a single, isolated operation.

The requirement of reflection is closely related to **articulation**. Articulation is encouraged when the tasks require the students to discuss their growing understanding, negotiate meaning, as well as publicly present and defend arguments. In Garcia and Roblin's (2007) research context, weblogs were used as reflective diaries that were also accessed by the other participants. They found that promoting articulation this way in online professional learning had a positive impact on many aspects of learning: it enhanced individual and group reflection, the development of metacognitive abilities, creativity and interaction between colleagues. It also promoted collaborative knowledge construction in a way that

was deemed "highly superior to what has been achieved with other similar groups of students" (Garcia & Roblin, 2007, p. 112).

The role of the instructor is quite different in an authentic e-learning context than in a more traditional, systems approach model. Instead of simplifying and breaking down the content into parts, the teacher facilitates the learning process and helps the learners deal with the inherent complexity of the context and the tasks at hand. An authentic e-learning course "provides for **coaching** at critical times, and **scaffolding** of support, where the teacher provides the skills, strategies, and links that the students are unable to provide to complete the task" (Herrington et al., 2010, p. 35). This aspect does not come up in professional development literature as widely and frequently as the previously mentioned elements of authentic e-learning. Ling and MacKenzie (2001) point out that successful professional learning is well supported, but in general the facilitation of online professional learning for teachers in higher education has not been extensively researched.

Finally, **authentic assessment** is a necessary part of the learning design. In order for assessment to be considered authentic, it must be seamlessly integrated in the learning process and the activities, instead of introducing an add-on or a separate stage in a linear process. Moreover, there should be multiple indicators of learning, students must be provided the opportunity to be effective performers with the knowledge they have acquired, and they must spend significant time and effort in collaboration with others. The question of assessment has been discussed in professional development research even less frequently than scaffolding and coaching – typically, the professional development workshops offered in universities do not involve assessment and accreditation. However, in the case of a full postgraduate certificate program, assessment is an inseparable and crucial part of the learning design.

Table 3 summarizes how the elements of authentic e-learning were implemented in the learning design of the 21st Century Educators program.

Element of authentic e-learning	**How it was implemented in the design**
Authentic context	• Studying alongside work and using one's classroom as a part of the learning environment allows for immediate application of the skills and knowledge in an authentic context. • A non-linear learning environment was created using blogs, Google tools and

	online tools of one's own choice instead of only using a traditional LMS. • Participants can choose to concentrate on phenomena relevant for their work instead of forcing exactly the same topics for everyone.
Authentic tasks	• Each module includes a long term project (6 months) that involves applying new theoretical knowledge in one's teaching • Authentic product: a digital presentation that draws together all stages of the project (in many cases this also turned to be a real life conference presentation). • The participants find sources for their projects themselves instead of being given a list of required reading.
Access to expert performances and modeling of processes	• Plenty of collegial sharing and learning from expert colleagues through blogs, discussions and team projects. • Networking with international experts through social media tools.
Multiple perspectives	• Working in multidisciplinary, international teams, blogging and online discussions invite to explore phenomena from various perspectives. • No textbook or lecture notes. Instead, multiple voices represented through different media; research papers, blogs, news articles, TED talks and other resources. • Participants were encouraged to find, evaluate and share resources themselves.
Collaborative construction of knowledge	• Projects and development tasks require teamwork. • Blog writing and online discussions are aligned with learning goals to promote collaboration • Peer feedback and peer evaluation are invited and required.
Reflection	• Frequent blog tasks for constant reflection on readings, phenomena discussed and the authentic projects being completed. • Blog commenting and discussions related to readings and projects promote collaborative reflection and comparing of ideas.

Articulation	• Blogs and discussions are used for articulating one's growing knowledge throughout the learning process. • Genuine collaboration and working towards a common project requires negotiating meaning and establishing shared understanding. • Blog writing and digital online presentations require presenting and defending arguments publicly.
Scaffolding and coaching	• Each learning team has a designated team facilitator. • Feedback from program coordinator. • Scaffolding through learning design. • Discussion forums for learners to share good practices and help each other.
Authentic assessment	• Blogs are used as e-portfolios where different phases and aspects of the learning process are documented in a reflective manner. • Assessment is integrated into learning tasks. • All tasks and readings build up to the authentic project. • Learning process is assessed instead of separate assessment tasks at the end. • Group efforts are evaluated.

Table 3. Implementation of the elements of authentic e-learning in the learning design of the 21st Century Educators program.

Finally, the authentic e-learning philosophy to learning with technology differs fundamentally from some, more commonplace approaches. Instead of seeing technology primarily as a method for delivering and presenting instructional resources, authentic e-learning leverages technologies as cognitive tools. Herrington et al. (2010) distinguish between "learning from" and "learning with" computers – the first refers to technology as a disseminator of content and is more common than the latter. For example, Gagne et al. (2005) describe technology-enhanced learning either as just-in time learning where "…information or instruction is delivered precisely where and when it is needed…often in a format preferred by the user", or as modular learning where "information covering different topics is delivered to students as individual courses or units of instruction…students often progress through the course material at their own pace" (p. 213). Almost a decade later, these descriptions still illustrate what typically

is understood as "e-learning" in higher education. In the cognitive tools approach of authentic e-learning, technology functions as "an intellectual partner to enable and facilitate critical thinking and higher-order learning", and learners use "…media and technology as tools for analyzing the world, accessing and interpreting information, organizing their personal knowledge, and representing what they know to others" (Herrington et al., 2010, p. 8). The authentic e-learning approach is thus better aligned with the 21st century learning needs, as well as professional learning aiming at transformative professional growth.

3.4 Multicultural collaborative e-learning

There are various approaches to what culturally aware learning design is like. Many e-learning providers have made different attempts to localize e-learning. For example Morse, (2003) sees that increasing awareness of cultural differences has practical implications for the future of online learning in the form of market segmentation. However, as Chowdhury (2009) points out, localization can be mistakenly understood as a "quick fix" to complex cultural issues. He also identifies other features that contribute to the success of intercultural communication, such as ability to relate to similar things done differently, work ethics, and cultural sensitivity. Also McLoughlin (2007) suggests that a flexible and pluralistic approach to design is more fruitful than the localization of resources, which she believes often to be a "superficial solution to accommodating social and cultural diversity" (p. 246) by changing surface level items such as icons and colors. By a flexible and pluralistic design McLoughlin refers to cultural pluralism in learning design, pedagogy and other aspects of the learning experience. She proposes three practical ways of doing this:

1. Using learning theories and models of cognition that accommodate inclusivity
2. Recognizing the cultural diversity in learning environments
3. Designing learning and assessment tasks that align with culturally inclusive learning outcomes and pedagogies. (McLoughlin, 2007)

As for learning theories that support inclusivity, McLoughlin introduces approaches such as situated cognition, community of inquiry and cognitive apprenticeship, all of which she believes to offer "a robust theoretical basis for the

design of culturally-specific environments" (2007, p. 247). Her observations thus align seamlessly with the pedagogical worldview of authentic learning. Also Hofstede (2007) believes that instead of ironing out culture and accommodating for the familiar, multicultural e-learning may serve as an opportunity for increased cultural understanding. He sees cross-cultural e-learning as a mirror to a different culture. Similarly, Raybourn (2012) suggests that cultural aspects should be taken into consideration when designing online learning environments so that they would better enable co-creation of narratives and support intercultural understanding between participants. Liu (2007) sees online learning as a way of developing social capital. He believes that "through online learning communities, both instructors and students from different cultural backgrounds can reduce cultural misunderstanding and build mutual respect and trust to improve the quality of education" (p. 47). Whereas this noble thought will probably not be automatically realized every time learners and instructors from different cultures work together online, it is certainly a worthy goal for an international e-learning program. McLoughlin (2007) provides a helpful guideline in striving for culturally inclusive learning design summarized in three examples of program delivery, varying from a low level of cultural inclusivity to medium and high levels. This is illustrated in Table 4.

Low level	Medium level	High level
• Online resources which recognize student differences without recognizing learning differences and differences in strategic approaches. • No interaction or dialogue. • Learning is information transmission • Summative assessment that focuses on products, not processes • Low level of constructive alignment.	• Recognizes that learners have different strategies and adaptation methods • Does not include culturally inclusive assessment practices. • Focuses excessively on teaching approaches rather than learning. • Moderate level of constructive alignment.	• Recognizes that while there are differences among students, their learning needs are best served by a focus on designing constructivist learning activities that recognize that: • students may adopt different learning approaches and have different levels of prior knowledge • cultural differences and perspectives are assets, not liability • create a motivating climate by setting challenges • assessment should be authentic.

Table 4. Different levels of cultural inclusivity. Adapted from McLoughlin (2007, p. 255-256).

When designing for a multicultural audience, it is also important to be aware of definitions and not fall into the pit of oversimplifying the concept of "culture". Typically, when talking about culture, we tend to think about ethnic and national cultures and if we extend the discussion to "learning cultures", we focus on the implications of the ethnic or national culture to learning styles, preferences or prior experiences. However, culture is more than ethnicity or nationality. In fact, Hewling (2005) believes that focusing on ideas of culture associated with ethnicity or nationality is actually not very beneficial when examining intercultural activity in online learning as the individual learners bring such a complex cocktail of cultural

influences and determinants into the learning context. This view is also supported by others, for example, Joy and Kolb (2009) found out in their study that the scientific background had a greater impact on learning styles than ethnic culture. Lindblom-Ylänne, Trigwell, Nevgi and Ashwin (2006) have observed a correlation between teacher's discipline and her or his teaching methods and conceptions of teaching and learning. For example, teachers of physical sciences, engineering and medicine were found to favor more teacher-centered approaches whereas teachers of social sciences and humanities apply more student focused methods.

This is not to say that academic traditions and learning culture do not also vary in different countries. In these cases it can be hard to determine whether the different practices are due to the different culture in an ethnic / national sense, or whether the practices have historical background that derive from other variables. For example Syynimaa, Isomäki, Korhonen and Niemi (2010) report of difficulties in a Finnish-Russian collaborative online program that emerged from the students from the two countries being used to different learning methods, different roles of students and teachers, and different type of goal-setting for studies. Of course, academic traditions in different parts of a given country, or even between different institutions within a country may vary. They also evolve over time, which creates another level of cultural difference between students of different age groups.

It is also helpful to perceive culture as an evolving, living thing, not only as something that is brought into the online learning context from outside. Learning culture is also created inside the learning context. Contemporary learning theorists focus increasingly on the social nature of the meaning making process. As we engage in communities of discourse and practice, our knowledge and beliefs are influenced by those communities. Schein (1992) points out that "the most useful way to think about culture is to view it as the accumulated, shared learning of a given group, covering behavioral, emotional and cognitive elements of the group members' total psychological functioning" (Schein, 1992; 10). In other words, the group starts creating its own culture from the moment its members start working together. Also Hewling (2005) sees culture as "doing" and online classroom as an evolving site of cultural creation. Therefore, facilitating the "doing" and supporting the formation of a learning community are in a central role. This is not a straightforward task: online collaboration is always more easily said than done and it becomes especially challenging when people with very different cultural backgrounds are asked to collaborate virtually. On the other hand, earlier research has also identified advantages of online collaboration compared to face-to-face collaboration. Anderson and Haddad (2005) studied voice, deep learning and

student sense of control over their learning in face-to-face and online learning environments in an American higher education setting. They found that as long as the online environment was designed in a way that required interaction and discussion, female students seemed to experience more voice in an online environment than in a face-to-face classroom. They conclude that "voices that may not emerge in a face-to-face classroom due to gender-based role socialization, cultural differences, or individual personality traits like shyness are heard in the online course…" (p.11).

Hofstede (2007) shares his experiences from e-learning team projects across European and Asian countries and points out that whereas some teams experienced great difficulties, some others seemed to thrive. He has also observed that cultural differences have the potential of leading to violent crises between team members but at the same time he reminds us that other factors, such as personality differences, team dynamics and supervision also have a major role to play. Eberle and Childress (2007) point out that when designing culturally diverse online learning, it is important to consider a variety of learner characteristics, some of which are very practical. Examples of these include clientele identification, abilities, language, culture, gender, time barriers and technology. Indeed, the participants to 21st Century Educators were a diverse cohort in all these areas: they had different career paths and levels of prior knowledge, different levels of technology experience, and various different native tongues.

4 METHODOLOGY OF THE STUDY

The research task of the present study was to define design principles for an effective online professional development program for teachers in the 21st century higher education context. This question has been approached with the help of an actual educational intervention that has been developed, tested, evaluated and refined simultaneously with and directly informed by the research process. Such research endeavors are referred to as design-based research (Kelly, 2003), development research (van den Akker, 1999), design experiments (Brown, 1992), or, more specifically in the context of the present study, educational design research (McKenney & Reeves, 2012).

Design research shares some goals and features with action research in that both approaches have a strong practical focus: both identify real-world problems and seek solutions and improvements through research (McKenney & Reeves, 2012; Eskola & Suoranta, 1998). One of the prominent differences of the two approaches is that design research aims at generating theory or design principles that can be applied in other contexts beyond the one of the research. The research task at hand also included features of a case study in that it focuses on one specific educational intervention. However, the case study as a research approach aims at explaining, exploring and describing a phenomenon that the researcher typically has little control over (Yin, 1989), instead of seeking to intervene. As the research task at hand involved both developing an intervention and generating design principles applicable in other situations, design research was deemed the most appropriate approach. During the research process, data has been collected and analyzed at different stages, using qualitative methods such as thematic analysis and narrative method. The four original articles that form the empirical part of the dissertation all focus on different stages and perspectives of the research process. Each article contributes to the overarching research question from a different angle, based on different sets of data collected at different stages of the research. The understanding gained from results of each study has also been directly used to refine and further develop the educational intervention.

4.1 Educational Design Research

4.1.1 Why educational design research?

Design-based research is a research methodology that has emerged and been developed for educational research especially during the past decade (Anderson & Shattuck, 2012), although its roots are frequently traced back to the work of Ann Brown (1992). The need for the design-based approach has risen from the lack of impact that educational research has traditionally had on practice (e.g. Reeves, 2000). Anderson and Shattuck (2012) have challenged their audience to name one research result that has made a difference in their educational practice – quite depressingly, many educators are either not able to name even one, or can only think of very trivial examples.

At least three key reasons have been suggested to have caused this obvious shortcoming of much of educational research. Firstly, learning environments are extremely complex systems with a great variety of interacting variables that influence the learning outcomes and processes. Controlling all these variables is extremely difficult if not impossible (Phillips et al., 2012). Cobb et al. (2003) call for a greater understanding of *learning ecologies*, i.e. the complex, interacting systems that involve multiple elements of different types and levels. They point out that complexity is a "hallmark of educational settings" (p.9) and they cannot be reduced to "a collection of activities or a list of separate factors that influence learning" (p.9). Despite of the natural complexity of learning ecologies, experimental designs are typically conducted in controlled laboratory-like environments, with the assumption that the phenomenon will function in a similar manner in the real-world setting (Phillips et al., 2012). However, when the unpredictability and messiness of real life with all its countless, sudden incidents such as illness, work related travel, family commitments and the like are added into the equation, the actual outcomes may be something completely different. Barab and Squire (2004) remind of the importance of context for learning and cognition and warn that examining these processes as isolated variables within a laboratory setting will inevitably lead to an incomplete understanding of their occurrence in a more authentic setting. Similarly, Cobb et al. (2003) emphasize the importance of "placing theory in harm's way" and developing and testing theoretical knowledge in actual settings – "the theory must do real work" (p.10).

Finally, especially e-learning related research is often conducted by comparing one group of learners who use a certain technology with another who are not, attempting to find out whether there is any difference in the performance of the two groups (Phillips et al., 2012). However, this approach has often resulted in studies that contribute little to the field of research, as they almost without exception end up with "no significant difference" (Reeves, 2011). Reeves suggests that such studies tend to concentrate on wrong variables: Instead of pedagogical dimensions, such as design factors, feedback, or aligning learning outcomes and assessment, the focus tends to be on comparing instructional delivery methods, such as traditional versus online instruction, face-to-face versus video lectures, or computer-based versus pencil and paper assessment. The drawback of these approaches is that the change of delivery method or technology is not yet transforming education towards a less content-driven and more 21st century skill oriented way.

4.1.2 What is educational design research?

Educational design research is the systematic study of designing, developing and evaluating educational interventions as solutions to actual, real life educational problems and challenges. (Plomp 2007). I chose educational design research as the methodology to guide this research process because I was faced with a complex educational problem that had to be addressed in a way that would have potential for high-level practical impact and relevance (Plomp, 2007; Anderson & Shattuck, 2012). The real-world relevance and rigor is achieved by moving from simply observing and describing what happens in a classroom to "systematically engineering these contexts in ways that allow us to improve and generate evidence-based claims about learning" (Barab & Squire, 2004, p. 2). In the words of McKenney and Reeves (2012), educational design research is "a genre of research in which the iterative development of solutions to practical and complex educational problems also provides the context for empirical investigation, which yields to theoretical understanding that can inform the work of others" (p. 19). Kelly (2007) recommends educational design research when there is no commonly accepted agreement or "how-to-guide" on how the problem at hand should be approached, or when literature reviews together with an examination of other solutions elsewhere do not solve the problem (Kelly 2007). This was exactly the case with this study.

Design-based research, or educational design research, is a practically oriented methodology that shares many epistemological and ontological underpinnings with the longer-established action research; however, design research has its own crosscutting features that differentiate it from action research. Cobb et al. (2003) have identified five distinctive characteristics of design-based research, or "design experiments" as they refer to the methodology.

1. The purpose of design-based research is to develop theories about both the learning process and the means designed to support it.
2. The methodology is highly interventionist: the aim is to test innovations by introducing new learning designs based on prior research.
3. The aim is simultaneously to develop theories and put them to the test in a real setting.
4. The methodology is iterative and features cycles of invention, evaluation and revision based on systematic attention to evidence.
5. The theories developed during the process must be able to inform prospective design: it does not suffice to conclude that the suggested intervention works or does not work – instead, the design principles must address how, when and why it works, as well as specify in detail what the intervention exactly is.

In summary, Cobb et al. (2003) conclude that design experiments are "extended (iterative), interventionist (innovative and design-based), and theory-oriented enterprises whose 'theories' do real work in practical educational contexts" (p.13).

The goal of educational design research is thus instead of attempting to compare whether method A is better in a given context than method B, to develop an optimal, research-based solution for a complex educational problem. Therefore, educational design research provides a direct link between research and practice. This improves the chance of meaningful impact considerably (Reeves, McKenney, & Herrington 2011; van den Akker, 1999). The definition by Anderson and Shattuck (2012) resonates especially well with the goals of the present study. According to them, design based research is

> …a methodology designed by and for educators that seeks to increase the impact, transfer and translation of education research into improved practice. In addition, it stresses the need for theory building and the development of design

principles that guide, inform, and improve both practice and research in educational contexts. (Anderson & Shattuck, 2012, p. 16).

As McKenney and Reeves (2012) point out, the distinctive characteristic of the theoretical orientation in educational design research is that in addition to framing the research it also shapes the design of the intervention. The design is based on an initial hypotheses deriving from earlier research and practitioners' experience, and during the research process these are validated, refuted or refined through empirical testing. The process involves multiple cycles of development, testing and refinement as illustrated in Figure 1.

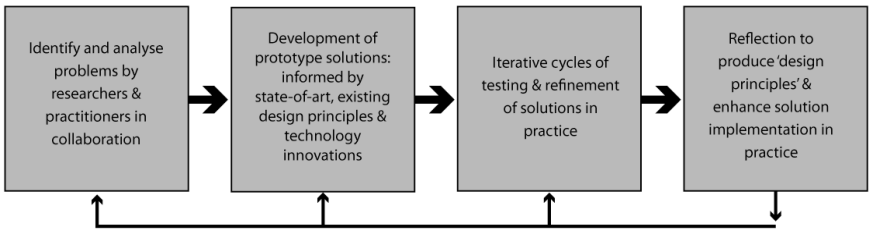

Figure 1. Stages of educational design research (Reeves, 2006, p. 59).

4.1.3 Challenges of educational design research

Being a very pragmatic and practice-oriented methodology, design-based research has sometimes been criticized for being an evaluative and development activity rather than research. Barab and Squire (2004) admit that at the first glance, design-based research indeed does resemble formative evaluation methodologies in that it, too, is naturalistic, process-oriented and iterative. Moreover, design-based research always involves stages of evaluation as the design is being tested, assessed and refined (McKenney & Reeves, 2012). However, Barab and Squire (2004) point out a fundamental difference between formative evaluation methodologies and design-based research: whereas formative evaluation and instructional design models aim at improving the value of a particular design or artifact, design-based research uses design to develop broader models of human learning. Thus design-based research aims further than at meeting local needs; it seeks to advance theoretical understanding by uncovering, exploring and confirming theoretical relationships (Barab & Squire, 2004). Simply developing an educational design, without the

research to guide the iteration and the research results to offer insight to form the design principles and new theoretical knowledge, cannot be considered educational design research. I would argue, however, that in practice the distinction is not quite as clear-cut: design research does involve stages of evaluation, and at these stages elements of evaluation research may be applied. It must be emphasized, though, that evaluation research is not the same thing as formative evaluation of an educational intervention. Phillips et al. (2012) point out that studies of the effectiveness of e-learning are typically not purely evaluative or purely research-based, instead there are varying degrees of the two purposes present at different times. They describe evaluation as "gathering information to help make judgments about the value and worth of an e-learning artifact or environment that can inform decision-making" and research as "gathering information to assist our understanding of how people learn using an e-learning artifact or environment" (p. 76). Table 5 shows how evaluation-research regarding learning environments, learning processes and learning outcomes has different goals depending on whether the emphasis is on evaluation or on research.

Focus	**Evaluation**	**Research**
Learning environments	Judgments about the usability of the e-learning artifact in the context of the particular learning environment	Understanding the characteristics of e-learning environments which effectively facilitate learning processes and learning outcomes
Learning processes	Judgments derived from actual use, about the way the learning environment was designed and how it could be improved	Seeking deeper understanding about ways that learners use and interact with the e-learning environment
Learning outcomes	Judgments about whether the e-learning environment works. How effective was it in facilitating its desired outcomes?	Seeking deeper understanding about how and why the learning environment engaged particular learning processes and led to particular learning outcomes

Table 5. Goals of evaluation and research in evaluation-research activities. Adapted from Phillips, McNaught and Kennedy (2012, p. 77).

While the evaluation part of the process must go beyond feedback surveys and incorporate multiple perspectives and sources of data in order to result in meaningful and reliable findings that can be used to inform practice, the research part searches for new knowledge that contributes to scientific understanding. (Phillips et al., 2012; McKenney & Reeves, 2012). While in practice it is unfortunately not uncommon that online programs are developed simply by adapting previous face-to-face courses into a LMS and the evaluation involves as little as the collecting of student feedback, I agree with Phillips and colleagues (2012) who argue that "e-learning artifacts and environments do not spring to life fully formed and perfect" (p.106). To ensure the quality of an e-learning intervention, it has to go through cycles of design, development and evaluation. This involves evaluation research at critical stages of the e-learning life cycle.

Another challenge of design-based research endeavors is the amount of time and resources the iterative process requires. Multiple iterations are a necessity, and the whole lifecycle of the process may become longer than expected. It is also typical for new research questions to emerge from the results of the evaluations, which makes the process difficult to predict and plan accurately ahead of time. As Cobb et al. (2003) point out; the educational design researcher tends to deepen her understanding of the investigated phenomenon while the experiment is already and still in progress. The resources required depend on the nature of the intervention. Often the intervention is not very large: Anderson and Shattuck (2012) conducted a review of design-based research articles published during the first decade of the 21st century and found out that the majority described relatively small-scale interventions in the life of individual teachers and schools. In the case of this study, the intervention was extensive (a full postgraduate certificate program that run for 1,5 years) and rather ambitious in implementation (in a multicultural setting that was new to the researcher and developers). It was clear that the iteration could not mean the repetition of the entire program. Therefore, the decision was made that the three modules of the program would serve as the interventions: evaluative data was collected after each module and the redesign was applied to the next module. Figure 2 illustrates the iterative lifecycle of the research project.

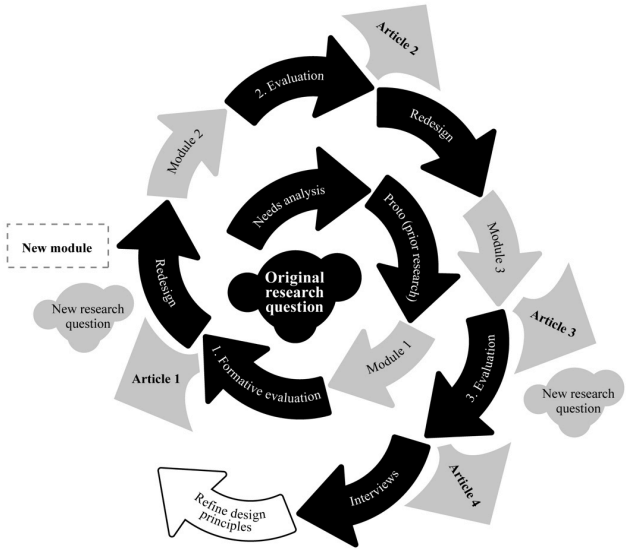

Figure 2: The stages of the educational design research process in the study.

Another inherent challenge of design-based research is the dual role of the researchers as designers and researchers at the same time. The design researcher simply cannot stay independent and distant from the learning environment. This intimate involvement in the process raises a fundamental question about the credibility of the assertions generated through design research (e.g. Barab & Squire, 2004). The design researcher faces the challenge of balancing objectivity and detachment with the requirement of "comradeship, enthusiasm, and a willingness to actively support the intervention" and she needs wisdom to "walk this narrow line between objectivity and bias" (Anderson & Shattuck, 2012, p. 18). The challenge is also familiar to many other forms of qualitative research, for example anthropology. It is also important to bear in mind that design research as such is not a method, instead, as Barab and Squire (2004) point out, the design researcher must apply appropriate methods in their work and be aware of the claims based on researcher influenced contexts. On the other hand, while the intimacy undeniably places certain limitations on design-based research, it can also be seen as the strength of the methodology.

As educational design research is an iterative process, it may be hard to determine when the process ends. McKenney and Reeves (2012) mention that very long-term projects may come to a closure because the problem is solved and enough of theoretical understanding is generated. However, they go on to point

out that in most cases projects end due to occurrences such as ceasing of funding or the departure of researchers. This particular project came to a natural end when the tryout of the program ended. The participants graduated and received their certificates from the Ambassador of Finland to the UAE in a graduation ceremony, and demonstrated their work at a concurrent conference. The final cycle of evaluation took place 3-4 months later as I interviewed eight of the participants. However, as McKenney and Reeves (2012) point out, when educational design research has been done well, the interventions created will outlive the design research projects that created them. Also in the case of this project, the ending of the pilot does not mean that the work is done. All the insight gained has been and will continue to be used for continuous developing, both refining the existing program and expanding it with further modules. New people have already enrolled both in the UAE and in other parts of the world and the journey goes on.

4.1.4 Research design

Educational design research is not a method, it is a research approach; a genre of inquiry. The researcher must still be able to choose the appropriate methods of inquiry that will help gather and analyze the type of data that will best provide insight to the research questions. Both qualitative and quantitative methods can be used within the research framework of educational design research.

4.1.5 Choosing the method

The research task I had at hand directed me towards qualitative research methods. Qualitative research has an interpretive and naturalistic approach to its subject matter. It typically takes place in the natural setting of the phenomena being examined, and instead of predicting or generalizing, it attempts to make sense and interpret. Savenye and Robinson (2005) define qualitative research as "…research studies that aid us in understanding human systems, whether large-scale, as in cultural systems, or smaller-scale, for example, in one college classroom…" (p. 67).

With regard to the evaluation of the program's learning design, I was interested above all in what the learner experience was like. Although I naturally wanted to know how many of the participants had for example experienced problems with online collaboration, this alone would not solve the design challenge. Additionally, and, I would argue, more importantly from the perspective of the research task, it

was crucial to understand what these problems were exactly, how they affected the work of the participants, what measures they took to solve the problems and what factors they found as supporting or hindering their learning process. Therefore, rather than finding out whether or not they found different elements of the authentic e-learning design successful or whether or not they liked the different aspects of the program, I wanted to know what it felt like to participate in the program and work together in an online environment with the multicultural cohort of learners. I wanted to understand the program as experienced by the participants, in order to gain a fuller, deeper and more detailed understanding that would allow me to work towards meaningful design principles. Creswell (1998) talks about a "complex, holistic picture" in his definition of qualitative research and emphasizes that the output of such an inquiry is a "complex narrative that takes the reader into the multiple dimensions of a problem… and displays it in all of its complexity" (p. 15). Moreover, in evaluating the impact of the program to the professional development and growth of the participants, I was interested in what meaning the participants themselves made of it, how they experienced it and how they perceived their developing professional identities. Thus I did not find the idea of applying a test for experimental and control groups beneficial or feasible; instead, I decided to collect open-ended data that would allow me to capture people's experiences as described in their own terms and words. Finally, the nature of the research task required that the people involved and their interactions with each other and the program being developed and refined would be studied in the actual authentic setting. Studying the successfulness of an educational intervention cannot yield reliable results if all the real life occurrences and surprising elements are removed - after all, the program must be functional in the complex and somewhat unpredictable settings of real world. Similarly, Creswell (1998) points out that when the participants of a study are moved away from the natural setting, the result may be decontextualized and contrived findings.

4.1.6 Data collection and analysis

Each of the articles that form this study had their distinct research question and served a different purpose in painting the whole picture. The different research questions called for different types of data: the data for articles 1, 2 and 3 was collected with two surveys with open-ended questions, and article 4 builds upon narratives collected from the participants to the program. In addition to these

clearly defined and more formal ways of gathering data, it is also important to point out that I was involved in the entire program as the program director and leading learning designer, which allowed me to observe the entire process first-hand and gave me plenty of tacit information about what was going on with the course, what was working, what was not and how the participants were behaving at different stages of the program. Whereas early practitioners of qualitative inquiry typically had the role of an outside observer who held the control over the entire situation (Erickson, 2011), in the case of this study the approach was participatory and collaborative. The insight gained during the observation had an impact on the design of the survey questionnaires - as I already had an idea of what the points of interest were, I was able to design questions that were relevant to the situation. The participants were thus dynamically and directly involved in the design process, rather than merely informants of a survey and passive research objects.

Another source of data that would potentially have been fascinating to explore was textual data in the participants' blogs. However, the researcher in me had to give way to the educator: I made a deliberate choice of not including the blogs a data sources because I did not want to risk their educational value. The purpose of the blogs was to offer a safe forum for reflection, articulation and discussion. The blogs were personal and I wanted the participants to feel ownership to them. Making these personal reflections subject to research could have had a negative impact on the depth, honesty and openness of the postings and related discussion, which, in turn, could have hindered the learning process and the development of a reflective practice. Moreover, although the blogs would have been a rich data source, they would have provided insight for a different research question altogether. Given that the primary research questions revolved around the participants' experience with the collaborative authentic e-learning program and finding the right balance in the learning design, the blogs could have overcomplicated the research unnecessarily. I tend to agree with Silverman (2000) who questions the value of adding multiple data sources in the hope that aggregating data would reveal "the whole picture" or an overall truth: he argues that this is often an "illusion which speedily leads to scrappy research based on under-analyzed data and an imprecise or theoretically indigestible research problem" (p. 99).

Surveys and interviews are very common both in quantitative and qualitative research. However, the central methodological issues for the two traditions differ: whereas quantitative research is typically concerned about the reliability of the interviews and the representativeness of the sample, qualitative research pays

attention to the authenticity of the understanding of people's experience, which is often seen to be best achieved by open-ended interview questions (Seale & Silverman, 1997). As Patton (1980) points out, open-ended responses on questionnaires are the most elementary way of collecting qualitative data and there are several limitations involved, such as writing skills of respondents, impossibility of extending the responses and the effort required to complete the questionnaire. These limitations could be seen in the present study as well: some respondents found the first questionnaire too long and onerous to fill out and the number of respondents to the second and third questionnaire was lower than the first one. However, like Patton (1980) concludes, even in the case of this "elementary level of measurement" (p. 29), the depth and detail of the actual lived experiences that are reflected in the replies can be remarkable and able to guide practice in an informed way. I found this to be the case also in the present study.

Table 6 summarizes the data collection during the research process.

Method of gathering	**When collected**	**Respondents**	**Used in**
Survey 1: open ended questions	After module 1 (January 2012)	26	Articles 1, 2 and 3
Survey 2: open ended questions	After module 2 (September 2012)	10	Articles 2 and 3
Survey 3: open ended questions	After module 3 (February 2013)	12	Article 3
Narratives (written and spoken)	3-4 months after the end of program (May-June 2013)	7 (2 spoken, 5 written)	Article 4

Table 6: Data collection during the research process.

In the case of all the three surveys, the data was analyzed thematically. As typical for qualitative data analysis, the data was continually categorized and recurring themes and patterns were sought. As Savenye and Robinson (2005) point out, all codes may be derived from the data or, depending on the research approach and design, one might use a set of initial codes derived from previous

research or an existing theory. My approach was the latter: To be able to evaluate the adequacy of the authentic e-learning model for the learning design, I used the nine elements of the authentic learning model to construct an analysis framework. The nine elements thus formed the set of initial codes that were used for the categorization of the data. The coding followed three steps: 1) respondents' comments were arranged into the nine categories; according to the element of authentic e-learning to which they best belonged (there were cases when a response was arranged in more than one category). 2) The categorized comments were sorted into challenges and opportunities regarding each given element, depending on the type of experience they reflected. 3) Recurring themes were sought within the categories, both in challenges and opportunities, and the responses were further arranged thematically. This three-step coding proved useful in revealing how the participants had experienced the different elements of authentic e-learning in the learning design, what was contributing to their professional learning in a positive way, and what the most important areas for improvement were. According to the iterative nature of educational design research, the results from the surveys were used for refining the program without delay, and the impact of the redesign was again evaluated in the next survey. Article 2 describes this iterative process and the utilization of the survey results in a greater detail.

Studies 1-3 were conducted using a similar process of collecting, analyzing and interpreting data. This process was found highly useful for the formative evaluation throughout the iterations. In general, the first studies pointed out what the most problematic areas were; what the sources of delight and frustrations were, as well as which aspects of the program were most rewarding for the participants. The surveys offered valuable glimpses into specific moments during the learning journey of the participants: The results expressed frustrations with team members publishing five blog posts at once the night before deadline leaving no time for comments and discussion, disappointments with the quality of team members' work when expectations had not been clearly articulated, as well as joy of discovery and success in implementing new technologies in one's classroom for real. But these were still fragments of understanding, as valuable as they were, like dots in a join-the-dots-game that had not yet been connected to reveal the whole picture. What were missing were the real stories of the real people that would help join the parts of the whole together. As the program developer, I wanted to understand what meaning the individual participants had made of the process, what they had felt at different stages of the course, what value they had found and what strategies they had employed in different learning situations, and with the help of this

information, I was hoping to construct a more comprehensive picture of the participants' learning experience. Moreover, I found it extremely important that the research process give voice to the participants, rather than just seeing them as objects of a study.

4.1.7 Narrative research

The research method that I found the most promising in answering to this research challenge was narrative inquiry. Although qualitative inquiry has a certain narrative touch as it in general "seeks to discover and to describe in narrative reporting what particular people do in their everyday lives and what their actions mean to them" (Erickson, 2001, p. 43), the distinctive characteristic of narrative research is that it is specially developed to study stories, narratives or descriptions of events (Riessman, 1993; Lieblich, Tuval-Maschiach, & Zilber, 1998; Polkinghorne, 2007). Quite contradictory to how the ideal of objectivity is traditionally perceived, narrative inquiry is specifically interested in life events as experienced by the people who lived them. At the heart of narrative inquiry is a story, and the aim of the researcher is to by immersing in that story, "learn how people as individuals and as groups make sense of their experiences and construct meaning and selves" (Chase, 2003; p. 80). As Polkinghorne (2007) describes it, narrative research "makes claims about how people understand situations, others, and themselves" (p. 476). As my research challenge was to gain a fuller understanding of the learning experience of the participants, both as individuals and as an interrelated group, narrative research provided useful tools to achieve that.

Narrative research is typically used in research situations that require a peak "behind the scenes". Narrative research is a way to immerse oneself in someone else's world and see the world through someone else's eyes. Lieblich et al. (1998) describe stories as a clear channel to learn about the inner world of individuals. Therefore, as Clough (2002) points out, stories can be used to uncover truths that could not be told otherwise. According to Gay (2012), narrative research has the potential to increase our understanding of the complexities of the classroom, as well as the nuances of the interactions that take place in that context. Lyons (2007) sees that narrative research is valuable in studying complex educational issues, such as contexts, culture, or individual students as learners.

Although narrative research is interested in the individual and their personal experience, this is not to say that the method would only yield very limited

knowledge restricted to a single case. Riessman (1993) finds narrative research especially fruitful in sociologically oriented investigations: narratives reveal things about social life that can easily be taken for granted or left completely unnoticed. She points out that "culture speaks itself through an individual's story" (1993, p. 5). There are several examples that illustrate the wider impact narrative research has had on practice. Lyons (2007) has recorded powerful examples from different professions, such as law, medicine and education, on how narrative research has helped deepening professional knowledge. Chase (2003) refers to how narratives of specific groups of people have led to growing understanding of those groups as well as to actual changes in cultural and political realities. In the light of these examples, I do believe that the narratives of the participants to the 21stCE provide insight that is applicable in a wider scale in the area of online learning design and facilitation.

In narrative inquiry, narratives are seen as both the method and phenomena of study. Narrativity can be perceived as a way of approaching the data, but also as a method of analysis, as well as a way of presenting the findings. Gay (2012) emphasizes the difference between narrative analysis and the analysis of narrative: in narrative analysis the researcher synthesizes descriptions of events through the narratives into a new narrative or story, whereas the analysis of narrative refers to collecting stories as data and analyzing common themes to produce a description that applies to all the original stories. The latter is a process commonly used in qualitative data analysis, either manually or with the help of specialized computer software. As Gay (2012) points out, this leads to a thematic, general analysis instead of emphasizing the unique aspects of each story. Narrative analysis can be tricky: unlike with content-based thematic approaches, there are no clear-cut starting-points, categories on which to focus, or even accounts of how to analyze the data (Andrews, Squire, & Tamboukou, 2008). There are a few conflicting approaches within the field, and even the definition of a narrative remains a matter of dispute. (Squire et al. 2008; Bold, 2012). In this study I adopt the approach described by Lieblich et al. (1998), which can be seen to be on the more practical side of the spectrum. They identify two main dimensions in narrative analysis: a) holistic versus categorical and b) content versus form. The approach I employ is what Lieblich et al. (1998) refer to as "categorical-content". The process of analysis follows four steps, which are described in full detail in Article 4.

4.1.8 Reporting the findings

Although the chosen research approach and methodology were found well suited for the study, they did pose some challenges with regard to reporting the study and writing the articles - neither educational design research nor narrative inquiry render themselves to typical academic reporting in a straightforward manner. The concern often associated with educational design research is that there is "too much story to tell" and the word count and other limitations of journal articles and conference presentations make sharing the intervention description, planning, methods, results and implications quite challenging (McKenney & Reeves, 2012). The same is true with narrative inquiry. The reporting often involves either long excerpts from the stories of the interviewees or narratives reconstructed by the researcher, and this, too, is often hard to fit into the standard research report model.

McKenney and Reeves (2012) recommend that the researcher break the research into interesting chunks that can either be individual micro-cycles of the process, or specific themes across several cycles. This, they claim, requires the ability of the researcher to see the different stories within the research. In this study, I have used a combination of the two suggested approaches. The articles are in a chronological order and they very clearly represent different stages of the research process. This allows the reader to follow the story as a journey that has a beginning, milestones, and an end. It is also interesting to see the autobiographical element of growing understanding in them. The articles can thus be also read as a story of personal professional growth as a researcher. On the other hand, the articles also examine different themes, thus each perceiving the phenomenon from a different perspective that contributes to the full picture. Some of the themes had not been decided from the beginning nor had they been a part of the original research question, but they arose from the reflections during the iterative process. This is often what happens with qualitative inquiry. According to Creswell (1998), the research questions evolve during the research process and in doing that they reflect the researcher's increasing understanding of the problem. Silverman (2000) points out, sticking to one's original research design is often not a virtue in qualitative research, instead, it may indicate "inadequate data analysis rather than demonstrate a welcome consistency" (p. 121). For example, the reflection that took place after analyzing the results of the first formative evaluation triggered the need to study the multicultural aspect of the program in more detail. In fact, the findings that derived from this "line of investigation" resulted in the decision to develop a

whole new module as an extension to the program that dealt with multicultural considerations in e-learning. At the time of writing this dissertation, the cycle has already moved forward again and the new module is being studied through evaluative research as a collaborative effort of the leading developer and students (Leppisaari, Jäntti, Mustonen, & Pratas, 2014). Thus the iterative approach has had a great and ongoing impact on both the research and the development of the educational intervention.

5 VALIDITY, RELIABILITY AND ETHICAL CONSIDERATIONS

5.1 Validity and reliability of the study

Being educational design research, the purpose of the present study is to form design principles and generate theoretical knowledge that will be beneficial for researchers and practitioners also in different contexts beyond the case in question. As Patton (1980) summarizes, the purpose of evaluative research is not to arrive in a universal "truth" but to "provide relevant and useful information to decision makers" (p. 273). Peräkylä (1997) analysed AIDS counselling practices in one London hospital but he argues that these practices are likely to be generalizable; not as descriptions of what other councilors actually do with their clients, but what they can do. He approaches the question of generalizability through the concept of possibility and states that the "possibility of various practices can be considered generalizable even if the practices are not actualized in similar ways across different settings" (p. 215). Moreover, some researchers argue that the basic structures of social order can be found anywhere and this allows for generalizability: there are social behaviours that would be present in any similar case (Silverman, 2000). However, this is not automatically the case but comparative work may be needed (Silverman, 2000). In the case of this study, a comparative perspective is offered in Article 3 where findings from two authentic e-learning based courses are introduced. As these findings suggest, it is highly likely that many of the experiences encountered by the participants studying collaboratively in a multicultural cohort, fully online, would be encountered by other participants to a different program where they would study collaboratively in a multicultural cohort, fully online. Therefore, the findings, suggestions and design principles crafted as a result of this study are believed to be beneficial to a wider audience as well.

When evaluating the impact of an educational intervention, it is important to bear in mind that to be able to reliably and profoundly evaluate the usefulness and value of an activity, a number of perspectives and multiple sources of data are needed. A simple survey collecting student feedback will not be enough in order to come to reliable conclusions, although this is what many practitioners choose to do

when evaluating the effect of an e-learning innovation (Phillips et al., 2012). This is not to say that student perceptions are not valuable, but as a single source of information they may be misleading, or at least incomplete. Unfortunately, many studies have been published where a summary of the results of a Likert scale student feedback form is presented as findings. Phillips et al. (2012) introduce a warning example of a study where students were found to perform significantly better after being presented with certain technology, but later, deeper investigation indicated that the reason for the better performance was actually that the technology was so poor that students self-organized into study groups and went to the library together (p.43). To reduce the risk of such false conclusions, my surveys were primarily open-ended and invited qualitative answers. However, when I later conducted the narrative interviews with some of the participants, I found how shallow a picture even those open-ended answers had managed to draw compared with the rich stories that helped connect the dots and revealed a much more complete picture. I am fully aware, though, that even with these measures taken, I am still only relying on different ways of asking the students, within a very limited period of time. To gain a more comprehensive understanding of the impact of the program, more sources of data from a longer time period would have to be involved. For example, this could include observations in the classrooms of the participants or feedback from their students.

5.2 Ethical considerations

Traditionally, academic discussion around research ethics is based on ethical rules to be followed. In such circumstances, research ethics easily becomes an issue of compliance, a research "etiquette" rather than a moral consideration (Syrjälä, Estola, Uitto, & Kaunisto, 2006). However, research never takes place in a value-free vacuum and researcher's awareness, responsiveness and responsibility in the ethical and moral aspects related to the research task and context are paramount.

While all research shares certain ethical principles, different research traditions and methodological approaches carry their own unique ethical implications as well (Syrjälä et al., 2006). For example, the question of privacy and protecting the identity of the interviewees has yet another dimension in narrative research, when the participants share their stories in much more detail and in a more personal way than in many other research situations. Research ethics cannot be perceived merely as an issue of compliance; instead, the real, personal relationship with the people

sharing their stories requires moral, caring and discretion from the researcher. As Syrjälä et al. (2006) conclude, the ethical considerations of narrative research are challenges that require dialogue and empathy, and each case must be approached in its own terms. Narrative research is sometimes used to study topics that require special sensitivity, and the participants may share very intimate and personal information with the researcher. In the case of the present study, the participants concentrated on their experiences with the program and the impact it had on their professional growth. Moreover, the reconstructed stories only tell parts of the original story, and no sensitive or personal information is shared or reproduced. In the publication (Article 4), pseudonyms are used to protect the identities of the participants, and all identifying information, such as the college where the teacher works, courses they teach, their nationality or age was excluded from the stories. No group email correspondence was ever sent nor were any research participants named, so even the ones who did volunteer to take part in the research did not know who else did.

In addition to research methods, the research context also always brings about different ethical considerations. Being research about education, this dissertation is by default on a shaky ground in what comes to values and ethics. Although the ideals typically attached to research include ideas such as "objectivity" and "value-freedom", this in itself is also a viewpoint, which is already value loaded. Looking from a different perspective, the concept of "research" in itself can be seen to be linked to imperialism and colonialism, examples of this being the way knowledge about indigenous peoples has earlier been collected and classified, and how they in this process were made the exotic "other" (Denzin & Lincoln, 2011, Erickson, 2011).

The same implications apply to education, especially the rather recent phenomenon of "education export" practiced in different forms specifically by Western universities and societies. Of course, education is not a product or commodity that can be "sold" in any context the way a car or a pair of pants can (I am not implying cars or pants are culturally value free either). Education, however, is thoroughly culturally based and value loaded. Therefore, "education export", be it in the form of student recruiting or implementing education in a different country, always involves the aspect of culture and values. As such, there is always also the danger of cultural imperialism present.

The context of this study is very much like that: an educational program developed originally in a Western country is being implemented in a Middle Eastern country, for an exceptionally culturally diverse audience. As a researcher

and the lead developer of the program, I have therefore had to find the best methods of research and development in order to acknowledge the danger of cultural imperialism and to avoid reinforcing it either in the design of the program, or in the methods of researching it. What also often tends to happen with regard to studies that take place in a different cultural context than the one of the researcher is that the results are only reported back to the culture and community of the researcher. Without too much exaggeration, this can be likened to colonialist expeditions where the adventurous researchers sailed to a faraway land and after a while returned with stories, samples of products and vegetation and sketches of people, housing and animals that they presented to a curious audience at home. To avoid this effect the best I could I wanted to ensure that the research and its results were also disseminated in the geographical area and cultural context where the program was implemented. Therefore I, as well as other designers and facilitators, were active in presenting in local Middle Eastern conferences and engaging in local e-learning and professional development related discussion (see e.g. Teräs & Teräs, 2011; Curcher, Teräs, & Hiasat, 2012).

6 AN OVERVIEW OF THE STUDIES

6.1 Study 1

Teräs, H., Teräs, M., & Herrington, J. (2012). A reality check: Taking authentic e-learning from design to implementation. In T. Amiel & B. Wilson (Eds.), ***Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2012*** **(pp. 2219-2228). Chesapeake, VA: AACE.**

This article sought to find out whether the implementation of the authentic e-learning design had been adequate in Module 1 of the 21stCE program. The aim of the study was to compare the outcomes and the design principles to identify possible gaps, to identify elements that required further development and to suggest steps for redesign. The goal was to gain understanding of how the participants had experienced the authentic e-learning design to be able to determine whether the intentions of the design had been attained. The data were collected through an online survey conducted immediately after Module 1 in February 2012.

The study sought to answer three research questions: 1) What are the successes and difficulties the participants experienced with each one of the nine elements of authentic learning?; 2) How well have the design principles realized in practice? And 3) What are the suggested redesign measures? The findings of the study indicated that there were many successes in implementing the nine elements of authentic e-learning, but also several difficulties and challenges could be identified. Areas that were found especially challenging were authentic tasks and collaborative construction of knowledge. On the other hand, the collaboration was also among the most rewarding experiences together with reflection and access to expert performances. Blogs and social networking were found effective in promoting these elements. It was also acknowledged that transformative learning requires stepping out of the comfort zone, which can be quite uncomfortable for the learner.

These findings crystallized into three redesign challenges:

1. How can the confusion some participants experienced with the less structured and ill-defined nature of the authentic tasks be relieved without sacrificing the authenticity?
2. How to provide sufficient scaffolding without oversimplifying the design so that it actually suffocates the learner and prevents the development of conative abilities?
3. How to provide more adequate facilitation?

The diversity of the cohort was evident throughout the first module, and it also showed in the survey results. The impact of cultural aspects in authentic e-learning was thus identified as an area for further research. It was deemed extremely relevant to consider the impact of culture on how the participants perceive teaching and learning, and in this given context, the authentic e-learning experience.

6.2 Study 2

Teräs, H., & Herrington, J. (2014). Neither the frying pan nor the fire: In search of a balanced authentic e-learning design through an educational design research process. ***The International Review Of Research In Open And Distance Learning*****,** ***15*****(2). Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/1705/2835**

The aim of this article was to describe the redesign measures undertaken as a result of the findings of Article 1, as well as to evaluate the adequacy of the redesign. The article was set to discuss the stages of formative evaluation in an educational design research process, describe how the findings of the evaluations informed the iterative design process, and how the impact of the measures taken was in turn evaluated, in order to eventually tighten the net and identify design principles for an authentic e-learning based professional learning program for teachers in higher education. The research question was directly based on the findings of the first study. The main goal was therefore to find the right balance in an authentic e-learning design for a fully online postgraduate teacher professional development program. The data were collected immediately after Module 2 in September 2012, again using an online survey.

As the findings of the first study indicated, balance needed be sought in the areas of site design, facilitator's role and learning task design. In Article 2, the extreme scenarios – the "frying pans" and the "fires" were identified for these three areas. The recommended balanced design can be found in the middle of these extremes, as illustrated in Table 7.

	Frying pan	**Fire**	**Balanced design**
Site design	"Rail shooter": very structured and linear, teacher/designer is responsible for the cognitive processes, students are walked through a predefined path.	"Lost without a map": very messy and chaotic, information and instructions hard to find, students' cognitive load is overwhelming.	Inclusive, accessible and user-friendly design, clear and consistent goals and navigation. Used together with real-life social media tools. Students may choose their working methods and tools.
Facilitation	"Force-feeding": teacher centered, instructive, students don't make decisions or look for anything themselves.	"Negligence": invisible facilitator, students feel left on their own.	Timely and constructive feedback, active communication, students' thinking scaffolded by genuine questions and comments. Facilitator is reachable but not omnipresent.
Task design	"Assembly line": very detailed instructions, defined steps to a pre-defined problem, uniform outcomes.	"Needle in a haystack": very ill-defined problems, goals unclear, students don't know what is expected.	Authentic tasks that are relevant to the students, students define their perspective to the task, high level of applied science, ongoing reflection on both theory and practice.

Table 7: Balanced authentic e-learning design

The findings of the study indicated that all the redesigned areas had improved and no new major challenges were identified. However, not all areas had improved

equally. Especially the redesign regarding scaffolding and coaching proved to be partly very successful, partly less so. Whereas scaffolding by learning design resulted in very positive outcomes, the same did not apply to coaching. The findings clearly emphasized the central role of the facilitator in a successful authentic e-learning process. Four design principles were introduced for planning and implementing effective scaffolding and coaching to ensure a balanced authentic e-learning design: 1) scaffolding by learning design; 2) scaffolded authentic tasks; 3) encouraging and enabling peer support and 4) coaching for collaboration. On the basis of the findings of the study it was emphasized that while an authentic e-learning program may be challenging for participants and differ greatly from more conventional forms of online learning, it is worthwhile to resist the temptation of hasty corrective measures. Instead, being aware of the extremes is helpful for finding the right balance in the authentic e-learning design.

6.3 Study 3

Teräs, H., Leppisaari, I., Teräs, M. & Herrington, J. (2014). Learning cultures and multiculturalism: Authentic e-learning designs. In: T. Issa, P. Isaias & P. Kommers (Eds.) ***Multicultural Awareness and Technology in Higher Education: Global Perspectives.*** **Hershey, PA: IGI Global.**

This study introduced two cases of authentic e-learning in a multicultural context and examined the effects of the multicultural aspect on their success. 21stCE was one of the two cases. This study aimed to shed light on the new research questions that arose from the findings of Article 1. These research questions were two sides of a coin: What implications does the multicultural learning context have for the authentic learning process, and, on the other hand, how does authentic e-learning as a pedagogical model affect the development of the learning culture of the diverse group of learners.

The data related to 21stCE consisted of the surveys conducted after each module. They were analyzed in a similar manner as with the earlier studies, however, this time in the thematization stage the focus was on multicultural implications and the formation of a learning culture.

The study concluded that learning culture is an essential consideration with regard to multicultural, diverse groups of learners. However, it was emphasized

that attempting to cater for the different preferences and familiar ways of learning of the diverse learners is almost impossible – in many cases the teacher would not even know where the students come from until the course commences. Moreover, it was noted that while the traditional teacher centered and presentation driven way of teaching may be the familiar option for many, this type of learning culture hardly produces the kind of transformational learning that is needed in the 21st century knowledge society. Instead, the recommendation was to develop learning designs that promote dialogue, reflection and collaboration, thus forming a basis for the group to collaboratively create a learning culture that appreciates diversity. The nine elements of authentic e-learning were all found to promote the type of learning activities that can lead to an increased cultural understanding and collaboration. The findings of the study revealed that students valued learning from others, opportunities for reflection and diversity. However, it was also noted that because authentic learning differs from many traditional approaches, it could cause a type of "learning culture shock" for some learners. Again, scaffolding and coaching were identified as the main development challenges also in this respect. Considerable similarities were found between the two cases: although they differed in length and scope, the common denominators – authentic e-learning and multicultural participation – resulted in very similar findings in the two cases.

6.4 Study 4

Teräs, H. (2014). Collaborative online professional development for teachers in higher education. *Professional Development in Education*, DOI: 10.1080/19415257.2014.961094.

This study was a narrative inquiry with the goal to investigate the learning experiences of the 21stCE participants in more depth. The study sought to answer two research questions: 1) How did the participants experience the collaborative online learning experience in the authentic e-learning based online professional development program? And 2) How did the participants perceive the impact of the online professional development program on their professional growth? These two questions were interrelated in acknowledging that measuring the impact of a given learning intervention without seeking understanding of the learner experience

during the learning process will only ever yield partial understanding of the effectiveness of the intervention. The data consisted of written and spoken narratives collected from seven of the participants 3-5 months after the end of the program, during April-June 2013.

The findings of the study illustrated how individual learners enter a shared learning context with their unique motivations, learning strategies, ambitions, cultural backgrounds and life situations. Each individual will experience the same learning situation in a different way and simultaneously affect the learning experience of others through their actions and choices.

All the respondents had had a different experience, and many had experienced severe difficulties at some point of the journey. Despite the challenges and different needs of the participants, everyone had clearly felt that they had benefited from participating in the program. Interestingly, the participants who described facing challenges and leaving their comfort zones had experienced a clearer conceptual change than their peers who had not had such a dramatic experience. These findings support the observations reported in Article 3: fully accommodating to learning preferences will keep learners in their comfort zones instead of encouraging them to cross boundaries and grow professionally and personally. Moreover, it was evident that in all the cases the teachers had employed highly developed self-regulation skills to persist and overcome the difficulties. As a result, a learning design that promotes the development of self-regulation skills was recommended. The results of the study also supported earlier findings about the crucial role of online facilitation that had earlier been reported in all the previous articles. The lack of practical resources for online facilitation specifically in authentic e-learning contexts was identified.

7 SUMMARY OF FINDINGS: DESIGN PRINCIPLES

The purpose of this study was to outline design principles for effective authentic online professional development for multicultural teaching faculty. Based on earlier research literature and experience, the nine principles of authentic e-learning were chosen as the learning design framework for the piloted program. The study therefore also aimed to evaluate the adequacy of the authentic e-learning design in the challenging context of a full post-graduate certificate program attended by multicultural teaching faculty, as well as examine the impact of such a program on the professional learning of the participants. The approach of the study was iterative educational design research.

The findings of the study underline the important and somewhat self-evident notion that although the learning design process of an educational intervention may be carefully and diligently conducted, the good intentions of the learning design do not always lead to the desired outcome. The results of the first iteration (Article 1) indicated that this was indeed the case with 21stCE. This was a sobering finding that encourages a closer examination of any intended e-learning design, despite the experience of the designers or the researched robustness of the design framework used.

The authentic e-learning framework proved to provide a very useful guideline for designing and implementing a fully online post-graduate certificate program for teaching in higher education. However, with the help of the iterative educational design research process, I was able to identify potential pitfalls and areas that require further refinement, as well as elements of authentic e-learning that call for special attention when designing online teacher professional development. The narrative research conducted for study 4 was especially helpful in getting a fuller understanding of the big picture and the learner experience during the program. In the following, the most important general findings of the research process are reported and discussed.

7.1 Design principles

The design principles outlined in this section have been formulated based on the research findings. Table 8 illustrates how the design principles address the three research questions of the study. Each design principle is discussed in more detail in the following sections.

Research question	Design principle
1. How adequate is the authentic e-learning model as a learning design framework for online professional development aimed at teachers in higher education? What are the shortcomings/ strengths of the model in such a context?	I. Prevent a learning culture shock
	II. Recognise and avoid extremes in the learning design.
	III. Place special emphasis on scaffolding and coaching.
2. What are the special considerations of authentic e-learning in a multicultural learning context?	IV. Leverage and celebrate diversity.
3. What is the impact of the authentic online professional development program on the professional learning and growth of the participants?	V. Venture out of the comfort zone to support professional growth and conceptual change.
	VI. Consciously design to support the development of self-regulation skills.

Table 8: Design principles and their relation to research questions.

7.1.1 I Prevent a "learning culture shock"

Authentic e-learning is a profoundly different approach to online learning than the more commonplace approaches based on traditional instructional design models. One of the most striking differences is the complexity and ill-defined nature of the

authentic tasks compared to, for example, the recommendations of the cognitive load theory that suggest removing all "unnecessary" elements from the activity lest they distract the student. Another difference can be seen in the learning environment design. Traditional instructional design frameworks emphasize a structured and linear presentation of content, which can be seen in many content presentation and management tools available in learning management systems. However, authentic learning environments allow students to create their own learning paths and make their own decisions of working methods and tools. The third major difference is the role of the online teacher: instead of teacher-centered and instructive approaches, authentic e-learning favors scaffolding and coaching. While these characteristics of authentic e-learning are firmly founded in modern learning theories and research and promote the preferred deep learning strategies, this is not to say that the learners would be able to pick it up effortlessly.

When introducing an authentic e-learning course to a cohort of students without previous experience is such a method of study, it is wise to not expect everything to go smoothly or for students to immediately embrace the philosophy. For students used to academic activities, multiple small assessment tasks, clearly defined learning paths, direct instruction and individual studying, authentic e-learning is an unfamiliar territory. The accustomization process the learners go through may be seen as a "learning culture shock" with phases that resemble the accustomization to a new cultural environment (Teräs, 2013). Whereas this may be even truer with adult learners whose previous study experiences may be decades away, it would be a mistake to make the assumption that younger students would readily adjust to the authentic learning style either. As the comparative study reported in Article 3 indicates, the cohort comprising or young university students experienced very similar challenges as the cohort of educators.

Adequate scaffolding is a key measure in preventing the learning culture shock from becoming overwhelming. The role of scaffolding is especially crucial at the very beginning of the studies. In the case of 21stCE, this was learned the hard way: the scaffolding deemed appropriate by the designers was not enough to help the participants get a good start for their studies. This experience was a valuable reminder of the original meaning of the word: just as with a construction site, the need for scaffolding is the highest at the beginning of the work. Scaffolding should be built in the learning design and learning environment design through inclusive design, clarity, consistency and user-friendly navigation, while it is also essential for the facilitators to be readily available and approachable, as well as aware and appreciative of the concerns of the learners. Moreover, it is important to **clearly**

communicate to the learners why things are done the way they are in the course. For example, being aware of why a learning task is complex and done collaboratively may reduce confusion and increase motivation. Once the course is well underway and learners are becoming familiar with the learning approach, providing ample opportunities for **reflection** and **peer support** will help learners gain confidence and overcome anxieties.

7.1.2 II Recognize and avoid extremes in learning design

A potential danger in designing for authentic learning is to try so hard to avoid the linearity of traditional instructional design that the result is like jumping from "a frying pan to the fire". The aim is not to replace a structured and linear design with a messy and chaotic environment, teacher-centered and instruction-driven approaches with an inadequate and unhelpful facilitation, or detailed and chunked task design with unclear instructions that leave students uncertain of what is expected of them. It is important to be aware of these extremes and strive to achieve a balanced authentic learning design with inclusive, accessible but open-ended and user-driven learning environments, adequate facilitation that helps students deal with complexity, and relevant, authentic tasks. It may well be that participant feedback on an authentic e-learning course reveals shortcomings in these areas. Instead of resorting to hasty corrective measures that may easily take one back to the starting point, it is worth considering whether the design is balanced.

7.1.3 III Place special emphasis on scaffolding and coaching

The elemental role of high-quality scaffolding and coaching was underlined in the results of each of the four studies. While the importance of getting this element right cannot be overestimated, the limited nature of teaching resources is a well-known universal. A smart learning design can free valuable teaching resources into more personalized and timely coaching. Much of the scaffolding can be built in the learning design through clear and user-friendly site design, clearly communicated goals and schedules, as well as intuitive navigation. Moreover, scaffolding measures can be built into the complex authentic tasks through project milestones, reflection and peer support. All resources, activities, discussions and informal learning

opportunities can be used as scaffolding measures that are integrated to build toward the polished end product of the authentic task.

Collaborative construction of knowledge has earlier been found as the most challenging element of authentic e-learning to implement (Leppisaari et.al., 2013) and this study confirmed these earlier findings. While online collaboration can be difficult to achieve, its benefits are widely recognized. Therefore, ways of improving collaborative learning should be sought actively. Genuinely redefining the role of the online facilitator offers tools for this purpose: when scaffolding and peer support are successfully built into the learning design, pressure is removed from the teacher and resources can be directed towards coaching collaborative learning. This also requires professional learning opportunities for the facilitators of online learning. While authentic e-learning assumes that expert assistant and coaching are available, the framework itself does not provide very much guidance for online facilitators at a practical level. The teachers are required to assume new roles as coaches, but there are few resources available that unpack that role. While professional learning programs and resources for online teaching are abundant, there is little support available for online facilitators in authentic e-learning contexts that differ profoundly from many other approaches. Further research is needed to address the needs of facilitation in collaborative and multicultural authentic learning contexts.

7.1.4 IV Leverage and celebrate diversity

Learning is a social process, and individual learners always bring their unique backgrounds, motivations, cultural backgrounds, learning styles and life situations into a learning context. Therefore, I dare to suggest that there is no such thing as an objective evaluation of a learning intervention. Instead, there are as many learning experiences as there are participants. In collaborative learning, which is an essential characteristic of authentic learning, these unique mixes of backgrounds become ever more evident as learners are required to work together towards a common goal. While this is always true, even with the most homogenous groups, the impact becomes greater when the learning situation is multicultural.

The study revealed that despite the different backgrounds of the learners, it is not recommended – or even possible – to make an effort to customize the learning experience for different cultures or different learning styles (see Article 3). While it would be difficult to achieve, it would also be potentially counter-productive and

hinder not only the co-creation of a shared, diverse learning culture, but also transformational learning as discussed in the previous section. Instead, it is essential to develop a learning design that supports dialogue, collaborative learning and reflection. The participants of this study greatly valued the diversity, sharing and collaborative learning opportunities, even though these very elements also occasionally became a source of frustration when learning strategies, personal goals and different expectations sometimes clashed. It is important to notice that all the participants that were interviewed (Article 4) had clearly benefited from the program, despite the evident differences in their learning strategies, needs and styles.

Based on the findings of the study, authentic e-learning is a promising framework for a learning environment that has a high level of cultural inclusivity as described by McLoughlin (2007). The authentic e-learning design allows for students to adopt different approaches and pathways to learning, and it promotes sharing and learning from others which acknowledges the different levels of prior knowledge of the students, as well as perceives cultural differences as assets rather than liability.

7.1.5 V Venture out of the comfort zone to support professional growth and conceptual change

One of the most interesting findings of the study implies that the participants who had taken steps the furthest away from their comfort zone experienced the most clearly observable professional growth (see Article 4). The implications for learning design principles is to resist the temptation to strive for a smoother facilitation and course management process by accommodating for the learners' preferred and familiar learning styles – staying in the familiar and secure deprives the learners of the opportunity to cross boundaries, face challenges and overcome fears. Transformational change occurs when previously unquestioned frames of reference and underlying assumptions are challenged, and this is typically an uncomfortable process that may make the learner feel insecure and unsure. The results of this study suggest that authentic learning provides a learning design framework that allows for transformational learning and conceptual change. However, this principle is to be observed together with the previously discussed ones: a messy design and an absent facilitator may also make the learner feel

uncomfortable and insecure, however, this is not transformational learning but bad design.

7.1.6 VI Consciously design to support the development of self-regulation skills

An important finding of the study indicates that the participants who faced and overcame challenges and experienced profound professional growth as a result of doing so were expressing highly developed self-regulation skills throughout the program. Beairsto and Ruohotie (2003) use the term *volition,* which refers to persistence, will to learn, self-regulation, self-evaluation and motivational control. Pintrich and De Groot (1990) point out that learners' self-regulation skills are directly tied to their beliefs about their capabilities as well as their attitude toward the value and usefulness of the task at hand. Self-regulation skills influence what tasks learners undertake, as well as how much effort they will put into them, or how long they will continue attempting to accomplish it, even when the task seems to be failing (Ruohotie, Nokelainen, Tirri and Silander 2000). The participants of this study demonstrated high degrees of persistence, willingness to learn, ability to reflect, and ability to control their motivation. Had they not been able to leverage these assets, they would likely have been at risk of dropping out. It was evident that these people already possessed these skills before starting the program, as they made use of their skills already at an early stage of the studies.

This observation leads to the sixth design principle derived from the findings of the study: it is advisable to consciously use the authentic learning design to support the development of the self-regulation skills of the learners. Authentic learning has been introduced as a potentially powerful method of doing this – in fact, a whole chapter in the book *A Guide to Authentic e-Learning* (Herrington, Reeves, & Oliver, 2010) concentrates on authentic e-learning and the conative learning domain. However, more research is needed in order to develop practical design principles for creating authentic e-learning designs for this specific purpose.

7.2 To conclude

The main contribution of this dissertation is a set of design principles for an authentic online professional development program for multicultural teaching faculty. The study provided a prolonged and holistic view into the learning journey of the participants to such a program and thus revealed important factors to be taken into consideration in the learning design and facilitation of online professional learning programs. It emphasizes the importance of continuous and real-time evaluation of educational interventions in order to ensure that the intentions of the learning design will go beyond words in the implementation plan. Educational design research has proven to be an extremely helpful approach in this.

The findings of the study clearly indicate that authentic e-learning provides a design framework that carries the potential to lead to profound professional growth and conceptual change, development of reflective practice, and a high level of cultural inclusivity. However, it was also possible to identify prerequisites that need to be in place in order to unleash this potential. (See Figure 3). Scaffolding and coaching must be emphasized and improved, the design must support the development of self-regulation skills, and the balance between the familiar and the new and challenging must be found, which means that the two extremes must also be recognized and actively avoided. While authentic e-learning as an educational approach can enable significant benefits for professional learning as well as online education in general, the learning design must be carefully conducted. The nine elements of authentic e-learning provide a highly useful design framework, however, the findings of this study offer further guidelines and design principles that will be of value for authentic e-learning designers. These findings deepen our understanding of how authentic e-learning can be leveraged to achieve effective, transformational professional learning. They also provide valuable insight for implementing authentic e-learning designs in other wider scale educational setting, such as an entire postgraduate certificate program.

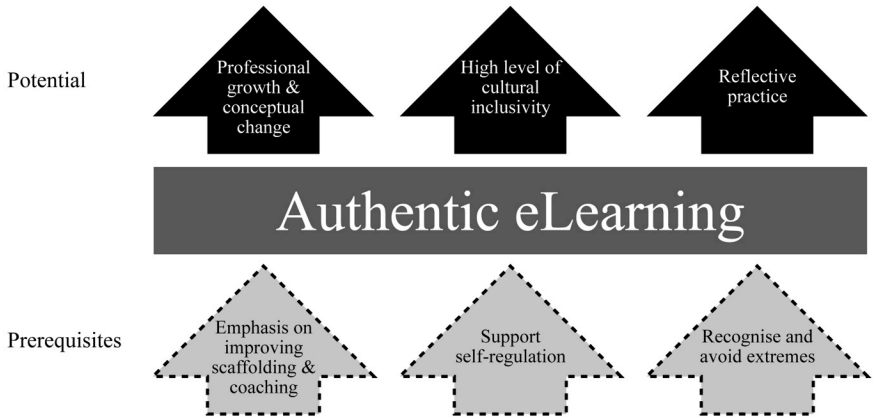

Figure 3. Potential benefits and their prerequisites in authentic e-learning.

The prerequisites identified and illustrated in Figure 3 also provide direction for further research. While the balanced authentic e-learning design has already been discussed in more detail in Article 2, the two others require further attention. In order to enable wider-scale implementations based on authentic e-learning to reach their potential level of impact, it is necessary to gain a more profound understanding of how scaffolding and coaching authentic e-learning can be improved, as well as what types of learning design actively support the development of self-regulation skills. Educational design research would undoubtedly be a useful approach for these research tasks as well, especially as practitioners, such as facilitators and designers of online learning would greatly benefit from the research findings being crystallized into design principles and guidelines that would help them improve their work.

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A reality check: Taking authentic e-learning from design to implementation

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Abstract: Tampere University of Applied Sciences has developed a postgraduate certificate program for teaching in higher education that is currently being implemented at Higher Colleges of Technology in the United Arab Emirates. In the design of the program, the principles of authentic e-learning (Herrington, Reeves, & Oliver 2010) have been used as a guideline. This paper examines how the design principles have been transferred into practice and how the elements of authentic learning have been realized from the student perspective. The experiences of the students have been mapped in a survey conducted after the first semester of the program. The data was analyzed with the help of the authentic e-learning framework in order to identify the challenges and successes regarding the implementation of the elements of authentic e-learning and thus draw guidelines for future development.

Introduction

The rapid development of technology, globalization and shift to knowledge economy have changed the work environment in an unparalleled manner. As Postman and Weingartner pointed out already forty years ago, when the environment changes, a new repertoire of strategies, skills and mindset are required (Postman & Weingartner, 1969). This is ever more true in the 21st century knowledge society. Many writers have identified a set of subject matter independent skills - sometimes referred to as "21st century skills" that are increasingly important for students to acquire (see e.g. Ruohotie 2002; Solomon & Schrum 2007; Trilling & Fadel, 2009). However, Rotherham & Willingham (2010) argue that assessment methods, teacher expertise and lack of support are potential stumbling blocks in the path of educational renewal. Even the introduction of education technology has often led only to surface-level changes in education: the same content, working methods and pedagogy can be applied, only with a different tool (e.g. Herrington et al., 2010; Stiles, 2007).

Previous research at Tampere University of Applied Sciences has yielded encouraging results and promising guidelines for a model of teacher training that supports teaching faculty in adopting a new professional role and identity, as well as in developing skills in innovative use of education technology (see e.g., Teräs & Myllylä, 2011; Myllylä, Mäkelä & Torp, 2009). This model is based on authentic e-learning principles as defined by Herrington at al. (2010), combined with a wide and diverse use of social technologies, and it has been developed and researched in a vocational teacher education context. It has proven to be a fruitful approach for teacher education on several levels. The results include improved collaboration skills, improved use of

advanced education technology, strengthened professional identity and improved reflection, and awareness of one's own learning (Teräs & Myllylä, 2011). These results have formed the basis for a postgraduate certificate program for teaching in higher education (PGCTHE), developed at Tampere University of Applied Sciences and currently being implemented in United Arab Emirates Higher Colleges of Technology. The program is developed to meet the professional development needs of teaching faculty who are experienced in their field of specialization but lack formal pedagogical training. The focus of the program is, as its name suggests, in the skills, knowledge and competencies that teaching faculty need in the 21st century environment, including understanding of megatrends in working life and society, developing education technology and social technologies as well as new approaches to teaching, learning and assessment. A central aim of the program is, as Postman and Weingartner (1969) put it—as they described their idea of "new education"—to help teachers cope effectively with change.

The program was started in September 2011 with 30 teaching faculty participants and 9 online facilitators specially trained for the purpose. The program consists of 3 modules, 10 European credits (ECTS) each. The first module was completed in February 2012. The aim of this paper is to describe how successful the implementation of the authentic e-learning model has been during the first semester of the program, to identify elements that require special attention, and to suggest steps for further development.

Authentic e-learning design of the program

Design elements of the 21st century educators program focus on providing an authentic online experience for students, supported by faculty from both the awarding university and locally trained facilitators. Based on nine principles of authentic e-learning (Herrington & al., 2010), the program models the pedagogical activity that it seeks to develop in the practice of participants, most of whom had prior learning experiences that were almost wholly based on the lecture knowledge-transfer model of learning. A collaborative progressive inquiry (based on methods introduced by Hakkarainen, Bollström-Huttunen, Pyysalo & Lonka, 1999) is another feature of the program that students experience. The elements of authentic learning and the way these elements have guided the design of the program are explained below (cf. Teräs, Curcher & Leikomaa, 2012):

An *authentic context* is a central and essential starting-point of an authentic learning experience. Without such a realistic context, students often struggle to determine the value and significance of the learning activities they perform. Herrington et al. (2010) warn about oversimplification of complex cases and situations, and encourage educators to embrace the complexity of the real life situation rather than break a learning problem down into small achievable steps. This enables the content and ideas to be studied in a physical or virtual environment that reflects the way the knowledge will eventually be used. This element of authentic learning is instantiated in the PGCTHE program by using the context of the teacher's own classroom, a learning management system (Blackboard Vista) and several social technologies, such as blogs, Google Documents, Google+ and Google Hangout. Because the program is designed for in-service teaching faculty to be taken concurrently with work, immediate implementation of new knowledge in teachers' own classrooms is an essential part of the program and ensures by its very nature, an authentic context for learning. There is also more reason to use open social technologies in addition to an LMS, because it is impossible for the teacher to have full control over the learning process or to make a detailed plan of the types of activities that are going to take place within them. Herrington et al. (2010) point out that the aim should be "to assist the learner in functioning in the environment rather than to simplify it" (Herrington et al., 2010, p.21).

Authentic tasks have real-life relevance and are open-ended and complex, just as real-life problems tend to be. Further, authentic tasks require long-term effort rather than the short-term endeavours required by decontextualized exercises that are frequently set in higher education learning environments. The central learning tasks of the program are extensive team projects that rely on the progressive inquiry method introduced by Hakkarainen et al. (1999). Creating one's own working theories and research questions is an elemental phase of knowledge construction, and a genuine process of inquiry is question-driven (Hakkarainen, Lipponen & Järvelä, 2001). Shared expertise and learning from others is an integral part of every progressive inquiry step, where new information is immediately applied in one's own work.

Access to expert performances and modeling of processes is another key characteristic of authentic e-learning. While this would traditionally have meant that students would have access to a professional, and the modeling of the professional way of completing complex processes, the wealth of information on the Internet now means that expertise in increasingly distributed. Expert performance does not always involve consummate expertise — it also involves access to other learners with various levels of expertise, as well as the opportunity for sharing narratives about professional practice. The program promotes this goal in several ways. With new knowledge constantly being created and shared through blogs, online discussions and social digital narratives,

there is continuing access to other learners and stories about professional practice. In addition to experience sharing, there is also the chance for observation of each other's performances through videos and related discussion.

An authentic e-learning experience also provides ***multiple roles and perspectives***. This includes the opportunity for students to explore issues from different points of view rather than, for example, a single teacher's view or from a heavy reliance on a single textbook. It also encourages students to use the learning environment and its resources in different ways, and for different purposes, instead of forcing a single unwavering pathway through the course. To promote this in the program, participants work in teams that have been carefully selected to ensure that each team has members from different colleges and departments, representing different ages, different nationalities, different subject matter expertise, and both men and women. The teaching staff of HCT is itself extremely multicultural, which adds yet another enriching aspect to the authentic e-learning process.

Authentic e-learning should include opportunities for the ***collaborative construction of knowledge.*** This means that the tasks should be completed in groups or pairs and the assessment should also provide an incentive for collaboration rather than simple cooperation. The complex learning tasks of the program encourage and require different types of collaboration in different groups. Team projects are completed in teams of 10 participants, but there are also tasks for smaller groups, collaboration between small groups and individual tasks that also require a collaborative element, such as reviewing and commenting on each other's blog posts or participating in an online discussion. Assessment works at both the individual and the group level.

A critical factor in authentic e-learning is attending to participants' own previous experiences and ***reflection***. The process of progressive inquiry requires decision-making at several points, both regarding the research question and the tools used for accomplishing the task, giving ample opportunities for reflection in-action (Schön, 1983). Social technologies offer versatile and effective tools for reflection. Blogging about the observations and experiences gained in applying the new knowledge acquired through the learning tasks enable the participants to compare their experiences, assess their own action and skills, attend to feelings, relate the new skills to their previous experiences, and learn from others as they reflect on-action (Schön, 1983). Reflection plays an important part throughout the program, and learners are encouraged to think of their own teaching from the viewpoint of both teachers and learners.

Another key element of authentic e-learning is ***articulation***. Tasks that promote articulation should require students to speak and write about their growing understanding, defend arguments and articulate ideas. This process is built in the progressive inquiry based team project, where the participants must first come to an agreement on the research question, build common understanding and create new ideas together. Blogging and contributing to discussion forums also offer further opportunities for articulation to enable tacit knowledge to become explicit. As Bielaczyc and Collins (2006) mention, an online discussion offers a space where ideas are visible for everyone and available for discussion and improvement. Thus a social context is formed, where, according to Glaser (1991, in Von Wright, 1992), the thinking processes of the learners are displayed, enabling individual as well as collaborative reflection.

Scaffolding and coaching is an essential feature of authentic e-learning that requires a teacher to sometimes adopt a new and quite different role in the teaching and learning environment. In addition to the main instructor, the program uses local facilitators, specially trained for the task. The facilitators are trained in an intensive course prior to the program's start. The facilitators' tasks include giving feedback on tasks, making sure their group stays on track and in general helping the groups in their studies. Coaching also takes place in all of the group activities in the program as the participants with varying levels of expertise coach each other.

Authentic assessment is another important element of an authentic e-learning environment, where assessment is integrated with the task, rather than comprising a separate standardized test. The assessment in the program is ongoing and portfolio-based, and is seamlessly integrated into the learning process. The assessment consists of group and individual learning tasks and products that are directly related to the participants' own work. A great deal of emphasis is also given to reflection and articulation in the form of blog posts and discussions. A central part of the assessment is formed by a process of progressive inquiry related to the themes of each module.

While it is not always possible to fully and completely comply with all the elements of an authentic e-learning environment given academic and assessment constraints, the PGCTHE course design aligned as closely as possible with the model as described here. In the sections below, research on the learning environment is described in more detail.

The research study: Research question and methods

At the end of the first semester of the PGCTHE program, the participants and local facilitators were asked to complete a comprehensive survey to provide feedback and so guide future developments and improvements. The survey mapped the participants' experiences in three main areas: 1) learning community; 2) technology and 3) instructional design and facilitation. The questions consisted of both multiple choice and open questions and it provided both quantitative and qualitative data. The survey questionnaire was online. Twenty six of the participants and facilitators fully completed the survey.

This study has three goals: 1) to identify the successes and difficulties associated with each one of the nine elements of authentic learning; 2) to compare the outcomes and the design principles to identify possible gaps and 3) to carefully examine the nature of the problematic areas in order to find guidelines for future development in order to enhance the authentic learning process. Both quantitative and qualitative results are introduced, however, this study puts more emphasis on analyzing the qualitative data as it is more descriptive and provides more insight with regard to the underlying reasons for the challenges and successes. For example, instead of knowing the percentage of participants who found collaborative activities difficult, we were interested in finding out what types of difficulties emerged, what caused them, and, with the help of the entire data, find patterns that explain relations between these difficulties and the issues with other elements (e.g. scaffolding and assessment).

For this study, the answers to the open questions in the survey were categorized and analyzed with the help of the authentic e-learning framework tool. However, the questions were formulated in such a way that they did not directly address any of the nine elements of authentic learning. This approach was chosen for two reasons: firstly, the developers wanted to keep the questions on a practical level to make it easier, less confusing and more motivating for the participants to take the time to complete the survey. Secondly, asking directly about the elements of authentic learning might have affected the answers as it had been explained to the participants earlier that this was what the program wanted to achieve.

All the open answers were first arranged under the nine elements, depending on which element they most reflected thematically. In some cases, the same answer was categorized according to more than one element. For example, an answer such as "At the beginning of the course it must be stressed that the course requires full participation and all deadlines *must* be met so that team members are not let down" can be seen to belong to both "collaborative construction of knowledge" and "scaffolding and coaching". Once all answers had been listed under the elements, the next step was to further divide the answers into challenges or successes. Finally, the data was studied carefully to find leading themes among each element, both challenges and successes, and the answers were further arranged according to the themes.

Challenges and successes

Authentic context

The challenges associated with authentic context were very few (2), both of them related to participants *struggling with putting the study program into a context relevant for them*. For example, one of the respondents felt that the theories studied were not relevant for his area of specialty. This comment also reveals that the participant in question had had very different expectations for the studies: all the theoretical knowledge in the module was related to teaching and learning in general, not in connection with a given subject matter. Another respondent required some background reading to help get oriented before the beginning of the studies.

The one major theme identified in the positive comments was *the chance to immediately apply the new things in one's own classroom.* These included methods, techniques, ideas and technologies. Many of the participants valued the recognition of their own classrooms as learning environments and seemed to take full advantage of it. This aspect was strongly encouraged in the program and the utilizing of the authentic context was an in-built element of all the learning tasks. This is also a major difference to many academic programs where the immediate and continuous link between theory and practice is often absent.

Authentic tasks

Authentic tasks was one of the elements that caused most difficulties and confusion during the module. The prominent theme identified in the data was that *instructions and purpose of the tasks were not clear*. There were twenty-two open answers that could be classified under this theme. A comparison with the quantitative data indicates that as much as 82% of the respondents felt that the instructions for the learning tasks were not clear enough. This is not a surprising finding, given that the very nature of an authentic task makes it less clear than traditional, more simplified learning tasks. Herrington et al. (2010) suggest that instead of sparing learners from dealing with complexity, the facilitators' task is to help them cope with it. It is important to notice that 82% of the participants who had sought assistance either from facilitators or peers, had had their problem solved.

Moreover, 63% of the respondents had also been able to help someone else at a point of confusion. This indicates that the participants had been able to adopt an active, inquiry-oriented role, even though according to the open answers, many would have preferred a more straightforward approach to instructions. Comments like "it was very confusing", "instructions were not clear" and "I would have wanted to be told exactly what I was expected to do each week" were very common. The challenge for the facilitators and developers of the program is to figure out whether this reaction was caused by a resistance to a different type of learning or an indication of insufficient scaffolding especially at the beginning of the studies.

Another theme for the challenges with authentic tasks was *confusion with technology*. As mentioned earlier, the program introduced the participants to various technologies. Especially at the beginning, this was confusing to the learners who found it difficult to follow the different platforms and use many different tools for the learning tasks. However, as the studies proceeded, problems associated with technology became less and less frequent.

Finally, a third theme identified was *group issues* that brought another challenging aspect to the learning tasks. This area is discussed in more detail in connection with collaborative construction of knowledge.

Authentic tasks were not only challenging and difficult. It is very important to notice that for many participants this was a highly rewarding aspect of the studies. A major theme related to the successes with authentic tasks could be summarized with one sentence: *problem-solving is enjoyable*. For example, one of the respondents pointed out that the confusing elements were "...healthy, as we were encouraged to think creatively and find our own solutions rather than prescribed one way." Several other answers reflected the same idea. Many participants also mentioned that they had been confused at first, but, due to coaching and facilitation, they had been able to work out the way forward with the tasks. This finding suggests that the scaffolding had been successful.

Access to expert performance and modelling of processes

The third element of authentic learning turned out to be one of the most successful ones in the first module of the program. Only one respondent felt that the program did not encourage this aspect in particular. *Learning from others and access to expertise from outside the program* were especially emphasized in the questionnaire. The job of a teacher is often a very lonely one and amidst the hectic everyday routine, opportunities for collegial support and sharing of experiences can be rare. Working in teams and especially following each other's blogs were perceived as a great advantage. Several comments suggested that aspects like "learning from others' experiences and discussions" and "sharing ideas and methods" were greatly valued in the program.

Although the use of Google+ remained unsystematic in the first module, some participants acquired an active role in this platform that was brand new at the beginning of the studies. The active networkers benefited from easy access to expertise all over the world. However, what was more interesting was to find out that many of the seemingly less active ones had also benefited from the use of Google+. The number of people who mentioned Google+ as their favorite technology for learning in the program was surprising; it far exceeded the number of the learners who posted actively in Google+. Many learners did not appear to do much with the platform, but they appreciated the "various interesting and often highly informative links posted by other users". This was one of the greatest surprises for the developers who had thought hardly anyone actually used the platform. As the use of Google+ was not obligatory or instructed, the demography of the platform was formed in a natural and user-driven way. Nonnecke and Preece (2000) point out that as much as 90% of participants to an online group are the type that are sometimes referred to as "lurkers" - people who follow an online community closely but do not give visible input of their own. In a traditional educational context, including traditional e-learning, this type of behavior is usually not encouraged due to lack of teacher control: it is impossible for the instructor to track the activity of the "lurkers". However, as Nonnecke and Preece (2000) suggest, the life of an online community can be dependent on them - if everyone is posting, who will be reading? They believe that public posting is but one way an online community can benefit from its members. This observation raises an interesting perspective to blending formal and informal learning, as well as to learning with social media in general.

Multiple perspectives

In a program where the diversity of the participants is great and learning takes place in teams, there should be plenty of opportunities for introducing and sharing multiple perspectives. However, according to the data, there is still room for development. The major challenge with regard to this element is associated with the discussion taking place in blogs: overall, *blog commenting tended to be scarce, remain shallow, or it did not initiate discussion*. Some of the respondents had not received many comments in their blogs, whereas others

regretted that the comments they got were only politely showing that the person had read the post and that they did not lead to any meaningful discussion. Some participants even felt discouraged to write the blog because of the scant attention they received.

Another hindrance to fully benefiting from multiple perspectives was associated with *group dynamics*. Some participants felt that expressing their perspective had led to disagreement, even conflict. Also practical issues, such as not adhering to schedules in posting, made it more difficult to take full advantage of sharing of ideas.

The positive experiences with the fourth element of authentic learning still outweighed the less successful ones. A theme that could be easily identified from the data was *appreciation of diversity*. Participants appreciated the multicultural learning environment, multidisciplinary collaboration, and generally working with people with different backgrounds. One person mentioned that she had enjoyed working with the team, even though they faced a conflict at one point. However, together as a group they had also learned to work their way out of the conflict. Another theme that arises from the data is *collegial support and sharing of ideas*. The participants had felt that working with colleagues had offered them new perspectives and practical ideas to their teaching.

Finally, it is important to note that *having an authentic audience is enjoyable and improves one's work*. Many participants mentioned that the fun aspect about writing the blog was that others read it. Although many would have been happy to see more meaningful discussion and more abundant perspectives in their blogs, they pointed out that they were still happy even for the comments that merely acknowledged that the commenter had visited the blog. One of the participants mentioned that writing the blog was "...useful because it's always interesting to get different perspectives and when you know you are writing to an audience, you think a bit more deeply about how you communicate your ideas". This observation reflects the idea of conversation and play discussed by Xin (2012), that communicating content is not the only purpose of educational dialogue, instead, the true enjoyment in online discussions comes from making moves that prompt other team members to keep them "playing".

Collaborative knowledge construction

One of the key findings in an international virtual benchmarking project by Leppisaari, Herrington, Vainio & Im (2011) was that collaborative construction of knowledge tends to be the most challenging element of authentic e-learning to implement. Not surprisingly, this was also the case in this study. 94% of the respondents reported difficulties with regard to the collaborative team learning activities. There were three main themes that the difficulties fall under.

Firstly, the most common problem associated with collaborative knowledge construction was that *time constraints and not adhering to schedule cause frustration*. In authentic learning, it is important that the collaborative construction of knowledge goes beyond simple cooperation, that completing the tasks requires collaborative action and that assessment also takes place in the group level instead of merely individual level (Herrington et al., 2010). In the PGCTHE program, the team project that formed the key part of assessment required active teamwork and collaboration. As all of the participants were studying alongside their full teaching load, time management became an important issue. It was rather a rule than an exception that some of the team members were running behind schedule and this caused controversy, frustration and even conflicts within the teams as the performance of the entire group was depending on the output of its members. This left the facilitators 'in between a rock and a hard place': on one hand they could relate to the difficulties of the learners to adhere to the schedule and the need for flexibility, and on the other hand they faced demands to be less tolerant for lagging behind schedule. One cannot of course determine if some of the missed deadlines and group work was in fact not only due to a large workload, but also because of procrastination. Elvers, Polzella and Graetz (2003) studied procrastination in online classes and found indications that "procrastinators in the online class tended to perform more poorly, and the poor performance may have led them to be dissatisfied with the course" (p.162). The possible correlation between the performance, attitude and replies to the survey was not studied so we cannot conclude whether this phenomenon also applies in this context. Elvers et al. (2003) suggest that literature may offer several recommendations for reducing academic procrastination in general. One of their suggestions is making the situation more structured. In using authentic e-learning as the framework for the program, it brings up several questions, such as, what is the right balance in online learning environments and how to determine when something is too little or too much structured. It is a part of designer's or instructor's professionality to sense and evaluate the balance, and act accordingly.

Another theme, slightly overlapping with the previous one, was *communication difficulties, group dynamics and conflict*. The majority of the participants had been in contact with their group members approximately either once or twice a month (41%) or even less frequently (24%). This is an alarming finding and

explains many of the aforementioned difficulties. Several participants pointed out that some of their team members had been hard to reach and slow to respond to queries. Moreover, in some teams the expectations and goals of the members were not met; some expectations went unexpressed and the quality of the other members' input was questioned. This combined with primarily written communication resulted in misunderstandings that at points escalated to a conflict. There were, however, huge differences between teams, where most were able to complete the team project together, but 2 of the 9 groups remained dysfunctional and did not manage to work together.

The third identified theme can be seen as the result of the two aforementioned ones: *the formation of a learning community was challenging*. 45% of the respondents mention that the way learning community is intended to support learning in the program has remained unclear to them. Several participants pointed out that there was not enough dialogue, discussion and feedback within the learning community, whereas others went as far as to state that there was no learning community at all. Again, there were significant differences between the teams. However, it is clear that the building of a community is a prerequisite for successful collaborative knowledge construction. Palloff and Pratt (1999) suggest that by paying attention to the development of a learning community, the instructor creates the vehicle through which the learning happens. Sadera, Robertson & Midon (2009) continue that there is a positive relationship between student learning and community (p. 277). Differences in participants' perceptions about the meaning of the learning community (or that some felt there was not community at all) could be explained with how facilitation and scaffolding assisted or did not assist the learning community to emerge (see chapter 4.8). 44.8% of the current participants reported that they had not got enough information about the role and importance of the learning community in the program. In the future, it might be beneficial to study at what level the participants' previous understanding, attitudes and perception about the meaning of a community are, and also how they see themselves as a part of the community. As Barab and Duffy (2012) suggest, "we are still in our infancy with respect to understanding the potential of, and what constitutes, a community" (p. 39). Further study is needed specifically relating to environments intentionally designed to support learning.

Despite the obvious challenges with regard to collaborative knowledge construction, 60% of the respondents pointed out that collaborating with others and learning from each other had been one of the best learning experiences of the module. It could be concluded that *working collaboratively is very rewarding when the team is functional*. Many respondents list interaction with group members and working on the team project among their most rewarding learning experiences.

An interesting theme that rises from the data is that *using social technologies supported collaboration*. Especially using Google Docs for working collaboratively was frequently mentioned as a very valuable learning experience. Google Hangout and blogs were also seen as tools that support collaboration. As one of the participants put it, technology had made "transferring, sharing and constructing knowledge easy".

Reflection

88% of the respondents found blogging useful and enjoyed using it for reflection and sharing ideas. As mentioned before, many would have wanted to have even more discussion in their blogs and would have enjoyed a more in-depth exchange of ideas and group reflection. This is also related to the biggest challenge associated with reflection: some participants felt that *lack of discussion discouraged blogging*. One of the most interesting findings of the study is directly related to this. Whereas the discouraged writers believed that others commented on their posts merely out of politeness and obligation, another participant wrote that he had greatly enjoyed reading his peers' blogs and benefited from it, although he had not commented on them very deeply. The "lurker" phenomenon discussed by Nonneke and Preece (2000) seems to apply to blogging as well. On the other hand, failure to prompt a move from the team members (Xin, 2012) seems to reduce the enjoyment of online reflection. This controversy poses an interesting challenge for course design and facilitation.

In spite of this challenging aspect, using reflection can be seen as one of the most successfully implemented elements of authentic learning in the program. The data clearly suggests that *using blogs for reflection enhanced learning*. Examples given by the respondents indicate that blogging promoted awareness of one's learning process and oneself as a learner, enriched the readings through reflection and encouraged creative thinking. Moreover, as one respondent put it: "reflecting on others' ideas helped me solidify my own ideas and understanding of the topic". Barab and Duffy (2012) support this by arguing that "too often when we are engaged in work we simply do not have the opportunity to reflect on what we are doing, are going to do, or what we have done" (p.36). To create an intentional space for this kind of reflection to occur was considered important in the design of the program as the participants were not considered to be "learning new teaching skills", but more precisely, defining and reconstructing what it means to be an educator in today's world.

Articulation

The significance of articulation in the learning process also became evident in the data. Whereas *the lack of articulation caused misunderstanding or conflict*, it was also very clear that *articulating one's growing understanding brought depth to learning*. Misunderstandings occurred when the team members did not negotiate meaning and had conceptualized the learning content differently. It is also an indication of simple cooperation instead of true collaboration (Herrington et al., 2010): in some teams the members merely delegated parts of the work to each other to complete individually, instead of articulating their understanding and negotiating meaning throughout the process. When the parts were finally pulled together, the end product was of an uneven quality and did not please the members of the team.

When successfully implemented, the element of articulation enriched the learning process. The fact that the learners were writing to articulate their understanding to each other instead of merely submitting work to the teacher made them reflect on what they had learned more deeply. One of the participants pointed out that at the beginning it was hard to make one's ideas and learning public, however, later on it proved to be very rewarding.

Scaffolding and coaching

Scaffolding and coaching can be seen as a backbone of a successful authentic learning experience. As Land, Hannafin and Oliver (2012) point out, "participation in authentic practices cannot be operationalized successfully without scaffolding" (p.11). However, alongside collaborative knowledge construction, scaffolding and coaching proved to be a challenging element in the module. Two main types of problems were identified. Firstly, there were moments when *scaffolding was provided but it was insufficient*. Participants called for more regular meetings, more clarity and more guidance, especially at the beginning of the program. Secondly, there were moments when *scaffolding was not available at all when needed.* Some participants complained about lack of communication, lack of feedback, lack of guidance and lack of involvement from the facilitator. This situation seems to reflect the phenomenon also studied by Mällinen (2010) who has found that in attempting to adopt the role of the facilitator and the "guide on the side" instead of "sage on stage" many teachers overdo the stepping aside and become "invisible". Land et al., (2012) write about the same thing, warning about mistaking a complete absence of support with student-centered learning design.

Happily, the opposite experiences were also plentiful: many learners pointed out that the facilitators had provided sufficient and timely scaffolding, giving constructive feedback, clarifying things and helping them forward with the process. Many also mentioned the positive and supportive attitude of the facilitators. Some even went on to mention their facilitators by name and express their appreciation.

Authentic assessment

The experiences with authentic assessment in the module go hand in hand with authentic tasks: the main challenge was that *learning outcomes and assessment criteria remained unclear* to some participants. Especially the fact that the collaborative activity was assessed caused some confusion, even frustration when some team members did not live up to the expectations of their teammates. Traditionally in education, assessment methods have reinforced what Scardamalia and Bereiter (1993) describe as knowledge reproduction, characterized by a transmission model where learners' task is to recite the transmitted information in the form of a presentation, essay or test. Therefore it is not surprising that the idea of assessing the process instead of assessing only the end products appeared to confuse some of the learners. It seems that some of the participants found it challenging to focus in the process instead of focusing in completing a given number of assignments.

Discussion and conclusions

The analysis of the questionnaire data indicates that during the first module of the program, there were many successes in implementing the nine elements of authentic e-learning, but also several difficulties and challenges could be identified. Whereas the design process of the program was carefully conducted, the good intentions of the learning design did not always lead to the desired outcome. Although this is a case study and the results cannot be directly generalized, we believe that the central findings may benefit instructional designers and practitioners of authentic learning even in a wider scope.

It is a challenge for the developers of the program to interpret the criticism in an appropriate manner. While there clearly is room for improvement, it is important to keep in mind that some of the criticism may reflect the conflict in the participants' minds when their previous ideas and beliefs of what learning and teaching are like are being challenged. The responses to the questionnaire represent the first step of Kirkpatrick's evaluation model; ***reaction***, that is, how well did the learners like the learning process. The further steps, ***learning, behavior*** and ***results***, can only be measured in the longer term (Kirkpatrick, 1996). It has to be

emphasized here that this does not mean *reaction* has no value in evaluation. Kirkpatrick argues that "people must like most of the program to get maximum benefit from it" (Kirkpatrick, 1996, p.124).

On the other hand, basing in authentic e-learning framework, the aim of the PGCTHE program is to guide the teacher in their journey of finding their way to new methods and technologies (rather than offering a ready-made "toolbox"), and at the same time, rebuilding their professional identity. Not only facilitating the learner's building understanding of different pedagogical methods or educational technology, but also helping to develop their "general readiness to understand, follow and critically relate to the world" around them as teacher. Learning that is transformative in nature, that is, it encourages the learner to challenge his or her unquestioned frames of reference and initiate growth and change, is also bound to be somewhat uncomfortable (Illeris, 2007, p.47). Moore (2005, p.84) points out that "by avoiding transformation of perspectives, we may feel safe and secure, whereas shifting our underlying assumptions can make us feel insecure and unsure". Moreover, Sterling (2010, p.25) argues that this type of learning can be "deeply uncomfortable" and that for some learners it can even be a traumatic experience of a crisis. At the first glance, these two statements seem to be contradictory: how to implement a learning process that is authentic and transformative in nature—and thus uncomfortable for the learner—and at the same time get learners to like the program?

The confusion some of the learners experienced with regard to authentic tasks, authentic assessment and collaborative construction of knowledge indicates that the way of learning was new and challenging. However, developers of such a program should resist the temptation to add clarity by shifting to a more structured approach where complexity is prevented by simplification and by breaking the topic down into parts that are easier to handle. This model is familiar from the traditional, systems approach to instructional design (Gagné, Wager, Golas & Keller, 1992). However, this would be in direct contradiction with the principles of authentic learning. Instead of simplifying the design, learners should be provided with appropriate scaffolding, helping them learn to deal with complexity rather than avoid it. This strategy is also suggested by Herrington et al. (2010) and the results of this study prove it viable. The question we are now facing is: how can the learners' adaptation to the new framework of teaching and learning (which is after all the main theme of the entire study module) be better facilitated? How to provide sufficient scaffolding without making it too much so that it actually suffocates the learner and prevents the development of conative abilities? The role of the facilitator should also be explored further regarding another challenge that arises from the data; the formation of the learning community and its significance in the learning process.

Another important area for further research is the impact of cultural aspects in authentic e-learning. Learners always bring their own history, knowledge, assumptions and attitudes to a new learning situation. Land et al. (2012) suggest that learners hold powerful beliefs that are deeply rooted in their everyday experience—so deeply that they tend to persist even in the face of contradictory evidence. Mezirow (2000, p.7) reminds us that "...understanding will be enabled and constrained by the historical knowledge-power networks in which it is embedded... we need to focus on who is doing the learning and under what circumstances to understand the transformative learning process". In a multicultural learning context such as the PGCTHE, it is especially relevant to consider the impact of culture on how the participants perceive teaching and learning (see e.g. Oxford & Anderson, 1995). This is an interesting question that deserves further research.

As Barab and Duffy (2012) point out, "we are witnessing a period in which theories of learning and cognition seem to be in a state of perturbation, with numerous books and scholarly articles being published that forward radically new theories of what it means to know and learn" (p. 29). The PGCTHE program is one example of bringing these theories into practice. Without a continuous dialogue with theory and practice among designers and practitioners, the potential impact of theories in actual educational practice remains limited at best.

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THE INTERNATIONAL REVIEW OF RESEARCH IN OPEN AND DISTANCE LEARNING

Neither the Frying Pan nor the Fire: In Search of a Balanced Authentic e-Learning Design through an Educational Design Research Process

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Abstract

Teaching in higher education in the 21st century can be a demanding and complex role and academic educators around the globe are dealing with questions related to change. This paper describes a new type of a professional development program for teaching faculty, using a pedagogical model based on the principles of authentic e-learning. The program was developed with the help of an iterative educational design research process and rapid prototyping based on on-going research and redesign. This paper describes how the findings of the evaluations guided the design process and how the impact of the measures taken was in turn researched, in order to eventually identify and refine design principles for an authentic e-learning program for international teaching faculty professional development.

Keywords: Authentic learning; e-learning; educational design research; professional development

Introduction

Being a teacher in higher education in the 21st century is, in many ways, a demanding and complex place to be. Academic educators everywhere are dealing with questions related to change: the pressure of integrating technology in education, changing curriculum, quality standards and measures, and increasingly multicultural and diverse groups of learners. For many teachers, the mysterious "net generation" learners that populate universities provide further pressure to be "innovative" to meet their different learning needs. Very often, however, little or no adequate training is provided, and opportunities for informed discussion and critical evaluation of the ever-changing world outside the university gates are scarce. Innovation also tends to be translated quite literally as "technology", whereas pedagogy—either online or offline—seldom receives equal attention.

These realities motivated Tampere University of Applied Sciences (TAMK) to design *21st Century Educators*, an international, fully online postgraduate certificate program that was designed for teachers in higher education to enhance their theoretical understanding as well as practical application of teaching, learning, assessment, and education technology in the global knowledge economy context. The learning design of the program was based on the principles of authentic e-learning as described by Herrington, Reeves, and Oliver (2010), and it was developed and implemented using an iterative educational design research process (e.g. Reeves, McKenney, & Herrington, 2011; Reeves, 2011; McKenney & Reeves, 2012).

Typically for educational design research, the goal of the research process is twofold. One of the goals is practice-driven: to design an intervention (in this case, a postgraduate certificate program) as a useful solution to a complex educational problem (lack of support and professional development resources for higher education teachers in an increasingly complex, global working environment). The other goal is theory-oriented: to produce knowledge about whether and why a certain type of intervention (a fully online program based on authentic e-learning principles) works effectively in a given context (multicultural cohort studying alongside teaching work) and, based on this knowledge, produce design principles that may assist designers in other projects to develop effective and workable interventions (Plomp, 2007).

This paper discusses the stages of formative evaluation and the resulting redesign in the research process. We will describe how the findings of the evaluations guided the design process and how the impact of the measures taken was in turn evaluated, in order to eventually tighten the net and identify design principles for an authentic e-learning program for international teaching faculty.

Why Educational Design Research?

Educational design research was chosen to guide this particular research context primarily because there was a *complex educational problem* that had to be addressed in a way that would have potential for high-level *practical impact and relevance* (Plomp, 2007; Anderson & Shattuck, 2012). Unfortunately, as much as the latter might expect to be the default in any research, this is not always the case. Reeves, McKenney and Herrington (2011) ask a very fundamental question: why is it that while the number of educational research publications has increased dramatically, at the same time educational attainment is either declining or remaining stagnant? Reeves (2011) suggests that one of the reasons for this is that most studies concentrate on the wrong variables: instead of meaningful pedagogical dimensions, such as design factors, feedback or aligning learning outcomes and assessment, the focus tends to be on comparing instructional delivery methods, such as traditional vs. online instruction, face-to-face vs. video lectures, or computer-based vs. pencil and paper assessment. As Reeves observes, these types of studies almost without exception render results of "no significant differences" (Reeves 2011), and thus they do not have the potential to significantly improve educational practice either. Indeed, Reeves labelled such research "pseudoscience" and claimed it was so flawed that it has little relevance "for anyone other than the people who conduct and publish it" (Reeves, 1995, p. 9).

Characteristics of Educational Design Research

Although there are subtle variations, design research is also known as *design-based research* (Kelly, 2003), *development research* (van den Akker, 1999), and *design experiments* (Brown, 1992). As such, it is a research approach that has the capacity to address complex and relevant educational problems for which there are no clear guidelines or solutions available (Anderson & Shattuck, 2012). The approach is very different from the comparative research approach criticized by Reeves: Instead of attempting to compare whether method A is better in a given context than method B, the aim is to develop an optimal, research-based solution for the problem, perhaps best described by Reeves (1999) as seeking "to improve, not to prove" (p. 18).

Although educational design research has one foot firmly in practice, the other one is just as firmly in theory. In the words of Cobb, Confrey, diSessa, Lehrer, and Shauble (2003), 'the theory must do real work' (p. 10). According to McKenney and Reeves (2012), the unusual characteristic of the theoretical orientation in educational design research is that scientific understanding is not only used to frame the research, but also to shape the design of the intervention. The hypotheses embodied in the design are validated, refined, or refuted through empirical testing, evolving through multiple cycles of development, testing, and refinement. Figure 1 illustrates these iterative phases of the approach, as depicted by Reeves (2006).

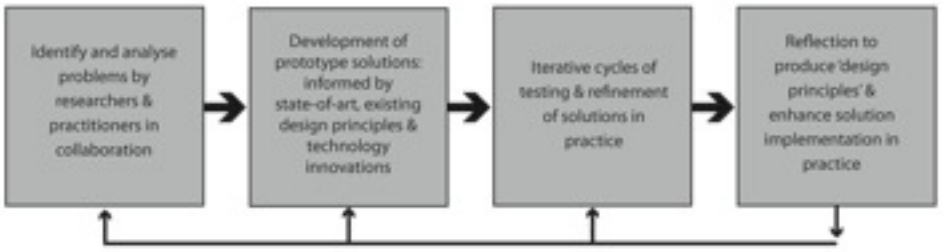

Figure 1. Stages of educational design research (Reeves, 2006, p. 59).

The role of evaluation in design research is paramount: A design is continuously improved based on information gained through evaluation. In the next section, we describe the critical role of evaluation in educational design research.

Evaluation in an Educational Design Research Process

Evaluation—either formal or informal—is always a part of developing almost any kind of educational intervention. In design research, evaluation is systematic, and it aims at concurrently producing theoretical knowledge and developing the intervention. Evaluation is accompanied with reflection upon findings and observations to refine theoretical understanding and inform decisions for a redesign (Reeves & Hedberg, 2003). Anyone who has been involved in designing an educational intervention of any sort will know that there can be a major gap between the intention and the actual outcomes. Van den Akker (2003) makes a distinction between three representations of a curriculum: the intended, the implemented, and the attained. The same distinction is useful also from the educational design research point of view. Table 1 below illustrates this.

Table 1

Three Forms of an Intervention (adapted from van den Akker, 2003, p. 3)

Intended intervention	Ideal, written	What the intervention sets out to do
Implemented intervention	Perceived, operational	How the intervention is used in practice
Attained intervention	Experiential, learned	What the outcomes of the intervention are

In an educational design research process, interventions are carried out in actual settings instead of a controlled test environment. This can be seen as a limitation, but, on the other hand, the strength of educational design research is that it is authentic and provides information of how designs work in real life, not only in ideal, controlled settings that have little to do with the complexity of an actual classroom (Collins,

Joseph, & Bielaczyc, 2004; Reeves, 2006). In the current study, this was seen as especially important for adult learners who were taking the program alongside very demanding and hectic work schedules, had family responsibilities, and whose learning was thus affected by the whole spectrum of real life events. Therefore, the *implemented* and *attained* forms of the intervention (see Table 1) are directly influenced by the complexity of the real life context within which it was implemented.

In the following sections, the aforementioned factors will be considered in more detail, specifically by introducing the educational problem that necessitated the design research process as well as the real life context where the intervention would take place; by describing the intended intervention and introducing the design principles that were used, explaining why they were chosen, and describing what the intervention was intended to achieve; and finally by presenting an analysis of the implemented and attained intervention.

Identifying the Need

An educational design research process begins with identifying and analysing the problem or need (see Figure 1). In this case, TAMK was to develop and deliver a fully online postgraduate certificate for teaching in higher education for a cohort of international higher education practitioners in the United Arab Emirates.

For the past decade, TAMK had been developing more engaging and authentic ways of conducting online pedagogical qualification studies for in-service teachers, which had yielded very promising results with regard to using social media tools and authentic learning approaches (Teräs & Myllylä, 2011). At the same time, Higher Colleges of Technology (HCT) in the United Arab Emirates (UAE),a major provider of higher education in the Middle East,was looking for ways of supporting the professional development of its teaching faculty in the areas of teaching and learning, assessment, and innovative use of new pedagogies and technologies. All the teachers worked on-campus, but the role of technology in classroom and blended approaches to teaching and learning was constantly increasing.

The model that had worked well for in-service teachers of vocational subjects in Finland (Teräs & Myllylä, 2011) was used as a starting-point for development. However, the context in the UAE was in many ways very different, and the original Finnish teacher education program would need to be developed further to meet the needs of the diverse group of learners. Therefore, the first step of the educational design research process was to identify these needs. This stage involved negotiations with HCT representatives, as well as a web conference where all the interested faculty members were invited to share their views and express their expectations regarding the program. These discussions were combined with a curriculum analysis of the original program to help customize the content adequately.

An important driver for the need of professional development for teaching faculty was the ongoing paradigm shift towards a networked knowledge society (e.g., Castells, 2007; Siemens, 2005) and its implications for education. The education-related discussion in the past years has been dominated by this construct; however, the focus has often been on individual phenomena rather than attempting to develop a holistic understanding of the underlying paradigm. This discussion can be very challenging for the educators, especially as it is often underpinned with an undefined but insistent demand to change in order not to fall behind. Therefore, one of the aims in developing the program was to demystify this discourse and offer a forum for critical and informed discussion. Also futures studies and trends were examined, such as the *Horizon Report* (Johnson, Smith, Willis, Levine, & Haywood, 2011), which regularly predicts a set of key trends—based on a yearly analysis of current articles, interviews, papers, and new research—considered to be the major drivers of educational technology adoptions during the next five years. To avoid a superficial showcase of trends and technologies, the aim was to combine theoretical knowledge of teaching, learning, and assessment with key trends in education, and bring both down to practice.

Authentic E-Learning Design: Creating the Prototype

The next step was to develop a prototype solution, informed by existing theoretical knowledge, design principles, and technological solutions.

The principles of authentic e-learning as defined by Herrington, Reeves, and Oliver (2010) were chosen as the framework for the design. Firstly, it was clear that the approach of a program that aims to transform teaching practice could not follow a traditional, top-down, one-to-many content delivery model that characterized the industrial age paradigm of learning (Castells, 2007). Secondly, it was crucial to ensure that the learning design would not fall into the pit that is extremely common in online learning: simply adapting new technology to traditional systems, practices, and methods (Herrington et al., 2010), rather than using authentic learning principles that complement the affordances and characteristics of online learning.

The designers were cautious to avoid the pitfalls often identified with regard to teacher professional development. Very often, the professional development is implemented rather poorly, typically in the form of isolated workshops that concentrate on developing teachers' technical skills with specific technologies (Dabner, Davis, & Daka, 2012). Many teacher professional development programs remain superficial and fail to provide ongoing support for teachers when they attempt to apply the new curricula or pedagogies (Dede, Ketelhut, Whitehouse, Breit, & McCloskey, 2009). The information is fragmented and does not fit with the professional contexts of the participants (Dede et al., 2009; Dabner et al., 2012). There are often limited opportunities for participants to interact with each other (Cho & Rathburn, 2013). Therefore, impactful professional development opportunities that lead not only to increased knowledge, but also to

improved teaching practice is very much needed (Dede et al., 2009, Ostashewski, Moisey, & Reid, 2011). The principles of authentic e-learning were seen as a useful design framework in order to meet these requirements.

Table 2 illustrates the characteristics of nine principles of authentic e-learning and how each was instantiated in the learning design of the program.

Table 2

The Elements of Authentic e-Learning (Herrington et al., 2010) and their Application in the 21st Century Educators Program

Element of authentic e-learning	How it was implemented in the design
Authentic context: ● The learning environment represents the kind of setting where the knowledge will ultimately be used. ● A non-linear learning design preserves the complexity of the real-life setting. ● The pathway through the learning environment is flexible.	● Studying alongside work and using one's classroom as a part of the learning environment allows for immediate application of the skills and knowledge in an authentic context. ● A non-linear learning environment was created using blogs, Google tools and online tools of one's own choice instead of only using a traditional LMS. ● Participants can choose to concentrate on phenomena relevant for their work instead of forcing exactly the same topics for everyone.
Authentic tasks: ● Activities that have strong real life relevance. ● Ill-defined, overarching complex problems instead of multiple small tasks. ● A sustained period of time for investigation ● The opportunity for the students to evaluate the relevance of sources and make decisions.	● Each module includes a long term project (6 months) that involves applying new theoretical knowledge in one's teaching ● Authentic product: a digital presentation that draws together all stages of the project (in many cases this also turned to be a real life conference presentation). ● The participants find sources for their projects themselves instead of being given a list of required reading.
Access to expert performances: ● Access to expert thinking and modelling of processes. ● Access to other learners with various levels of expertise. ● Opportunity to share narratives and stories about professional practice.	● Plenty of collegial sharing and learning from expert colleagues through blogs, discussions and team projects. ● Networking with international experts through social media tools.

Element of authentic e-learning	How it was implemented in the design
Multiple perspectives: ● Opportunity to explore issues from different points of view. ● Multiple pathways through the learning resources and materials. ● Various sources of information instead of for example a single textbook.	● Working in multidisciplinary, international teams, blogging and online discussions invite to explore phenomena from various perspectives. ● No textbook. Instead, multiple voices represented in the form of research papers, blogs, news articles, TED talks and other resources. Students were also encouraged to find resources themselves and share them with each other.
Collaborative construction of knowledge: ● Tasks are completed in pairs and groups rather than individually. ● The nature of the tasks direct towards group collaboration instead of simple cooperation. ● The group effort is assessed, not only the individual performance.	● Projects required team work. ● Blogging and online discussions promote collaboration - not automatically though, but they must be well designed and aligned with learning goals.
Reflection: ● Students are required to make decisions about how to complete the tasks. ● Students work in groups that enable discussion and social reflection. ● Nonlinear organization of materials to allow students to return to resources and act upon reflection. ● Students can compare their thoughts and ideas to experts, teachers and other learners.	● Constant reflection on readings, phenomena discussed and the projects in blogs. ● Blog commenting and discussions related to readings and projects allow for collaborative discussion and comparing one's ideas to others.
Articulation: ● The tasks require students to discuss and articulate their growing understanding. ● There are groups to enable articulation. ● Students are required to publicly present and defend arguments.	● Blogs and discussions used for articulating one's growing knowledge ● Genuine collaboration and working towards a common project requires and encourages articulation ● Blogging and the digital online presentations require presenting and defending arguments publicly.
Scaffolding and coaching: ● There is collaborative learning where learners are able to assist with coaching. ● Coaching and scaffolding are available when needed.	● Locally trained facilitators to coach the learning teams ● Feedback from program coordinator ● Scaffolding especially through learning design ● Discussion forums for learners to share good practices and help each other.
Authentic assessment: ● Assessment is seamlessly integrated with the activity. ● There are multiple indicators of learning. ● Significant student time and effort in collaboration with others.	● Blogs used as e-portfolios, where different phases and aspects of the learning process are documented in a reflective manner, assessment integrated into learning tasks ● Learning process assessed instead of separate assessment tasks at the end ● All tasks and readings build up to the project ● Evaluating group efforts

Once the intended intervention or the prototype of the solution was designed, it was evaluated and tested internally at TAMK. The design team guided a review team through the program, documented their recommendations, and implemented the final changes before the program went live in September 2011.

The First Iteration and Way Forward

Divided into three modules, the program was designed to run through three semesters. After each module, a survey was conducted to evaluate the appropriateness and effectiveness of the intervention. This section discusses the first iteration and evaluation and how it was used to inform the redesign.

Data Collection and Analysis

The first formative evaluation of the program was conducted in January 2012. The method chosen was an online survey that was designed within an online survey tool (SurveyMonkey). The survey included both multiple choice and open-ended questions, out of which quantitative data was used to obtain an overview of the trends, and then the qualitative data were analysed in more detail. Out of the 30 participants who completed the module and the nine facilitators involved, 27 people completed the survey.

A thematic analysis was conducted of the data received through the open-ended questions. A framework for the analysis was constructed using the elements of authentic e-learning for the categorization of the data. The respondents' comments were first arranged into the nine categories, according to the element of authentic e-learning to which they best belonged. In the second phase of the analysis, the categorized comments were sorted into challenges and opportunities regarding each given element. Once all the responses were categorized, recurring themes were sought and they were arranged thematically. The findings of the first evaluation have been reported earlier (Teräs, Teräs, & Herrington, 2012; Teräs, 2013), allowing this paper to concentrate on the most significant challenges that were identified, and explain how they informed the iterative design research process.

Translating Findings into Design Action Points

The analysis of the data revealed that especially four elements had caused challenges to the participants: *authentic tasks, collaborative construction of knowledge, scaffolding and coaching,* as well as *authentic assessment*. The open-ended quality of authentic tasks was new and challenging for many, and often it had been unclear for the

participants what was expected of them. The same problem was reflected in the uncertainty with regard to authentic assessment: The communication of the intertwined nature of the authentic tasks and assessment had been ambiguous and the idea of assessing the learning process instead of clearly defined assessment tasks remained unclear. Moreover, collaboration and working in teams had been difficult. Team members not adhering to schedules, communication difficulties, and different expectations caused friction. Scaffolding at the metacognitive level was also often seen as insufficient when more active facilitator directions and feedback were expected (Teräs, Teräs, & Herrington, 2012).

The first evaluation stage was followed by translating the gathered information into a refined redesign. As McKenney and Reeves (2012) point out, the challenge in educational design research is to redesign in a way that remains true to the original intervention goals. This requires careful reflection instead of hastily jumping to conclusions with regard to the usefulness of the intervention. For example, although in this study there appeared to be uncertainty and dubiety regarding authentic tasks, this should not automatically lead to the conclusion that traditional assignments are "better" than authentic tasks. Indeed, a closer examination of the nature of the challenges suggested room for improvement in the implementation of the authentic e-learning principles in the learning design.

The analysis of the data emphasised the crucial role of scaffolding and coaching in the success of an authentic e-learning design. Three areas (site design, facilitator's role, and learning task design) were identified where a balance needs to be sought, in order to avoid a jump from the frying pan into the fire—in other words, trying to change an unwanted situation by going to the other extreme that is equally dangerous, or that sacrifices the principles upon which the approach was based. Each of the pitfalls is illustrated in Table 3 by a metaphor: As for site design, the extremes are "rail shooter" (the term refers to a type of video game where the player has no control over the path of her or his avatar but is taken from beginning to end as if tied to rails) and a "lost without a map" scenario. The facilitator should avoid "force feeding" as well as "negligence", and the task design should resemble neither "assembly line" nor "needle in a haystack".

Table 3

Balanced Authentic E-Learning Design

	Frying pan	Fire	Balanced design
Site design	"Rail shooter": Very structured and linear design, information in chunks. Teacher / designer is responsible for the cognitive process, students are walked through a single path to a defined destination.	"Lost without a map": Very messy and chaotic, information hard to find, instructions not readily available (even when asked). Students' cognitive load is overwhelming and it feels stressful. No one ends up in their goal.	Inclusive, accessible and user-friendly design, clear and consistent goals and navigation, used together with the open-ended, user-driven and unpredictable characteristics of social media. Allow students to make their own decisions of working methods and tools.
Facilitator	"Force feeding": Teacher-centered, rich with instructions, to the point where students don't need to make any decisions or look for anything themselves.	"Negligence". Invisible facilitator, students are left alone without help. They feel abandoned and get the feeling that nobody cares for their learning.	Timely and constructive feedback, active communications, allow students room and time to think for themselves, don't give answers (or give hints of answers), instead scaffold the thinking process with well placed, genuine questions and comments. Help students deal with complexity instead of cleaning it out. Be reachable, not omnipresent.
Task design	"Assembly line" Very detailed instructions on assignments, defined steps to a well-defined (by someone else) problem. Outcomes are uniform: there is an "ideal performance", usually in the head of the teacher, the one who produces the closest equivalent scores best.	"Needle in a haystack": Very ill-defined problems, to the point that no one has any idea as for what to do (including the facilitator). Students don't know what they should be looking for, not to mention where they could start looking for it.	Authentic tasks that are relevant for the students and that they can feel ownership to. Consider the possibility of allowing students choose their own tasks, or at least their own perspective to the task. Scaffold the combining of theoretical and practical, high level of applied science. Include ongoing reflection of both the meaning of theoretical knowledge to the individual and of the application to practice.

The redesign of the learning environment involved practical adjustments that are described in more detail in the following section.

The Practical Redesign Steps Taken

One of the biggest individual challenges regarding the redesign was the learning management system (LMS) used. The LMS that had been in use during Module 1 did not seem to lend itself easily to the constructivist, authentic e-learning design. Being rather content-driven it allowed for little flexibility in the way the site could be presented, and the embedded tools, such as the synchronous meeting tool, were extremely teacher-centric. Relying fully on social media was not an option, due to privacy and legal issues related to assessment and student information. Therefore, a bold decision of changing the learning management system in the middle of the program was made and a new learning design was implemented in the Moodle LMS. The aim of the LMS transition was to improve communication and reduce the confusion with the learning tasks and assessment with the help of a clearer design, as well as to provide more user-centric forums for discussion. Moreover, a fortnightly email newsletter was introduced. The newsletter was visually appealing and informal in tone, with the twofold purpose of improving communication between the program leaders, facilitators, and participants, and promoting a sense of community by introducing brief participant and facilitator biographies, news, and examples of participants' work.

In order to better support online collaboration, the teams were restructured. They were reduced in size and each small team was allocated a designated facilitator. Moodle discussion forums were established to allow for spontaneous discussion related to the topic at hand. In addition to these measures that aimed to better support collaboration, the team project of Module 2 was redesigned to be less dependent on individual team members' performance.

To clarify the authentic assessment process, three scaffolding measures were employed. A clearer assessment rubric specifically adapted for blog writing and online collaboration was introduced. Moreover, the instructions for the project and blog writing tasks were rewritten in a way that illustrated more clearly how they formed a reflective part of the assessment. Finally, a Google spreadsheet for project milestone tracking was linked into Moodle. The spreadsheet allowed for the participants to mark completed milestones themselves, thus also making their progress visible for other team members. They could also share information about the scope and goals of their project through the spreadsheet, as well as share addresses to their blogs. The challenges related to facilitation were addressed in two ways. Facilitators' tasks were reorganized to reduce the workload and to clarify responsibilities, and the team facilitators were offered more systematic support from TAMK.

Figure 2 illustrates the way the identified challenges were translated into redesign.

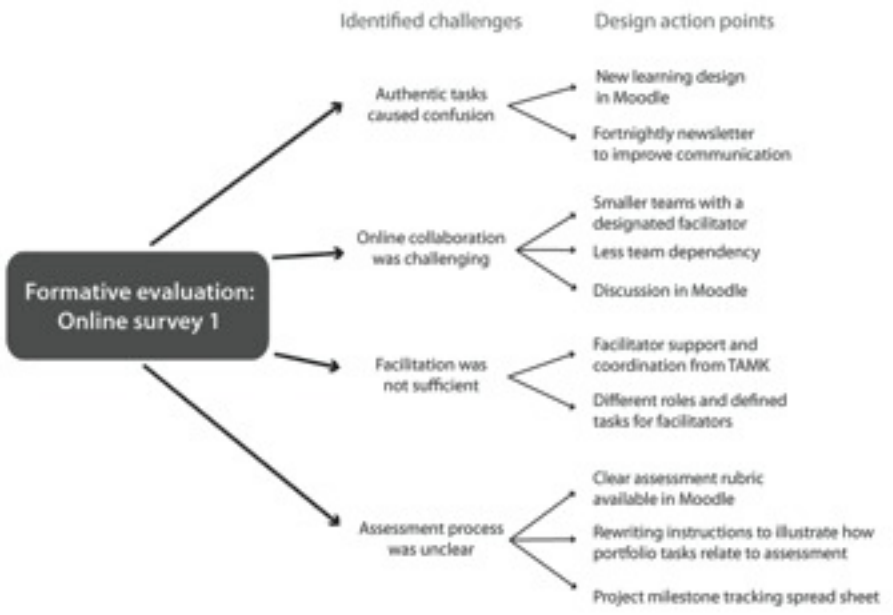

Figure 2. Translation of evaluation results into design action points.

Evaluating the Adequacy of the Redesign

A new survey was conducted at the end of Module 2, in order to evaluate the adequacy of the redesign measures, and identify new challenges and successes. The methods of gathering, thematising, and analysing data were similar to the first survey. This time, 10 participants out of the 19 that completed the module responded to the survey. Responding to both surveys was optional, so the significant decrease in the response rate is noteworthy. It might indicate that people had fewer pressing concerns after the second module and did not therefore feel the need to respond to voice their concerns. It could, of course, also suggest decreased interest, perhaps due to disappointment regarding how impactful the earlier feedback was. However, judging by the positive trend identified in the responses, this would seem less probable.

In the following section, the question of the adequacy of the redesign is addressed first, then a discussion of the new challenges and successes revealed by the data.

Authentic Tasks

Authentic tasks was an area that was addressed through several changes in the learning design. This proved to be successful: Nine out of 10 respondents found the requirements of the tasks clearer compared to the first module. The majority felt that the newsletter had brought added value. All respondents found Moodle a more suitable and more intuitive learning management system for the purposes of the program. Two respondents would still have hoped for clearer instructions, whereas some had found it difficult to implement the authentic task in practice.

However, this time the successful areas outweighed the challenges. Almost all the respondents reported that working on the project had been a highly rewarding learning experience. Learning to integrate relevant technology in one's own teaching, improving one's teaching skills with new ideas and methods, as well as positive impact on student experience were mentioned in the comments. This also became evident in the blogs where the participants continuously reflected upon the different stages of the project, in relation to theoretical knowledge and experiences from implementing and evaluating it. It is noteworthy that not all projects ended up being successes—sometimes they simply did not work out as planned. However, this also constituted a useful and rewarding learning experience—one of the respondents mentioned that the best part of the module had been "reflecting what went wrong with my project".

Collaborative Construction of Knowledge

Collaborative construction of knowledge also improved, but remained one of the most challenging areas. Half of the respondents found that collaboration had improved, whereas the other half found no difference. Six out of 10 found that the discussion forums in Moodle supported collaboration, mainly by allowing informal discussion and interaction between people from different teams. Sharing experiences and realizing that others struggled with similar questions had been very important for some of the respondents. However, others felt the discussions had not added value.

As for remaining challenges, two themes could be identified. There appeared to be a tendency of perceiving some other participants as hindrances to collaboration, either due to lack of knowledge, interest, experience, commitment, or engagement. As one of the respondents put it: "Too many participants think all they need to do is make a post. They don't seem to try to engage in the discussion or respond to what others say."

Respondents reported that peers had not provided feedback, or that they did not offer in-depth contributions or engage in discussion. Some participants hoped there would have been a way to find colleagues with similar working methods as themselves and form teams with them. One respondent even doubted that collaboration could ever be successful between people with such different levels of experience.

The few suggestions for better supporting collaboration all involved increasing the number of synchronous meetings, for example, through Google Hangouts. This had indeed been the intention in the redesign, however, the way these meetings were realized in the end varied greatly. Some facilitators made a much more systematic use of it than others. Some teams had found it hard to find common timeslots. This would probably always be the case in a program that is taken alongside work and other life commitments. A development consideration for the future might be to include more regular, pre-scheduled synchronous meetings, with the recommendation to attend a certain number of them.

Some participants felt that collaboration had greatly improved, predominantly due to the introduction of new collaboration channels. It could also be seen in the data that the

tasks being less heavily dependent on collaboration made the process easier. However, the design team felt this as a slight compromise in the authentic e-learning design: Collaboration should not be an optional and additional extra, but a built-in requirement for the successful completion of the authentic task (Herrington, Reeves, & Oliver, 2010). Therefore, reducing the dependency on the team was "the easy way out". Collaborative learning is in many ways more demanding than traditional individual ways, even more so in online environments, so it is very easy for the learning designers and teachers to simply revert to traditional practices. We feel, though, that a closer examination of the element of scaffolding and coaching and development of appropriate design principles is a more promising way forward in order to ensure that students can benefit from the strengths of collaborative endeavor.

Scaffolding and Coaching

The redesign regarding scaffolding and coaching turned out to be partly very successful, partly less so. Overall it could be said that the redesign of scaffolding—the aspects that could be improved with learning design—resulted in desired outcomes, whereas coaching—the aspect that required changes in the facilitators' work—was more difficult to improve. It was quite obvious that the new learning design was successful in reducing the anxiety and confusion that some participants had experienced during Module 1. The balance that was sought between the "rail shooter" and the "lost without a map" scenarios (see Table 3) seemed to be well achieved. However, the same balance was not found with regard to facilitation. The comments concerning facilitation displayed considerable variation. Some would not stop praising their team facilitator, whereas others felt that the team had been mostly working on their own.

The two main themes observed in the data were: 1) a need for more timely and better-focussed feedback to support the learning process, and 2) a need for more active involvement of the facilitators to improve the sense of community. The respondents suggested that the facilitators' workload would have to be adjusted more adequately ("they are doing a great job considering the little time that they have"), or that they should receive more training. Although the workload issue was beyond the influence of the design team, the important observation was that the role of the facilitator is central for the successful authentic e-learning process, and it should be ensured that facilitators have sufficient resources, relevant knowledge and experience, and sound understanding of the authentic e-learning model to be able to avoid the extremes of "force-feeding" and "negligence" as described in Table 1.

Authentic Assessment

The authentic assessment in Module 2 consisted of a development project where the teachers were requested to choose a technology that they would study, integrate in their teaching, and evaluate. They were to search for literature and earlier research regarding the technology, write an implementation plan of how and why they would be using it, reflect upon the different stages of the project in their blog, and, in the end, design and

share an interactive electronic presentation about the project. During the course of the module, theoretical background regarding online pedagogies was also introduced and the participants reflected upon the theory and its applicability in their project in their blogs. The process was explained in detail, and the milestone tracking tool was used to facilitate keeping up to date and to offer a support structure to the process. Compared to Module 1, there was significantly more scaffolding in place; however, the project still fulfilled the requisites for an authentic assessment task: The interactive presentation was a polished, refined product; students participated in the activity for an extended period of time (6 months), and the students were assessed on the product of an in-depth investigation.

Other Elements of Authentic E-Learning

The second evaluation indicated that all the areas that were redesigned had improved, and no new major challenges were identified. With regard to the five other elements of authentic e-learning, the most important observations were related to *reflection* and *articulation*. The ways in which the personal blogs were used in the program seemed to support these areas very well. For many, writing the blog was the most rewarding learning experience as it supported ongoing reflection in a systematic way. The way the blog and other activities contributed to the project and supported reflection was also appreciated:

> I enjoyed keeping track of the project and now have the possibility to look back. For me, that is a new experience and one that I appreciate, i.e. to have written down a teaching process and having shared it publicly.

The idea of public articulation of one's growing understanding was at first new and challenging to some participants, but it soon proved to be beneficial. In the words of one of the respondents:

> Writing my blog was not always easy as my learning process was now public. However, I have appreciated the challenge and regard it as one the best learning opportunities of this course. It has made me reflect a lot on teaching practices.

Thus a fruitful connection could also be found between articulation and reflective practice: Being encouraged to continuously make the learning process public supported the formation of a practice of reflection. Considering Schön's definitions of reflection-in-action,the type of reflection that takes place while we work,and reflection-on-action, where we look back and evaluate our own performance (1983), the process of articulation could also be seen as a way of making the reflection-in-action visible and public. Traditionally, students are usually required to publish polished, well-structured arguments that are evaluated and assessed. Therefore learners may at first feel quite uncomfortable with publishing unfinished thoughts, initial ideas, and works in progress,

just as the above quote suggests. However, it seems that this type of pedagogical use of blogs and discussion forums might be more effective in supporting the systematic development of reflective skills, which in turn seems to have a positive impact on professional development. When asked what the most rewarding experience during the program was, one of the respondents said the following: "Writing my blog, because it gave me the opportunity to reflect. I appreciate that as in my day to day I don't have much time for reflection and it is an essential part of learning and personal/professional development."

As for *access to expert performances* and *multiple perspectives*, some participants found the discussion forums very useful. The forums provided an informal channel for collegial sharing and support. Some of the participants made an extensive use of the forums, whereas others did not find them that useful and chose not to take part in them. The discussions were not a formal requirement, but the opportunity was provided on a regular basis. Keeping in mind that the participants were busy educators studying alongside work, it is noteworthy that so many took the opportunity to engage. This suggests that the need for an informal way of interacting and sharing with colleagues is very genuine and should be taken into account in the learning design.

Conclusion

This paper has described the use of an educational design research process in finding the right balance in an authentic e-learning design of a fully online postgraduate certificate program. Educational design research has proved to be a very fruitful approach for designing, implementing, and improving an educational intervention in a complex setting. It allows for rapid prototyping and very agile, targeted redesign through iterative cycles in order to gain a deeper understanding of the learner experience during the process. The iterative cycles of implementation and revision enables the learning design to be user-centered and significantly improved where required, and the strengths of the program can be identified at an early stage in order to further enhance the successful elements.

When implementing a fully online authentic e-learning program, it is helpful to identify the challenges and potential pitfalls. It is worthwhile to recognize and be aware of the extremes—the frying pans and the fires—and resist the temptation of hasty corrective measures. Authentic e-learning differs in many ways from some traditional educational approaches to which the students may be accustomed. Therefore, especially at the beginning of the learning process, the students may experience difficulties with some of the elements of authentic e-learning. These challenges are best addressed with adequate scaffolding and coaching measures. We close by suggesting four strategies for planning and implementing effective scaffolding and coaching to enhance the authentic e-learning experience.

1. **Scaffolding by learning design.** Much of the scaffolding can be built in the learning design, which frees resources for coaching. A clear and user-friendly site design, clearly communicated goals and schedules, as well as easy navigation to resources and tools are paramount.

2. **Scaffolded authentic tasks.** Building scaffolding measures, such as project milestones, into an authentic task helps learners to pace their work, to reflect both in-action and on-action, and to collaborate with each other. It is crucial, however, to resist the temptation of breaking the task into small, pre-digested chunks. Instead, all resources, discussions, and activities can be used as scaffolding measures, integrated in a way that builds towards a polished product.

3. **Encourage and enable peer support.** Peer support allows for shared expertise, community building, and the development of a reflective practice by continuous articulation. Moreover, it is another way of freeing facilitator time for coaching activities.

4. **Coaching for collaboration.** When scaffolding and peer support are successfully built into the learning design, the valuable teaching resources can be directed towards coaching and facilitating team effort and collaborative knowledge construction. Collaboration and forming of a learning community is a crucial but also the most challenging aspect of an authentic e-learning program and it can only succeed when properly facilitated.

Authentic e-learning was found to be very useful as a framework for both design and evaluation. The authentic approach allowed for a better transfer of learning and impact on teaching practice: Instead of merely gaining knowledge of pedagogy or learning technologies, or even learning how to use new teaching methods and technologies in practice, the participants had the chance to fully incorporate these into their teaching on a deeper level and thus transform their practice.

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Chapter 10
Learning Cultures and Multiculturalism:
Authentic E-Learning Designs

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ABSTRACT

In the rapidly globalizing 21st century knowledge society, multicultural understanding plays a major role. However, what do we mean by "culture" in the educational context, what aspects have or should have an impact on our learning environments, and might some of these assumptions direct the development of our learning environments in an unintended and possibly undesirable way? New learning models that differ from traditional learning approaches might cause a type of a "learning culture shock" for some learners. What are the best ways to avoid and overcome cultural clashes in online learning? This chapter discusses the experiences of two cases from multicultural and multidisciplinary online programs for teacher education and professional development. Both of the programs are based on the principles of authentic e-learning framework described by Herrington, Reeves, and Oliver (2010). The aim of the study was to find out how learners with different cultural backgrounds experience the authentic e-learning process, as well as to find out what impact the authentic e-learning model has on the development of the learning culture.

INTRODUCTION

During recent years, globalization and rapid technological development have brought about changes and new challenges for higher education throughout the world. Different, remote-access online learning approaches, such as massive open online courses (MOOCs), have extended learning opportunities for learners from different parts of the world and created new types of multicultural learning contexts. While these new learning encounters where learners from different cultures

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come together in virtual spaces offer new, exciting learning opportunities for many, they also bring new challenges for educators and educational designers. Increasingly often, learning spaces are virtual and the groups of learners are increasingly diverse. This raises questions of how to take cultural differences into account in the design and delivery of e-learning. At the same time, graduate outcomes such as critical thinking, collaboration skills, appreciation of diversity and intercultural communication skills, are in demand.

Multiculturalism and the impact of cultural aspects in learning are often associated with different ethnic backgrounds, religions and languages. While all such aspects are important to consider, it can also be argued that there are diverse learning cultures that affect the way students and teachers behave in an educational context. These learning cultures can be formed by factors such as academic tradition, field of study, and preferred teaching methods. Very often, these cultures - the traditional teaching and learning practices of higher education - are replicated in online learning. Learning management systems, such as Moodle, Blackboard or Optima, are used for information transfer through lectures or readings, followed by assessment based on the reproduction of this information (Laurillard & Masterman, 2009) Despite this, even the transition from classroom education to online learning can be seen as a major cultural shift (e.g., Develotte, 2009).

How can pedagogically meaningful multicultural learning spaces and processes, that meet 21st century needs, be created? Researchers have earlier examined, for example, issues of culture in online education (Goodfellow & Lamy, 2009) and different international pedagogies (Hellsten & Reid, 2008). This study examines two cases of multicultural online learning that are based on authentic e-learning as a pedagogical framework. Authentic e-learning has been found to be an effective paradigm, for example, in supporting advanced knowledge acquisition (Herrington & Oliver, 2000), collaboration and development of a learning community (Oliver, Herrington, Herrington & Reeves, 2007); self-direction and general working life skills (Teräs & Leikomaa, 2011); networking and connecting between educational institutions and working life (Leppisaari, Maunula, Herrington & Hohenthal, 2011), as well as reflective practice (Teräs & Herrington, forthcoming). Deriving from situated learning and constructivist approaches, authentic e-learning offers a strong association with real-life professional practices and ways of thinking, which makes it a more useful approach when skills such as creative and critical thinking, problem solving and collaboration are in demand. (Herrington & Oliver, 2000; Herrington, 2005; Herrington, Reeves & Oliver, 2010).

Authentic e-learning differs from the traditional presentation-driven educational approaches in many ways, and it may create a feeling of unfamiliarity and uncertainty - a "learning culture shock" - for people with a very different learning cultural background. In this chapter, factors that affect the implementation of authentic multicultural e-learning will be addressed. The chapter introduces two cases of authentic e-learning in a multicultural context and examines the effects of the multicultural aspect on their success. The research question represents two sides of the coin:

1. How did the learners from various cultural backgrounds experience the authentic e-learning process;
2. What impact did the authentic e-learning model have on the learning culture in the two cases?

LEARNING CULTURE AND CULTURAL IMPACT

In this chapter, we examine aspects that may affect the learning culture, and introduce examples of cultural impact that arise from the data of the two cases. We are interested in how learners with different cultural backgrounds experience

the authentic e-learning process, as well as the impact of the authentic e-learning model on the development of the learning culture.

Culture and Learning

One should be careful when referring to the concept of "culture" as it is not easy to define. Commonly, when talking about culture, people are referring to ethnic groups or nationalities. Many researchers have examined cultural differences in learning, often using Hofstede's model of cultural dimensions – power distance, uncertainty avoidance, individualism vs. collectivism, masculinity vs. femininity and long vs. short term orientation – as the framework (see Hofstede, 2001). However, it is easy to fall into the pit of stereotyping, as there are naturally noticeable differences between learners from the same cultural background, and nation states very seldom host a uniform culture.

In this context, learning culture is understood generally as an organisation or more broadly as a community's concept of learning and the related operational practices and underpinning practices. Learning is directed by a community's learning culture. Learning culture refers to operational practices that are characteristic to a learning community which are formed by learning, community, community members and environmental practices, perceptions and beliefs and their interpretation. Learning culture is defined as a set of shared beliefs, values and attitudes favourable to learning. (e.g., Innovative Workplaces, OECD http://www.oecd-ilibrary.org/education/innovative-workplaces_9789264095687-en)

The beliefs and practices of a community are absorbed through social interaction (e.g., Moore, 2004). Learning communities are a part of society that directs learning in accordance with objectives defined for education and social tasks given to graduates. The learning culture concept in practice is applied in multiple and diverse contexts and with various content; often learning cultures are broadly divided into two: Western – Eastern learning cultures. This inevitably leads one to think the phenomenon is over-simplified; what about Others? We also talk of teaching and learning clashes between different subject areas or different cultures; for example, collective learning, a 'doing together' culture may clash with a culture that stresses competition. Examples of these differences can be found in previous studies; for example, Boland, Sugahara, Opdecam and Everaert (2011) compared the learning style preferences of Australian, Japanese and Belgian students and found that the Japanese students had a clear preference for learning by watching, whereas the Australians were keen on learning by doing.

Given the complexity of the concept of "culture" or "learning culture," how should – or could - cultural considerations be addressed in designing online learning? Researchers have different approaches to what culturally aware learning design is like. There are at least two major ways of looking at the question: some researchers emphasize the need of catering for different learning styles, whereas others find it more important to find ways of promoting cultural awareness of the learners in and through the multicultural learning environment. For example, Morse (2003) sees that increasing awareness of cultural differences has very practical implications for the future of online learning in the form of market segmentation. Raybourn (2012) on the other hand suggests that cultural aspects should be taken into consideration when designing online learning environments so that they would better enable co-creation of narratives and support intercultural understanding between users. Hewling (2005) emphasizes that the collaborative nature of online learning requires that attention is paid to intercultural collaboration and facilitating the communication of culturally diverse learners.

On the other hand, "culture" is more than ethnicity or nationality. Hewling (2005) believes that focusing on ideas of culture associated with ethnicity or nationality is not very beneficial when examining intercultural activity in online learning

as the individual learners bring such a complex cocktail of cultural influences and determinants into the learning context. Other researchers have made similar remarks. Joy and Kolb (2009) found out in their study that the scientific background had a greater impact on learning styles than culture. Their findings are in accordance with the research of Lindblom-Ylänne, Trigwell, Nevgi and Ashwin (2006), who have pointed out a correlation between teacher's discipline and her or his teaching methods and approach to teaching and learning. They found evidence that teachers of physical sciences, engineering and medicine tend to favour more teacher-centred approaches whereas teachers of social sciences and humanities apply more student focused methods.

Academic traditions and learning culture also seem to vary in different countries. In these cases it can be hard to determine whether the different practices are due to the different culture in an ethnic / national sense, or whether the practices have historical background that derive from other variables. For example Syynimaa, Isomäki, Korhonen and Niemi (2010) report of difficulties in a Finnish-Russian collaborative online program that emerged from the students from the two countries being used to different learning methods, different roles of students and teachers, and different type of goal-setting for studies. Of course, academic traditions in different parts of a given country, or even between different institutions within a country may vary. They also evolve over time, which creates another level of cultural difference between students of different age groups.

Not all researchers see culture merely as something that is brought into the online learning context from outside. Rather, culture is created inside the learning context. We can understand the culture as an ongoing process of identity-construction through interaction (Goodfellow & Lamy, 2009). Contemporary learning theorists focus increasingly on the social nature of the meaning making process. As we engage in communities of discourse and practice, our knowledge and beliefs are influenced by those communities. So is our identity formation, which is also a major outcome of learning (Jonassen & Land, 2012). Schein (1992) points out that "the most useful way to think about culture is to view it as the accumulated, shared learning of a given group, covering behavioural, emotional and cognitive elements of the group members' total psychological functioning" (Schein, 1992, p. 10). In other words, the group starts creating its own culture from the moment its members start working together. Also Hewling (2005) sees culture as "doing" and online classroom as an evolving site of cultural creation. The learning cultures of tomorrow's learners are ever-expanding (Goodfellow & Lamy, 2009).

Authentic E-Learning and Creating a New Learning Culture

Similarly to the concept of culture, the concept of authenticity can also be defined in various different ways. In this chapter, authentic learning refers to the pedagogical conditions in online educational contexts—based on realistic settings and contexts—that provide opportunities for students to collaboratively undertake challenging and realistic tasks, resulting in meaningful products and significant learning. Rooted in situated learning, the education philosophical underpinnings of authentic learning are significantly different from teaching models based on content transmission. This presentation-driven way is very widely used in higher education, and there are undoubtedly countless students who are therefore used to this type of learning culture, either due to the academic tradition or discipline. Should educators thus apply online learning designs and methods that are familiar to these students? Trigwell, Prosser and Ginn (2005) would not recommend this - they argue that certain teaching strategies indeed are "better" than others in what type of learning they produce. A conceptual change driven, student-centred teaching strategy leads to deeper learning than one that is based on knowledge transmission (Trigwell

et al., 2005). They are not the only researchers who believe that traditional, presentation-driven way of teaching where information is delivered and tested is becoming less and less relevant: Solomon and Schrum (2007) also argue that it prepares students for jobs that require following directions and rote skills, which were very useful in the industrial era but not much so in the 21st century working environment.

Even though technological development has created rich affordances for a much more student driven and social ways of learning, the aforementioned content delivery driven approaches have been widely employed also in e-Learning. As Laurillard and Masterman (2009) point out, only a small proportion of the investments in ICT have been targeted at changing practices. Instead, E-books, interactive whiteboards and notebooks are used as electronic equivalents to traditional educational methods. Instead of learning with technology - taking full advantage of the nature and potential of emerging technologies as cognitive tools - what typically happens is learning from technology (Herrington & Parker, 2013). This exemplifies how a learning culture can be almost automatically transmitted into a new environment.

As illustrated in the previous chapter, the impact of culture on learning is a complex phenomenon and to take all possible variants into account in online learning design would be an overwhelming task. Moreover, it can be concluded that there are existing, long-rooted learning cultures that are no longer entirely relevant for the needs of the society. Therefore, the most beneficial way of designing multicultural online learning would probably be one that supports the shared creation of a new, 21st century learning culture and promotes cultural understanding and appreciation of diversity among the group of learners.

Authentic e-learning as described by Herrington, Reeves and Oliver (2010) provides a framework for online learning where a new, student-centred and active learning culture can be developed. Design guidelines provide a framework for educators to create such authentic e-learning environment, specifically:

- Provide authentic contexts that reflect the way the knowledge will be used in real life.
- Provide authentic tasks and activities.
- Provide access to expert performances and the modeling of processes.
- Provide multiple roles and perspectives.
- Support collaborative construction of knowledge.
- Promote reflection to enable abstractions to be formed.
- Promote articulation to enable tacit knowledge to be made explicit.
- Provide coaching and scaffolding by the teacher at critical times.
- Provide for authentic assessment of learning within the tasks (Herrington et.al., 2010 p. 18).

The emphasis on the collaborative completion of realistic artifacts, similar to those that people would undertake in real-world professional situations, means that a shared culture of both the context and the product must be developed by students as they engage with the task. The creation of genuine and useful products that can be publically shared online or within the course group, encourages students to create "polished products" with pride and a great deal of effort—and much more so than tests, essays or assignments that are only seen by the teacher as they are assessed.

THE CASES AND THE STUDY

Previous research at Tampere University of Applied Sciences has yielded encouraging results and promising guidelines for an authentic learning based model of teacher training that supports teaching faculty in adopting a new professional

role and identity, as well as in developing skills in innovative use of education technology (see e.g., Teräs & Myllylä, 2011; Myllylä, Mäkelä & Torp, 2009). Similar results were compiled also in International Virtual benchmarking project (IVBM) coordinated by Finnish Online University of Applied Sciences, in which teachers from five countries were developing authentic e-learning together using the nine elements of authentic learning as the peer evaluation criteria for development of e-learning in higher education (Leppisaari, Herrington, Vainio & Im, 2011; Leppisaari, Vainio, Herrington & Im, 2011). In turn, IVBM project's results were used in the ALP course design and implementation (see also Leppisaari, Vainio, Maunula & Hohenthal, 2012).

Introducing the Two Cases

Case 1 is a fully online postgraduate certificate program "21st Century Educators" (21stCE), developed at Tampere University of Applied Sciences. The aim of the program is to support the professional growth of teaching faculty who lack pedagogical background. The international pilot of the program was implemented at Higher Colleges of Technology in the United Arab Emirates during September 2011 – February 2013. The program is based on principles of authentic e-learning (Herrington, Reeves & Oliver, 2010) and it utilizes a wide range of social technologies. The program is designed to be taken in the authentic context of one's own teaching work, using the teacher's own classroom as an integral part of the learning environment and introducing authentic development projects that have a direct and immediate impact on the classroom work. The participating faculty members were both men and women, all expatriates, representing various nationalities from all over the globe, including Middle East, Europe, Asia, Australia and the US. Moreover, they were specialists of different subject matters. The program consists of three modules of 10 European credits, each taking on one semester. Thirty-two faculty members completed at least one of the modules and 23 were awarded the full certificate.

Case 2 is an Authentic e-Learning Principles course (ALP) implemented at Centria University of Applied Sciences. Centria is the leader organisation of KOR-EU KE-LeGE, Leaders for Global Education project. This project between European Union (EU) and the Korean Ministry of Education, Science and Technology aims to promote competencies of global education and intercultural sensitivity for young education leaders in Korea and EU countries. The targets are undergraduate students who will become secondary education teachers. The main framework of KE-LeGE comes from the framework of competencies four 21st century skills: ways of thinking, ways of working, tools of working, and living in the world (e.g., Cisco, 2010). The KE-LeGE exchange program creates Korean – European cooperation for learning the 21st century teacher skills. The Authentic Learning Principles course was produced and implemented within the KE-LeGE curriculum context in fall 2011 and 2012. In these pilots that are examined here as a whole, the aim was to design instructional approaches that support work-life competences of today. The ALP course introduces the nine elements of authentic learning (Herrington & Oliver, 2000; Herrington et al., 2010) and students engage these elements in online education teaching content production and online guidance provision. The courses clearly formed a multicultural learning environment, as in Fall 2011, thirteen students participated, mainly from South Korea, Lithuania, and Pakistan. The course was also multidisciplinary, with students majoring in education and management studies. In the first pilot (2011), there were two teachers who shared the tutoring resource and co-taught. The main focus in the pilot of 2012 was the multicultural learning process between Korean KE-LeGE student team and Finnish teacher. This authentic learning process was supported

Table 1. Summary of the cases

Case	Case1: 21stCE	Case 2: ALP Course
Organizing University	Tampere University of Applied Sciences	Centria University of Applied Sciences
Participants	International teaching academics of Higher Colleges of Technology in United Arab Emirates.	Centria students and exchange students, mainly from the KE-LeGE project.
Length of Program	1,5 years, 3 modules	2,5 months
Number of Participants	23-31. (23 completed all 3 modules, 31 completed at least one).	16 participated, 9 completed
Summary of Program	Postgraduate certificate for teaching in higher education. Professional development taken alongside teaching work.	Online unit for teacher students and students in various disciplines who require teaching and training skills in their work for promoting authentic e-learning processes in virtual learning environments.

by weekly webinars and also included a development task where students were asked to design or redesign an existing course using the authentic learning framework.

Data Collection and Analysis

For the development of quality multicultural e-learning we need to form an understanding of learning culture as a multidimensional phenomenon and learn to reflect the complex characteristics of multicultural e-learning (Goodfellow & Lamy, 2009). This paper examines the aspects of diversity and culture in these two programs. We are especially interested in the experience of the learners: how they experience the authentic e-learning approach and being a part of a multicultural online learning group. We are also interested in the formation of the internal learning culture within the multicultural online learning context. On the other hand, our aim is not to systematically compare the experiences of learners from different cultural backgrounds (e.g., Eastern-Western, or any given nationalities), nor do we extend this study to examine the impact of cultural backgrounds or pedagogical approaches to learning outcomes. We argue that in these cases, comparison with any specific cultural backgrounds would be neither feasible nor relevant. The participants of the 21stCE alone represented more than ten different nationalities, which would increasingly often be the case with internationally offered online study modules. Perhaps even more importantly, the different cultural backgrounds of the learners can seldom be predicted when enrollment is open internationally, which makes specific cultural comparisons less helpful for the online education providers and facilitators. Therefore, the purpose of this study is to gain a better understanding of the challenges and advantages associated with authentic e-learning in multicultural learning contexts. The observations discussed in this paper are based on the results of two qualitative surveys conducted during and after the first implementation of the 21st Century Educators program, and the first pilots of the ALP course.

Table 2 summarizes the data collection from both cases.

The research data for Case 1, 21stCE, consists of the answers to two qualitative surveys that were conducted after the first semester and at the end of the program. Twenty six of 32 participants and facilitators fully completed the first survey, and 12 of 22 participants completed the second one. The data collected consists of open, narrative-type answers to the questions that mapped the participants' experiences with various aspects of

Table 2. Data collection summary

Case	Respondents	Data Collection
21stCE 1	26	Qualitative survey after the first module of the program.
21stCE 2	12	Qualitative survey after the last module of the program.
ALP course	16	Online artifacts, discussions, learning tasks, reflections and course feedback; interviews, observations.

their learning journey. For analysis, the survey results were first categorized according to the nine elements of authentic e-learning, followed by a thematization of the comments into cultural challenges and advantages.

In Case 2, the main objective was to gather and analyze students' experiences with the course. The study data of the ALP pilot consist of Blackboard (Bb) (2011), and Optima (2012) online learning platform tracks (discussions, learning tasks, reflections and course feedback), KE-LeGE student interviews, KE-LeGE Facebook group site, and teachers'/ researchers' observations.

CULTURAL CHALLENGES

The analysis of the replies to the 21st Century Educators survey as well as the online artifacts of the ALP course revealed several themes related to cultural factors. Both challenges and successes with regard to the authentic e-learning approach could be identified. In this section, these areas are discussed in more detail.

Ambiguity Caused by the Authentic E-Learning Approach

In both cases, one of the biggest challenges seemed to be that the open-ended nature and the process of inquiry characteristic for authentic e-learning caused uncertainty and even stress for some of the participants. Many said that the instructions, purpose of tasks or the process of authentic assessment were unclear to them. Learners expect to be given clear guidelines, and may feel anxiety when this does not happen in the anticipated way. This is well illustrated in the comment of the 21ctCE participant:

At the beginning of any course it is important to know exactly where it is going, what activities need to be completed, and in what timeframe. (Case 1, Survey 1).

However, in both cases, the great majority of the participants who had sought help from facilitators or the teachers and peer students had had their problems solved. As an ALP student put it:

First I was little confused with how to make development tasks, so if I had gotten sample, I would have learned and studied more easily. But it wasn't too hard without samples because teachers honestly explained it very well. (Case 2, Student 3, 12.12.2011, Bb).

This illustrates a central feature of authentic e-learning: authentic tasks should not be simplified at the outset, but the complexity should be dealt with, just like in real-life situations. This approach is likely to cause a "culture shock" for learners who are accustomed to a learning culture where clearly defined, smaller scale assessment tasks are prominent.

It is also possible that the scientific background and discipline of the learners (cf. Joy & Kolb, 2009) might have had an impact on how confusing the authentic, collaborative learning culture and the reflective meaning-making process was for them, although some expressed openness to a new form of study.

I have taken one course from open cyber university. But I think this ALP has totally different form from that. So I'm looking forward to it! (Case 2, Student 3, 4.10.2012, Optima).

One of the most interesting findings was the clear difference in answers to the first and the second survey of 21stCE. The first set of data illustrated a great deal of anxiety and difficulties with regard to the open-ended and ill-defined nature of the authentic e-Learning approach. In fact, authentic tasks were identified as one of the three most challenging areas of the program. Many participants found it difficult to understand the instructions or the purpose of the tasks (see Teräs, Teräs & Herrington, 2012). A year later the results were quite the opposite: the majority of the participants listed the authentic tasks among the three most rewarding learning experiences during the program. One of the respondents mentioned that the most challenging thing had been "understanding the process *at the beginning of the course*" (italics by the authors). The results seem to support the rather common sense observation that new things tend to be confusing at the beginning but not anymore once one has become familiar with them. A similar progress could be identified in Case 2, as one student noted:

After drawing the concept map about Authentic learning (AL), we are learning little by little about what is the core concept of AL and also thinking about operationalising the authentic activities in our life. It is very good idea to find out broad information and contexts by ourselves from unlimited sources. Not only I realise that I am learning what is the authentic learning, but also I acknowledge that this course, this task from ALP is what the authentic learning is. Now I am sketching my first step of blue print about authentic learning. (Case 2, Student 2, 1.11.2012, Optima).

Group Dynamics and Communication

Especially in Case 1, some participants had at some point been frustrated with their team members. Time constraints and others not adhering to schedules caused frustrations, communication breakdowns occurred, and the expectations of the team were sometimes different or remained unexpressed. Some teams had gone through a full conflict during their collaborative learning process. Perceptions of time vary in different cultures, which may of course have an impact on how people react to schedules and deadlines. However, online collaboration is similarly challenging even within culturally more uniform groups. For example, Myllylä, Mäkelä, and Torp (2009) have observed challenges in online collaborative knowledge construction in all-Finnish groups of learners.

A lack of articulation also caused misunderstandings and collision. In the ALP course, blended learning implementation and weekly synchronous meetings (webinars) promoted finding solutions for asynchronous online group collaboration:

It is little bit hard to take part in, but I can learn in on, off-line both and get a feedback from teachers and co-students (also, collaboration). (Case 2, Student 10, 8.10.2011, Facebook).

However, collaboration often remained on a simple discussion level, whereas a deeper level of reflection and collaborative construction of knowledge was difficult to reach.

Overall, the formation of a learning community was in both cases demanding. This can at least partly be explained with different cultural

backgrounds. Firstly, higher education is traditionally largely based on individual work and many learners are thus not very experienced in collaborative learning (see e.g., Leppisaari et al., 2011). Moreover, some students had very little accumulated experience of how cooperation can be supported by computers and the Internet; instead they were largely perceiving computer use in education to be more individual work. This, again, is an indication of a different learning culture, which may be affected by academic tradition in the learner's geographical area or field of study. Secondly, communication tactics differ in different cultures - both ethnically/nationally and academically defined. Intercultural communication can be challenging in a face-to-face context, not to mention in asynchronous, text-based communication where the risk of misunderstanding, offending or remaining unclear is very high even between individuals with similar cultural backgrounds.

Nevertheless, some students saw the benefits of collaboration at a distance:

The atmosphere that is created by the students is helpful to their study. Moreover, students can help himself and also his peers by doing cooperative activities. [Collaborative study] is far more effective than independent study because of the intense interaction between students. (Case 2, Student 2, 12.11.2012, Optima).

Social technologies were in both cases seen as a factor that promoted online collaboration and made it easier. This observation is supported by Torp, Myllylä, Mäkelä and Leikomaa (2009) who found that the process of collaborative knowledge construction of teacher students became more effective when social technologies were used instead of, or in addition to, a learning management system.

As we used Optima in the Authentic learning class, we are using this webpage for doing discussion. From the help of this kind of webpages, we are allowed to interact each other such as commenting our opinions. Also, when we found one material related to Authentic learning, we might find them on people's blogs or pages, which means everyone can share their perspectives on Internet. (Case 2, Student 3, 12.11.2012, Optima).

Using collaborative tools such as Gdocs, blogs etc has been a real good experience. Also I have tried to implement a few in my teaching and will continue to use more in future, which I think will be very effective. (Case 1, survey 1).

Again, it is noteworthy that the experience the learners had with collaboration improved as the learning process proceeded. Whereas at the time of the first survey of the 21stCE, collaboration was perceived as the most challenging and even frustrating element in the authentic e-learning process, the results of the second survey indicated that it was the most rewarding element that the learners most valued - despite of the challenges. In order for this to be achieved, the collaborative element must not be an additional extra or an optional feature, for example a discussion forum where students can chat if they are interested or have time. Instead, collaboration must be an inherent part of everything that is being done. The following student comment summarizes the essence of collaborative learning in a very clear and insightful way:

If each member in the group is willing to do something together, it doesn't matter if the meeting is online or off-line. (Case 2, Student 2, 12.11.2012, Optima).

Expectations Regarding Scaffolding and Coaching

The third major challenge identified in the data is the role of the facilitator and learners' expectations regarding it. Some of the participants seemed to have expected more direct instruction, more clearly

defined tasks and more frequent and detailed interventions from the facilitators. In Case 1, there were also differences in how the facilitators saw their role. Some felt the need for more intervention and would have wanted to give step-by-step instructions, whereas there were some who hardly intervened - even when requested. Also, in Case 2, teachers aimed to take the role of mentors or coaches but in many steps of the learning process students would have wanted them to give "right answers" and "clear guidelines". In addition, receiving feedback, comments and further questions from teachers was quite a new experience for some students.

The role of the facilitator (Case 1) or teacher (Case 2) in an authentic e-learning process is very different from the traditional teacher's role, and this can be a challenge for the learners and the facilitator alike. Mällinen (2010) has observed that some teachers try so hard to step down from the podium and become "a guide on the side" that they actually become invisible. Land, Hannafin and Oliver (2010) also warn about mistaking the absence of support with student-centred design. The teacher in Case 2 articulated the new complexity in the teacher's role:

I hope that ALP course could give you an example of how learning can be a process / a journey. Our understanding about AL grows step by step during the course. It's important that we feel we don't need to be ready - I hope we feel free to share also our preliminary and unfinished views/perceptions. (Case 2, Teacher, 8.10.2012, Optima).

Supporting the development of a learner's self-confidence is essential in a new type of learning environment. It is also very important to consider how to take into account all the guidance resources of the learning community and to also promote learners' mutual peer tutoring and scaffolding (Leppisaari, et al., 2011) so that the students learn to seek assistance as part of the learning process (Remedios & Clarke, 2009). Based on our experiences, the authentic learning program needs a community to make it work (cf. Oliver, Herrington, Herrington & Reeves, 2007).

There were also cultural differences regarding critical reception of information (cf. Remedious & Clarke, 2009). A comment of an ALP student illustrates this:

I became confused in distinguishing which is really valuable material for my study. Sometimes I felt it was like finding a needle in a haystack. For solving these problems, teacher's advice and coaching are needed.:) (Case 2, Student 10, 12.12.2011, Bb)

The responses in Case 1 were very similar. The results of both surveys indicate that the participants valued comments and feedback from the facilitators, and would have appreciated to have them more frequently. Comments related to requests for "more timely feedback" and "more interaction with the facilitators" came up very frequently. It should be noted here, however, that the ALP students received more structured and frequent feedback from the teacher than the 21stCE ones. Moreover, the ALP students all had the same teacher, whereas there were several team facilitators for the 21stCE, all of whom had their own individual ways of working.

In their last self-evaluation at the end of the course the ALP students were asked to reflect on how they learnt best. One student wrote:

Comments from the teachers were helpful in developing concepts/thoughts. My thoughts would have been limited if there weren't teacher comments. In addition to this group assignment was also effective in applying what I have learned. (Case 2, Student 1, 16.12.2012, Optima)

Whereas the value and significance of feedback as a part of the scaffolding and coaching process cannot be undermined, it is also worth considering whether the frequent intervention of the teacher may possibly have more negative effects

as well. While the comment above illustrates the importance of scaffolding and gives an example of access to expert performances, it may also carry the implication of a teacher as a knowledge authority whose opinion, in the end, is the right one. When teacher intervention comprises direct assistance rather than metacognitive prompts, it may in some cases encourage dependency on authority instead of promoting the development of critical thinking skills.

CULTURAL ADVANTAGES

Sharing

Collaboration may have been one of the major challenges in the authentic e-learning process, but it was clearly also one of the most rewarding aspects in both cases. Learning from others, access to expertise from outside the program, working in teams and especially following each other's blogs or learning tasks and reflections were seen as great advantages of the program. In the traditional learning culture, not only students but also teachers often work in isolation from peers. However, learning and working together is a key aspect of authentic e-learning, promoted by many of its elements (authentic tasks, access to expert performances, collaborative construction of knowledge, multiple perspectives, articulation, scaffolding and coaching). One student articulated this well with this comment:

Sharing ideas always broaden one's thoughts and develop in depth. (Case 2, Student 3, 17.12.2012, Optima)

The model thus creates plentiful forums and opportunities for shared narrative, negotiating meaning and building a common learning culture, making it an extremely useful model for multicultural learning. In Case 1, the participants worked in teams throughout the one and a half years of studying. Despite all the challenges discussed above, the participants highly appreciated the constant sharing of expertise. This was especially prominent in the responses of the second survey. When asked about the most rewarding learning experiences in the program, the learners listed things such as "working in group projects," "sharing best practices with the team," "working in teams and sharing" – one respondent even mentioned "the collaborative nature that underpinned most of the activities". When asked about ways of improving the program, many suggested there should be even more group activities.

In Case 2, team teaching in the first pilot supported the processes of collaborative construction of knowledge and reflective sharing of the expertise, and helped students to understand the goals of learning culture and working practices. The sharing of one's own growing understanding of the authentic learning phenomenon and elements was for many quite a new and very rewarding experience. ALP students commented:

Other students here supported my learning, especially different mindmaps gave me a better understanding of AL (authentic learning). (Student 11, 5.10.2011, Bb)

By articulating we promote our learning deeply and make us think to be organised. Personally, this is the way to learn and memorise, so the most important thing is left here. How do we promote students to articulate? (Student 2, 26.11.2012, Optima)

Different learning cultures may also affect the way we perceive sharing and collaborative learning. In a learning culture where organizing, categorizing and memorizing are central, discussion might be difficult at the beginning of the learning process, when the disconnected "bits and pieces" are not yet organized into a meaningful whole. It may be difficult to talk about concepts that are not yet clear. The discussion may become more fruit-

ful if it is started only when there is a sufficient understanding of the theoretical background (cf. Tharar, 2007, p. 51).

Reflection and Articulation

Reflection is one of the nine key elements of authentic e-learning. In both cases described here, the opportunity for ongoing reflection—both individually and collaboratively—was appreciated by most of the participants. The impact of reflection on learning and professional growth was also valued by many. The following student comment is a good example of this:

It made me look at my own teaching style and methodologies in a critical way and provided me with opportunities to understand in more formal way the way I taught content to my students. (Case 1, Survey 2)

In Case 1, blogs were used for reflection and articulation throughout the entire program. The learners enjoyed both the writing of their own blogs or reflection tasks, and many also mentioned that they had benefited from reading those of others. However, this was something that some of the learners "grew into," instead of embracing it unreserved from Day 1. One of the participants mentioned that making their open questions and learning process public was not easy at first but in the end proved very rewarding. Revealing one's unpolished thoughts and the process of learning with all cycles of trial and error, doubts and uncertainty – opening one's heart and making public the process of learning to know oneself better – is indeed something that does not traditionally belong to our learning cultures. Some cultures might accept the idea more readily than others, but in most cases it would be something that has not been a part of the learning culture the participants were used to. In this light it is outstanding that reflection was so frequently mentioned among the most rewarding learning experiences.

In addition, in Case 2, particularly at the beginning of the learning process, reflection was experienced as very challenging. However, in this case too, students got used to the practice rather quickly. Teachers also emphasized that critical thinking and evaluative learning were expected and preferred (cf. Remedios & Clarke, 2009). However, the students needed encouragement for making critical and expansive questions, reflecting and articulating their learning. For example, the following two quotations comprise a student's comment on self-evaluation, followed by the teacher's scaffolded support at the metacognitive level, and response:

This is the first self-evaluation. I have taken three times of lecture, found two links about authentic learning, done several assignments and started thinking about our development task so far. Now I'm catching the idea about Authentic learning vaguely. I need to get used to this module task more. (Student 3, 31.10.2012, Optima)

The teacher commented:

You describe clearly the main points of what you have done so far. You also tell how you feel about your learning at the moment. To support you to catch the idea of self-reflection, I will yet ask you some questions: Are you satisfied with your situation/learning process on ALP? Or is there something what you'd like to do differently? I see that you are working hard and your understanding of AL is growing. How do you feel you have worked in your group? How do you describe your contribution to the group task during last days? (Teacher, 31.10.2012, Optima)

Cultural differences in the use of self-reflection were also evident and asking for students' self-reflection about a topic was especially challenging, because in a traditional sense, they were not accustomed to reflecting on the process of their learning (cf. Leppisaari et al., 2011). Asynchro-

nous learning processes/practices seem to support reflective learning well (cf. Clarke, 2011) in multicultural learning environments.

Becoming more reflective and aware of one's actions and ways of thinking is a key factor in increased cultural understanding. Antal and Friedman (2004) point out that critical self-reflection "opens up new ways of seeing a situation, expands the range of potential responses and helps people become more effective at generating shared understanding" (Antal & Friedman, 2004, p. 6). Therefore, creating an intentional space for continuous reflection can be seen as an essential feature of multicultural online learning. New social technology tools support the possibilities to create common meaningful spaces for reflective learning (e.g., group wikis, blogs, e-portfolios) (see e.g., Wenger, White & Smith, 2009). The role of reflection is also central in the reform of educational practices. Kenna, Yalvac and Light (2009) found that the more faculties get engaged in education-related reflection and collaboration, the more readily they adopt more student-centred teaching approaches.

Appreciation of Diversity

It is noteworthy that the multicultural nature of the program was warmly welcomed by the participants in both cases. They appreciated the multicultural learning environment, multidisciplinary collaboration and generally working with people from different backgrounds and felt that the diversity enriched their learning considerably. Writing blogs and reflection tasks, working on a team project and taking part in online discussions offered plentiful opportunities for participants to explore issues from multiple perspectives and benefit from the rich diversity. This, again, is a central element in-built in the authentic e-learning model. An ALP teacher student reflected on the learning experiences in the multicultural learning community:

On the ground of my experience, studying with peer and interacting with them is helpful for me. Studying with peer, I can get more information and feedback from them. Also, they are more easy to contact for asking and discussing so it is a benefit to me. (Student 10, 13.12.2011, Bb)

In Case 1, the participants truly experienced diversity on many different levels. Instead of trying to form teams that were as homogenous as possible, the opposite was sought. The teams were built in such a way that almost all participants were from a different country of origin and represented a different discipline. This way a very rich combination of ethnic / national cultures, learning cultures and cultures deriving from different scientific backgrounds was reached. Already the results of the first survey indicated that this was a successful strategy: not a single complaint about diversity emerged, but instead there was plenty of praise for things such as "connecting with different people," "working with people from different backgrounds," "different perspectives" and "good insight to a multicultural learning environment". At the time of the second survey, the same elements continued to be valued. Many learners considered working in groups, sharing best practices with the team, and getting to know other participants to be the most rewarding aspects of the program.

LIMITATIONS AND THE WAY FORWARD

In this study, two cases of multicultural authentic e-learning have been examined in order to obtain deeper understanding of the way learners with diverse cultural backgrounds experience a study program that has been designed according to the authentic e-learning approach. The study does not aim at comparing the experiences of learners with certain nationalities, nor does it include any comparison of learning outcomes of

different groups of learners. Being a case study with a qualitative research approach, it does not suggest generalizable results. However, similar observations regarding the elements of authentic e-learning could be made in both cases, and the findings can be helpful for educators and learning designers who design and implement online learning programs for multicultural groups of learners.

In Case 1, the data was collected using online surveys. The method was chosen because of a physical distance between the participants and the researcher, convenience, easy integration with the online learning environment, as well as the flexibility of the survey tool in designing questions. However, there are certain limitations regarding surveys: a link in the online environment or email is easy to ignore by time-poor respondents, and there is no opportunity for in-depth dialogue between the researcher and the respondents. The observations, online artifacts and discussions in the online learning environment that were used in Case 2 provide rich data, but on the other hand they lack the focus and opportunity for targeting questions. Thus using different types of data has allowed for us to sketch a richer and more detailed picture of the experiences of the learners. The next steps will involve narrative interviews of the participants (Case 1) and targeted online survey (Case 2). The interviews (Case 1) and online survey (Case 2) are conducted a few months after the end of the program, in order to gain a deeper understanding of the learner experience during the program, as well as the impact of the program in the professional practice of the participants.

CONCLUSION

Culture is a complex concept, and learning cultures are affected by many variables. Moreover, the traditional, teacher-centred and content-driven learning culture does not necessarily produce the kind of learning that is needed in the 21st century knowledge society. Striving for a learning design that accommodates and accords with different students' existing learning culture is therefore not only almost impossible, but also "dangerous" (to use Antal & Friedman's, 2004, description). Instead, it is crucial to develop learning designs that allow for dialogue, reflection and collaboration and thus creates a solid starting-point for the group to collaboratively create a multicultural, 21st century learning culture.

When moving out of the centre of the learning process, the role of the teacher changes and becomes more of a designer/script writer who delivers the pedagogical architecture for the "learning play" before it starts, and then acts as a participant, learning and facilitating in the network through the various movements between meta-communicative levels in the networked dialogue (Sorensen, 2007). Authentic learning programmes must be implemented by using the very working methods the students are expected to learn. In so doing in the cases described here, students gained significant and meaningful experience from the power of cooperation and feedback in learning. An ALP student summarized her findings as follows:

To support authentic learning, interaction and collaboration within individual, pair and team is important. Furthermore, effective access to experts is also necessary. Also learning community is a significant thing. (Case 2, Student 10, 13.12.2011, Bb)

Authentic e-learning seems to provide a useful framework for this type of a learning design. The nine elements of authentic e-learning all promote the type of activity that can lead to an increased cultural understanding and collaboration. This can also be seen in this study: learning from others, opportunities for reflection and diversity were greatly appreciated by the participants. However, the model is very different from traditional learning approaches and can therefore cause a type of "learning culture shock" for some learners. It is essential that sufficient scaffolding is provided

especially at the beginning of the program to help learners cope with the ambiguity and complexity of authentic tasks. Moreover, as authentic e-learning requires a great deal of collaboration and working with others, contrary to the traditional individual approach, special attention must be paid to facilitating the collaborative activities, communication and development of a learning community. Thus it is not surprising that the third key challenge identified in this study is scaffolding and coaching. It is important to develop new ways to harness a group's mutual support and peer support to promote multicultural learning.

The cases we have examined differ in duration and group size. However, common features include their multidisciplinary and multiculturalism, and above all, the chosen pedagogical approach. Based on our study and research questions three common cultural challenges were recognized concerning the following factors: 1) Ambiguity caused by the authentic learning approach, 2) Group dynamics and communication, 3) Expectations regarding scaffolding and coaching. Accordingly, we have further identified three common cultural advantages concerning our cases: 1) sharing, 2) reflection and articulation, and 3) appreciation of diversity.

It could be said that authentic e-learning represents a paradigm shift from traditional to 21st century learning culture. In many ways, it also involves transformation and change - elements that are never very easy for learners. Moore (2005, p. 84) points out that "by avoiding transformation of perspectives, we may feel safe and secure, whereas shifting our underlying assumptions can make us feel insecure and unsure". This draws our attention strongly to the eighth element of authentic e-learning: scaffolding and coaching. The role of the facilitator is essential in the process of developing a shared learning culture; he or she has the role of a leader of change, a supporter of a profound process of growth. Moreover, growing attention should be given to the role of peer coaching, especially in multicultural online learning (Liu, 2007).

Facilitating multicultural online learning in an authentic e-learning context is an important question that should be explored in practice, and investigated in further detail through ongoing research.

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KEY TERMS AND DEFINITIONS

21st Century Educators: A pedagogical qualification training program developed at Tampere University of Applied Sciences. The target group is in-service teaching faculty who are subject matter experts without pedagogical background. The program is fully online and based on the principles of authentic e-learning.

ALP, Authentic Learning Principles Course: Authentic Learning Principles course offered by Centria University of Applied Sciences focuses on the following topics: what is authentic learning, why it is needed and how we can promote learning by using elements of authentic learning. Having completed the course the learner will be able to design, implement and evaluate online courses and teaching modules that support authentic learning and promote authentic learning processes in virtual learning environments.

Authentic E-Learning: Pedagogical conditions in online educational contexts—based on realistic settings and contexts—that provide opportunities for students to collaboratively undertake challenging and realistic tasks, resulting in meaningful products and significant learning.

KE-LeGE: KOR-EU Leaders for Global Education project (2011-2014) where 4 European and 3 Korean higher education institutes develop the skills of future practitioners to work in global

education contexts. The project funds student and staff exchanges as well as development of global education contexts.

Learning Community: A group of people who engage actively in learning together. They work collaboratively, support each other and share their knowledge with each other to achieve a shared learning objective.

Learning Culture: Shared learning of a given group, covering behavioural, emotional and cognitive elements that affect the way learning is perceived. Learning cultures are affected by complex cultural variables that may derive from nationality/ethnicity, academic traditions, personality, learning styles and methods of instruction.

Online Learning Community: A learning community that works collaboratively in an online environment, using online social networking tools and resources. Online learning communities share knowledge via Internet-supported media.

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Collaborative online professional development for teachers in higher education

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Enhancing teaching quality has become a priority for many universities. The need for high-quality professional development for university teachers is therefore crucial. Earlier research has indicated that isolated workshops often fail to result in significant changes in teaching practice. It has been suggested that the desired transformation requires changes in perceptions of educators, not merely learning new techniques. Reflective, collaborative long-term professional development that is integrated in the everyday activities of the educators has proven to be a promising approach; however, research that addresses how this can be implemented in online learning is scarce. This study investigates the learning experiences of seven educators who participated in a collaborative, authentic e-learning-based online professional development programme. Narrative analysis is used for examining the experience of the participants during the programme and the perceived impact on their professional growth. The results suggest that while collaborative online professional development can be challenging due to the different learning needs, expectations and preferences of the participants, it can potentially lead to significant professional growth. Instead of accommodating different learning preferences, emphasis should be given to supporting the development of self-regulation skills and strengthening the facilitation of collaborative learning.

Keywords: online teacher professional development; teaching in higher education; authentic learning; narrative research; online collaboration; professional growth

Introduction

As higher education is going through changes, professional development needs for university educators have become ever more pressing. During the past decade, increasing emphasis has been placed on enhancing teaching quality in higher education institutions (for example, Knight *et al.* 2006). In the age of digitalisation, professional learning programmes are increasingly often offered online. However, earlier research has identified shortcomings in teacher professional development endeavours, especially with regard to the degree of impact they tend to have on changes in teaching practice and student experience.

While there is increasing understanding of what constitutes an effective professional development programme in the higher education context, there are

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fewer examples of the design and implementation of impactful online professional development (oPD) for university educators. For example, although there is wide agreement among researchers about the value of social interaction and learning communities for oPD, there is a less clear understanding of practical design principles with regard to learning design and online facilitation that would promote effective collaborative oPD. While some studies indicate that a certain percentage of the participants experienced problems in online collaboration or would have required more personalised support, we usually do not get to hear from the learners themselves. We seldom see the full picture of the learning experience of a group of individuals throughout an oPD programme, although this would offer a richer and more detailed understanding of the collaborative learning process. Moreover, we seldom hear of what happens in teachers' classrooms after the programme: What do the participants take home from oPD and how do they perceive the experience and its impact on their professional growth?

The present study is a narrative inquiry that investigates the learning experiences of seven educators who participated in an authentic learning-based, fully online postgraduate certificate programme for teaching in higher education. The research questions that the study seeks to answer are: how did the participants experience the collaborative online learning experience in an authentic e-learning-based oPD programme; and how did the participants perceive the impact of the oPD programme on their professional growth? The two questions are interrelated. Learning is a process rather than a one-time event. Therefore, in order to understand the destination, one cannot overlook the journey: the destination is a result of the path taken, the travel companion, the guidance received and the vehicles used. In other words, measuring the impact of a given learning intervention without gaining understanding of how the learners experienced the learning process only gives a partial understanding of the effectiveness of the said intervention.

Professional development in higher education: pitfalls and success factors

It is widely agreed that high-quality professional development of teachers plays a central role in improving education (Guskey 2002, Borko 2004, Dede *et al.* 2009, Creemers *et al.* 2013). While teacher professional development has been studied more extensively in the school context, this is also true in higher education: Blackmore and Blackwell (2006) go as far as to state that nothing at all can be achieved without staff expertise, which is the single most important asset in a university. It must of course be noted that while teaching is an important part of academic work, it is only a part of it. Academics are increasingly feeling the pressure of being expected to simultaneously excel in teaching, research, administration and numerous other responsibilities (Blackmore and Blackwell 2006). Therefore it should be emphasised that the professional development needs of academic staff go well beyond pedagogical skills. However, these are out of the scope of this investigation, which concentrates on the teaching aspect of academic work.

The role of the university teacher is changing: education technology, massive open online courses and focus on increasing student recruitment and retention are all trends that are shifting the focus into issues such as student engagement, active learning and more authentic ways of teaching, learning and assessment. Teachers in higher education are under increasing pressure to evolve and innovate in order to achieve these goals. Teaching certainly has a tremendous impact on student learning:

Prosser and Trigwell (1999) have demonstrated that different teaching approaches evoke different approaches to learning. A teacher-centred, knowledge transmission-based strategy is likely to encourage a surface learning approach, whereas student-centred teaching tends to lead to deep learning strategies. Therefore, as Prosser and Trigwell (1999) emphasise, students' approach to learning is fundamentally related to their learning outcomes.

Unfortunately, the professional development programmes offered to support teaching in higher education are often either sparse or inadequate. Sometimes they are downright non-existent; Knight *et al.* (2006) have studied how academics learn to teach and the results indicate that the two most common ways are simply doing the job of teaching, and drawing from one's own experience as a learner in higher education. The danger of this socialisation-based approach is that it is resistant to change and improvement. Young teachers may mimic their senior colleagues, who in turn teach the way they have been taught themselves, in many cases decades ago. When considering the desired outcome of teacher professional development, improving the student learning experience (Knight *et al.* 2006), this type of professional learning looks rather alarming.

When professional learning opportunities are offered, they often have a pragmatic focus and they are 'conceived in terms of changing lecturers' practice – their techniques and skills' (Gibbs 1995, p. 21). As Gibbs (1995) observes, these endeavours often lack theoretical basis and fall short in developing academics' pedagogical understanding. Another pitfall that has been identified in earlier research is the decontextualised way of delivery that characterises much of the professional development offered for academics. Increasingly often, lecturers are required to participate in professional learning that represents the 'fragmented and intellectually superficial' workshop type described by Borko (2004, p. 3). The result is that participation as well as the outcomes may become compliance-driven with the goal of 'ticking a box'. Knight *et al.* (2006) found many such examples: they cite a respondent who states that they did change their way of marking assignments although they remained unconvinced it was the right approach (Knight *et al.* 2006, p. 329). Instead of leading to educational improvement, these professional development programmes may lead to teacher frustration with time-poor academics having to commit a great amount of precious time that they do not have, while not gaining much in return (Dede *et al.* 2009). Liu (2012) points out that due to failure to meet the actual professional development needs of the teachers, professional development programmes are often perceived either as additional extra burdens or as time off for teachers instead of legitimate professional work. Rienties *et al.* have studied oPD in higher education and they emphasise that it is particularly important that, 'professional development is embedded into the academics' daily practice and not just concentrated upon in one particular context' (2013, pp. 122–123).

Norton *et al.* (2005) suggest that different teaching approaches reflect different underlying conceptions of teaching and learning. The way of genuinely enhancing a teaching approach of academics thus involves the acquisition of more sophisticated conceptions, rather than the acquisition of more information about teaching and learning, adoption of education technology or the learning of new teaching techniques. Although these issues may constitute the immediate focus and objective of the learner, Mezirow (1997) emphasises that in addition to the short-term objectives, the long-term goal of transformation must be taken into account when designing adult education. According to Mezirow (1997), facilitating transformative learning

involves promoting critical awareness of one's and others' assumptions, practice in recognising frames of reference and multiple perspectives, and effective participation in discourse. It is clear that this transformation is a process of professional growth that cannot be achieved in a single workshop. Instead, the changes in attitudes result from successful classroom practice and observed positive results in students' behaviour and learning (Guskey 2002). The brief and fragmented workshop-type professional development does not extend to the level of classroom implementation and the related reflection, and thus also the change in teacher attitudes may remain unachieved. According to Ling and MacKenzie (2001), while these endeavours may increase the participants' level of awareness of the issues covered, they very rarely result in change that would reflect in classrooms. Therefore, if change in practice is seen as an evaluation criterion of the effectiveness of professional development, most of it is ineffective. Instead, professional development that is run over an extended period of time – for example, in the form of action research or a development project – is more likely to reflect in classroom practice as well.

This view is supported by Lawless and Pellegrino (2007), who found that effective professional development provides teachers with support for a substantial period of time, as well as opportunities for implementation and sustained reflection. Moreover, teachers who participated in Ling and MacKenzie's (2001) study gave praise to professional development that was long-term, offered opportunities for practical application, included collegial sharing, was project-based and was well supported. While these factors have repeatedly been identified in the research literature, Rienties *et al.* (2013) point out that there is very little research that addresses how this type of integration of daily practice into formal teacher development can be effectively established – let alone in a fully online format. The professional learning programme investigated in the present study is a novel approach to oPD in that it attempts to do just that.

Background and context of the study

The scene for this study is Twenty-first Century Educators (21stCE), a fully online postgraduate certificate for teaching in higher education developed in Finland. 21stCE was designed to support multicultural teaching faculty in deepening their understanding of teaching and learning, education technology and assessment in the context of a twenty-first-century knowledge society. The international pilot of 21stCE was implemented in partnership with a major Middle Eastern higher education provider, starting in September 2011. The cohort of participants was diverse: they were women and men who represented different subject areas, nationalities, cultural and religious backgrounds as well as age groups. All of them were practising teachers who took the programme alongside work. The programme consisted of three modules, each of which ran for one semester (five to six months). Thirty-two people completed at least one of the three modules and 22 were awarded the full certificate in February 2013. The participants worked in small teams of six to eight people and each team had its own team facilitator. For this study, seven of these people shared their stories of this 18-month journey.

The education philosophical approach of the programme builds on the views of Prosser and Trigwell (1999), who argue that good teaching consists of teachers becoming aware of their conceptions of and approaches to learning and teaching, and putting focus on individual students and their learning experience. This

understanding was thus simultaneously a design guideline and an intended learning outcome of the programme. Moreover, the programme aligns with Zuber-Skerritt's (1992, p. 147) position of the most appropriate mode of teaching and learning in higher education, namely 'learner-centred, problem-oriented, interdisciplinary, process-centred, and using an open, critical approach'. In doing this, the programme aimed to answer the challenge identified by Leppisaari *et al.*, which is 'to integrate *doing* in authentic environments more fully within online education' (2013, p. 54; original emphasis). These goals meant that the programme could not be designed in the traditional content delivery model: the programme needed to practise what it preaches. Therefore, 21stCE is based on the principles of authentic e-learning (Herrington *et al.* 2010) and utilises a variety of social technologies, especially personal blogs, as the learning environment.

The narrative research process

I chose the narrative method for three reasons: I wanted to understand the experience of the participants; I needed the research approach to align with the education philosophy and pedagogical underpinnings of the programme that set the scene for this study; and I was interested in finding ways of improving the online human interactions – collaboration and facilitation – that were central for the programme.

Characteristics of narrative research

Narrative research is a qualitative research method with the distinctive characteristic that it aims at the study of stories, narratives or descriptions of a series of events (Riessman 1993, Lieblich *et al.* 1998, Polkinghorne 2007). Narrative inquiry is interested in life experiences as narrated by the people who live them. It is about, 'meaning making through the shaping or ordering of experience, a way of understanding one's own or others' actions, of organizing events and objects into a meaningful whole, of connecting and seeing the consequences of actions and events over time' (Chase 2011, p. 421). In essence, narrative research 'makes claims about how people understand situations, others, and themselves' (Polkinghorne 2007, p. 476). This aligns with the research task of the present study; to study the participants' experience with the learning process and their own professional growth.

Stories are a fundamental, inherent human characteristic: they have been used in meaning-making for as long as there has been spoken language (Clandinin and Rosiek 2007). Alongside logic, the narrative is a way of knowing: a method that we use for sense-making, classifying and organising our experiences. Therefore, as Lieblich *et al.* (1998) suggest, stories that individuals tell about their experiences are a channel to learn about their inner world. Lyons (2007) sees that narrative research has a pivotal role in studying complex educational issues, such as contexts, history, culture or individual students as learners. Clough (2002) points out that stories can be used to uncover truths that cannot be told otherwise. Riessman (1993) finds studying narratives particularly fruitful in sociologically oriented investigations because they reveal things about social life that may otherwise be left unnoticed or taken for granted.

Collecting the stories

As Polkinghorne summarises, 'narrative researchers study stories they solicit from others: oral stories obtained through interviews and written stories through requests' (2007, p. 471). In this study, the data consist of stories obtained through both ways. The invitation to participate in this research by sharing one's learning story was sent at the beginning of February 2013 by email to all 22 participants who completed the full 21stCE programme. Seven of them, four women and three men, expressed their willingness to participate. The stories were collected in May–June 2013, three or four months after their graduation. The participants were given the choice of a spoken interview via videoconferencing, or, alternatively, a written narrative. Observations during the programme suggested that some participants expressed themselves more freely and thoughtfully in writing, whereas for others it felt more natural to interact 'face to face' in a videoconference. In order to get more meaningful replies, everyone was then given the chance to tell their stories in the way most suitable for them. Two men chose the videoconference interview whereas all of the others wished to reply in writing.

The narrative approach directed the formulation of the interview questions. In order to gather truly narrative data, the questions asked must invite a story and sharing of one's personal experience. If this is not the case, there is the danger that the answers will be general and clichéd. The respondents may also feel that there is a 'right' or at least a preferred answer, and they may formulate their responses accordingly. The type of information that is obtained this way does not necessarily reveal anything new, or it might even be misleading. Chase (2003) recommends that even if we are interested in general ideas, cultural ideologies or phenomena, we are likely to get more insightful information and a deeper, more nuanced understanding of them from the personal stories that our respondents tell. The same questions that were asked in the spoken interviews were also sent to the participants who chose the written narrative. The questions invited stories about the participants' professional journey, prior experiences with technology and e-learning, first impressions of the programme, rewarding and frustrating experiences during the programme, and moments where they had applied something they had learned during the programme or had done something differently than they would have before.

However well the questions are formed, the narrator does not automatically share her or his full story. It is not something people are generally used to doing, and sometimes the interviewer has to work hard to encourage the interviewee. Chase (2003) recommends that this can be done by paying close attention to the details in the responses and asking further questions that arise from the story. Whereas this was something that could be done quite naturally in the spoken interviews, there was limited ability to ask further questions in the written ones. In this case, the solution was to send further questions to the participants by email whenever there was something of particular interest that raised new questions. In most cases this proved to be very fruitful, and there were cases where the conversation went on in several emails sent back and forth.

Analysis framework

There is no one single way of reading, interpreting and analysing narrative data. Lieblich *et al.* (1998) identify two main dimensions in narrative analysis: holistic

versus categorical approaches; and content versus form. In the categorical approach, the analysis is targeted at sections of the story that belong to a certain category, collected from the whole story or from a collection of stories, whereas in the holistic approach the story is taken as a whole and the context of other parts of the narrative guides the interpretation. As for the other dimension, the content approach is interested in the content of the story – what happened, why did it happen and who was involved – whereas the form approach concentrates on how the story is told – the style of narrative, sequencing of events, metaphors used and so forth.

Bold (2012, p. 120) points out that the purpose of analysis in narrative research is to, 'enquire deeply into the meaning of different situations and different people's understanding of the world'. As one of the aims of the present study was to find out how the individual participants had felt and behaved during the course of the programme, there had to be a way of examining their stories in parallel to a shared plot. To address this need, I also 'tell a story' – the one of the course itself. The analysis approach employed was what Lieblich *et al.* (1998) refer to as the 'categorical-content' approach. The typical steps of the analysis, as described by Lieblich *et al.* (1998), are as follows:

(1) *Selection of the subtext*. All sections in the text that are relevant to the research question are identified, marked and assembled into a file or subtext. Only the subtext will be analysed, but the rest of the text may be revisited for validation purposes. In studies where interview questions have directed the narrator to focus only on content that is directly relevant to the research question instead of inviting a life story, all of the obtained text may be subject to analysis. In the present study, the latter was indeed the case – especially with the written narratives. With regard to the two spoken interviews, there were parts of the transcripts that were not included in the analysis.
(2) *Definition of the content categories*. These are themes or perspectives that cut across the selected subtext and they are used to classify the content items. The categories may be predefined by a theory or they may emerge from the content. In this study, the categories were formed with the help of the three-act structure, a widely used framework for writing and evaluating storytelling in western tradition. It divides the narrative into three parts: set up, confrontation and resolution. The first step in the analysis of the data was to use the three-act structure to map the phases in the shared story of 21stCE and build a coding guide accordingly. This is illustrated in Table 1.
(3) *Sorting the material into the categories*. This sorting takes place by choosing parts of the subtext – sentences, utterances or paragraphs – and organising them into their relevant categories. In this study, this stage involved using the coding guide (Table 1) to analyse the participants' stories and reflect them against the 'grand narrative' of the 21stCE programme. This was done separately for each narrative. Elements that revealed how the narrators had felt, experienced, acted and reacted at the different stages (acts and plot points) were sought from each story and these were arranged in a table next to each other in order to facilitate comparison of what the participants had done at certain stages of the programme. This version was where the initial interpretative comments were added, using the 'add comment' function of the word processing software. Based on this presentation, it was possible to construct a three-act structured story for each of the seven narrators. These

Table 1. The coding guide.

Act 1: setting the scene, introducing the characters
• Path to becoming a teacher
• Experience with e-learning
Plot point 1: the first turning point
• Decision to enrol, expectations
Act 2: confrontation: experiences with the elements of authentic learning
• First impressions
• Biggest struggles as the programme goes on
Plot point 2: climax
• A turning point, solution
Act 3: resolution
• Learning experiences after the turning point
Epilogue
• Impact on one's professional and/or personal growth

stories were then coded again. This time the purpose of the coding was to find key themes that would reveal more about each individual as a learner and as a participant to the course and thus to reach a deeper understanding of why they had acted and felt the way they did. At this point the original transcripts were also revisited and special attention was paid to the original language the narrators used – ways of describing things, expressions, choices of words and so on – in order to find supporting or refuting cues to the interpretation. This stage thus also blended in elements from the 'categorical-form' approach (Lieblich *et al.* 1998).

(4) *Drawing conclusions from the results*. This final stage can include both quantitative and qualitative elements. As Lieblich *et al.* (1998) emphasise, the selected measures depend on the research question. In the quantitative approach, the sentences in the categories can be counted, tabulated or subjected to statistical computations. In the qualitative approach, the content in the categories 'can be used descriptively to formulate a picture of the content universe in certain groups of people or cultures' (Lieblich *et al.* 1998, p. 114). The latter approach is the one I found appropriate in order to gain a fuller understanding of the collaborative online learning process and the meanings made by the participants. Thus, with the help of the information gained, it was possible to draw the learner profile of each participant. The more time I spent immersed in the narratives, the more evidence I could find on the participants' values, motivation, strengths as a learner, most important learning needs and obstacles for learning. These were all included in the learner profile matrix. I thus found myself agreeing strongly with Riessman (1993) when she says that the way to analyse narrative data is to immerse in it and spend time with it, which also means that narrative research can be extremely time-consuming.

Results: representing the stories

Ely (2007) stresses that narrative researchers have an obligation to represent the stories shared with them in a way that does justice to what was shared and how it was

shared. In this case, there are seven people telling their stories about a shared event. Each of the narrators is equally important and no story is less significant than the others. Therefore, I first faced a problem in reporting the findings: How was I going to do it in a way that was interesting, inclusive and economical enough to be published in a journal? Initially I considered the possibility of reconstructing two stories; one would be the story of a student who struggled with the authentic e-learning process and the other would describe the journey of a thriving student. Very soon I realised this was not how the data wanted to be treated: it would be an oversimplification, it would not do justice to the unique narrators who shared their stories with me and, most importantly, it would be untrue. There were no struggling or thriving participants; there were only seven different experiences.

I chose to write the story of the 21stCE programme using an omniscient third-person narrator voice; that is, the type of observer narrator who is able to tell what all the characters are thinking. While some narrative researchers argue that third-person narration distances the researcher from the participants and their stories, others, for example Coulter (2009, p. 609), see the benefit in the way the third-person narrator can 'take the reader from scene to scene, filling in and generalizing the details that otherwise might be left out'. I used the most significant acts and plot points from the three-act narratives to structure the story; starting from the beginning and the formation of the learning community, then moving through different stages of collaboration to the impact of the journey on the participants' professional development. Although this is the story of 21stCE, a similar structure can be found in any collaborative oPD programme. All the names mentioned in the story are pseudonyms.

The collaborative online learning experience

Learning community

> For Souad, the building of a community certainly didn't start very well. When the course started it felt chaotic: Souad didn't know who was in her group, who the facilitator was, how they were supposed to communicate and what they were supposed to do in the learning environment. Once the groups were settled it became easier, but she felt that the group members were not contributing equally. Although there was a course outline, she was still unsure of what she was supposed to do at certain points. Her sense of isolation and confusion was strong. Colin wasn't doing much better. He missed the video conference at the beginning of the course and the way the course was laid out in the online learning environment didn't work for him either. He felt lost. He would have wanted to have more dialogue and interaction with other learners, but this was not happening. He was starting to lose interest. Faisal was confused too. He found the online learning environment was messy and hard to navigate, and the instructions were unclear. He consulted his peers for advice but his team members were equally confused. Together they wondered if enrolling in the program had been the right decision after all.
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> At first it was hard also for Patricia to find information and she didn't know how to get started with the blog. But she was an adventure-loving person with high tolerance of ambiguity so all this didn't really worry her much, she trusted that the facilitators and peers would help her and everything would work out in the end. Mahmoud on the other hand found the course structure and the tasks clear and well organised. When he noticed that some of his fellow students struggled, he wanted to help them out – just the way he had always done for classmates in college – and created screencast videos to explain some of the technical issues.

> Not all of the participants worried about the learning community – in fact, some were quite happy without. Aniya employed a self-learner strategy that she had used successfully earlier in life and gave little thought to the hiccups in building a community. She was more interested in hands-on developing of her classroom practice, and she didn't need a community or facilitators to do that. Khadija was focused on developing her teaching skills – there had recently been a quality assessment in the school where she taught and now she was looking for PD that would help her improve her work, learn about new pedagogies and understand the requirements of the assessing board. She appreciated the advice and efforts of the facilitators but didn't long for more interaction with the other learners.

These experiences illustrate different expectations with regard to instructions, facilitation and the formation of a learning community at the beginning of an online course. It also becomes clear that in the case of 21stCE, there was not enough scaffolding in place when the course started. Out of the seven participants, three had serious problems to the point of losing interest and considering dropping out, whereas two resolved the situation by resorting to a familiar self-study strategy. It is important to notice that although the ones that make this decision may well thrive in the course and perform well, it is extremely difficult to engage them in the other collaborative activities later on in the course if the culture of collaboration fails to be established from the beginning. Strengthening the scaffolding at the beginning, proactive facilitation and leveraging the confident students (like Patricia and Mahmoud) for peer support are measures that could promote the building of a learning community and help establish a culture of positive collaboration.

Shared responsibility

> Mahmoud enjoyed the discussions and collegial sharing of ideas, but one of his biggest struggles was a busy timetable. He was a very diligent and responsible person who wanted to do things well and on time, even if this meant sacrifices regarding personal life. He cared deeply for his students and took his responsibilities very seriously. Although he was given more time he would feel stressed to leave things hanging. Therefore it was also very frustrating to him when others in the team didn't contribute on time. Faisal, on the other hand, was very appreciative of the extra time he was given. He found it hard to juggle between all the different commitments in his life and it was difficult for him to meet some of the deadlines. Faisal was a family man – in fact, his biggest concern when deciding to enrol was if committing the extra time to the course would affect his family life in a negative way. Being a social person who values relationships, his approach was less task-oriented than Mahmoud's. Instead, he emphasised interaction with other learners and the facilitators.
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> Colin was eager to participate in discussions and reflection activities using the blog, but he was frustrated with some group members who would not do their part or take any initiative, or they would do everything late so that it was not possible to read their blogs and comment on them on time. At the same time, Aniya had a very different approach to blog writing and the related discussion. She concentrated fully on implementing the projects in her classroom and did much more practical classroom work than what was required. Instead of the online readings and videos that were reflected on and discussed in the blogs, she was hoping for a formal textbook that she could study at her own time during the semester breaks. She did enjoy the blog writing but didn't manage to meet the deadlines and didn't find the blog tasks as a scaffold that would build towards the classroom projects.

These two examples illustrate conflicts that may typically take place in oPD when the people who are expected to collaborate have very different preferences and

goals. Flexibility in timetables may be just what the busy professional studying alongside work and other life commitments needs, but it can also be a source of stress for the team members who schedule their own work based on the assumption that everyone else will also meet the deadline. Whereas too strict deadlines may not be the solution for professional learning, the stories also provided feasible suggestions for improvement, such as facilitating time management with monthly checkpoints with limited flexibility, and allowing the self-organisation of teams. While the typical explanation for randomly allocated teams is to promote collaboration in diverse groups, Colin had a point in his story as he compared it with working life where teams are typically formed based on specialisations and expertise, which is usually not the case with collaborative learning. When this does happen, it is an enriching learning experience, as in Souad's case when one of the tasks allowed her to use her expertise and special interests to benefit the group. Aniya's story is also an important reminder of the validity of individual learning strategies. Although collaboration skills are undeniably increasingly in demand and should be promoted, there is also the risk of 'overdoing' collaboration. It is worth considering whether the collaborative approach is always the most useful one and seeking balance between collaborative and individual tasks.

Dialogue and communication

> Module 2 was a turning point for Colin; the new learning design was much clearer and there was more discussion and feedback. Colin became fully engaged, and stayed that way throughout the program. There was more discussion and he got more feedback, but still he would have wanted to have more of those things. He still felt there was no true dialogue, and instead of true collaboration, the team only managed to reach simple cooperation. Souad found the discussions interesting and she enjoyed the sometimes even heated exchange of ideas but she hoped that the discussions would be more moderated. She didn't know if her writings made sense from the course objectives point of view.

> Souad was not the only one who experienced heated conversations. At one point Patricia's team came into a severe disagreement because they had all had different ideas of how a project should be implemented. They were disappointed with the quality of each other's work and the situation escalated into a full conflict and offensive emails. After some heated exchange of messages, the team managed to get over their disagreement and produced a good project outcome in the end. Being a person who didn't spend too much time worrying, Patricia didn't take the incident too hard and didn't let it affect her work – she understood that sometimes misunderstandings happen, especially in online communication.

These examples underline the importance of high-quality online facilitation. A good online facilitator can promote dialogue and direct discussions towards deeper thinking, provide constructive, formative feedback as well as enhance the sense of community by establishing an online presence. It is important to ensure that the resources and expertise required for these tasks are available when implementing collaborative online learning. Almost all the stories made some reference to facilitation, but unfortunately not all of them in a positive way. Faisal probably summarised the thoughts of many when he pointed out in his story that it was a draw of luck for the participants; some groups were lucky to have very good facilitators whereas others did not get the support they needed.

Impact on professional development: out of the comfort zone

The evidence of impact that could be found in the stories can be divided into two categories: changes in teachers' classroom practice; and changes in perception and attitudes.

Classroom practice

Almost all of the participants had experienced situations where they had changed their classroom practice in some way and it had had a positive impact on students' behaviour or learning. These examples often illustrated adoption of new pedagogical ideas, teaching strategies or technologies:

> Aniya found that after the course it was easier to think creatively and come up with new ideas for the classroom – she had already implemented some collaborative learning strategies and these had been well received by students. Similarly, Patricia had started using new methods and tools that were big hits among students. Faisal started applying flipped classroom methods and social networking tools in his teaching and worked to make them a more formalised and permanent element in his courses.

Some participants improved the teaching skills that they already had and started using them more efficiently:

> Mahmoud was already skilled in explaining difficult concepts in an understandable way – this was something he had done already as a student – and he demonstrated this skill also in creating screencast videos to help other 21stCE participants with technology. He became more aware of the relationship between learning content, learning outcomes and assessment, and started to use technology to illustrate and communicate this to students in a clearer way, which students found very helpful. Mahmud also wrote a blog post with tips to a new teacher, based on all the experiences and knowledge gained during the course. His blog post was found so useful that it was adopted as actual orientation material for newly employed teachers at the college.

> Colin valued dialogue, reflection and deep learning, which possibly made it natural for him to adopt authentic learning principles and align his assessment strategies accordingly. He started planning his courses from a new angle, using the learning outcomes as a guideline and introducing more authentic assessments. He was able to integrate real interactions with real customers in a course he led, with students acting as guides at a university fair. The students enjoyed the authentic task, and even the ones who were usually not very motivated were there on time and participated very actively.

Perception and attitudes

For some of the participants, the 21stCE journey had a profound impact on professional growth, even professional identity. Interestingly, the stories suggest that this was especially likely to happen when the teacher had to take a significant step out of their comfort zone. The teachers who tell about changes in their attitudes and conceptions tended to have gone through a clearly identifiable climax in their stories:

> Faisal was almost ready to drop out after Module 1, but he decided to persist and not give up. As an outcome of the effort, he started to see his students differently. He became more aware of their individual learning needs and learning styles, instead of trusting his own perception of what was good for them.

> Colin learnt a lot from experiences that didn't work out as planned. His classroom project didn't work out as he was hoping it would. First he was disappointed but then he

reflected on his experience and was able to analyse why it had happened and how it could be done differently next time, and this turned into a great learning experience. He had a similar experience with group work. The difficulties made Colin think about the way he used group work in his own teaching in a new light. He also learned to perceive his less preferred teaching methods in a new way and started to see their value in different teaching situations and understand the theoretical underpinnings behind them. This helped him very much in his work where he had to observe teachers and give them feedback as their supervisor.

Khadija pioneered the use of blogs in her school and faced many difficulties in implementing her vision. Both students and their parents were reluctant and suspicious of the new pedagogy and technology. Khadija didn't give up on the idea but used her best negotiation skills to convince the students and parents about the benefits of twenty-first-century learning methods, and in the end it did pay off and both the students and parents bought in. The project turned out to be extremely successful. She experienced a clear difference in her classroom as her students became more attentive and engaged – she felt that she had reached every single student in the classroom and all of them were eager to participate. That was not all: there was a new quality assessment in Khadija's school and she implemented the new things she had learned in her teaching. The feedback she got from the assessors was fantastic: she was considered 'an outstanding teacher'.

Souad had concerns about studying fully online without a face-to-face element. Face-to-face was her preferred way of learning and she was wondering if she was motivated and disciplined enough to study fully online. Finally, she decided she was mature enough to study that way. At first it looked like the wrong choice: the scaffolding at the beginning of the course was not adequate and the facilitator was not communicating clearly. Later on, her team met face-to-face and this was the turning point for her studies. She suggested adding a face-to-face element to the course as an improvement. In the end, despite all the problems, Souad benefited greatly from the programme. She overcame her fear of online education and gave a virtual presentation to the entire college, which was a truly empowering moment for her. Moreover, her entire philosophy of learning developed and her perception of the students changed: she now tries actively to invite them to think about thinking and gain ownership of their own learning.

Discussion: what do we learn from these stories?

As the stories of the participants illustrate, individual learners always bring their unique motivations, learning strategies, ambitions, cultural backgrounds and life situations into a learning context. They experience the learning situation in different ways, at the same time affecting the learning experience of their peers through their actions and choices. With such different preferences and learning needs, how does one go about being learner-centred in the design and implementation of oPD?

It is noteworthy that despite the different learning strategies and needs, and even difficulties, all of the participants had clearly benefited from the programme. The findings also support Guskey's ideas on how conceptual change occurs: the stories highlight the interplay of long-term implementation and reflection on the experience. This is also in line with Clegg *et al.* (2002), who emphasise it is important that reflection and implementation are both present and in balance. One of the most interesting findings of the present study is the observation that the participants who experienced a clear climax in their stories – in other words, those who went out of their comfort zones, faced a challenge and got through it – described a clearer conceptual change in their narratives than those who had less distinctive plot points in their stories. Of course this is not to say that oPD should be designed to be difficult,

unclear and stressful. What it does imply, however, is that meeting student preferences does not automatically equal a deep learning experience and professional growth – I dare to suggest that people tend to prefer that which is already easy for them, rather than the unfamiliar and new. Perceiving the surveys that map student preferences in this light may thus also be an enlightening exercise. It is important to realise that whereas people do have different preferred ways of learning, fully accommodating them will keep them in their comfort zone and not allow them to cross boundaries, be empowered and grow professionally and personally.

In all of these cases, the teachers overcame the difficulties with highly developed self-regulation skills, such as persistence, willingness to learn, self-reflection and controlling one's motivation. These are abstract skills that cannot be directly 'taught'. Instead, as Ruohotie (1999) suggests, the learning environment, learning experience and learning tasks can be designed in a way that promotes the development of self-regulation skills. A learning design that promotes the development of these skills is therefore recommended. Authentic e-learning has been found to carry potential in this (Herrington *et al.* 2010), but further research is needed to gain a more comprehensive understanding of designing online learning that specifically targets the development of the conative domain.

In light of the narratives of the present study, it can be argued that effective design of oPD does not mean catering for all individual preferences – for example, by offering the choice between self-study or cohort-based authentic learning – but rather scaffolding the authentic learning process and collaboration with adequate learning design and skilful, responsive online facilitation. Collaboration is something that happens in the interaction of individuals. There is therefore no uniform experience of online collaborative learning, nor is there a one-size-fits-all solution to implementing it. The authentic collaborative online learning ecosystem is complex, messy and, admittedly, challenging to facilitate. Not all learners are overly excited about collaborative learning, and often engaging in it means taking steps out of the comfort zone, tolerating the team members' different working styles, and sometimes putting up with frustrating communication difficulties and different expectations. On the other hand, learning with and from colleagues is a powerful professional development experience that should not be overlooked. In the context of 21stCE, it has been reported earlier that collaboration was simultaneously experienced as one of the most challenging and one of the most rewarding elements in the course (Teräs and Herrington 2014). The advantages of collaborative learning have also been widely discussed in oPD research literature. Rienties *et al.* (2013) recommend creating opportunities for the participants to share and reflect upon their experiences and projects with colleagues. Garcia and Roblin are in favour of interdisciplinary teams in oPD as they promote the 'convergence of multiple viewpoints, opinions and experiences' (2007, p. 107). Löfström and Nevgi (2007) have observed that an atmosphere which encourages different perspectives and promotes dialogue is advantageous for oPD and that it is important to provide teachers with the opportunity to learn from each other's work. Online collaboration should thus not be avoided simply because it is hard, but scaffolding and coaching collaboration should be emphasised.

The open-ended nature of authentic learning may be puzzling and even stressful for learners who are used to clear instructions and structure. The stories indicate that this was indeed the case especially at the beginning of 21stCE. Dobozy (2012) found evidence of a similar phenomenon when she studied a new professional development model for university educators based on a collaborative and

have left out details that may have been meaningful for them but were not included in the questions. Secondly, in addition to my researcher role, I was closely involved in the development of the programme and as the programme director I coordinated the work of the facilitators. This is a clear limitation as my position of power may have impacted the stories of the participants. To reduce this risk, the stories were collected after the programme when all the respondents had already graduated and received their certificates and when their relationship with me could no longer have even a theoretical impact on the assessment of their performance.

Finally, it has to be noted that all participants in this study were motivated to take part in voluntary professional development. As Zuber-Skerritt (1992) points out, the attitudes of academic staff towards professional development vary greatly, the scale going all the way from very keen academics to others who may be even hostile to the whole idea of improving teaching. The results of this study reflect the interactions of highly motivated participants in a voluntary oPD programme. A compulsory professional development endeavour would be likely to bring in a whole new layer of attitudes and strategies that could affect collaborative learning in ways that have not been addressed in the present study. Moreover, the remarks that have here been made about the impact of the programme on professional growth must be interpreted in this light.

Despite the limitations, this study offers a valuable insight into the variety of experiences and strategies of the participants of a collaborative oPD programme. As Bold states, although narrative research is typically not generalisable in the traditional sense, it is 'valid and reliable, in the sense that it is purposeful for the context in which it took place and it has significance for others in similar contexts and places' (2012, p. 121).

Conclusions

Earlier research has indicated that successful and transformative professional development programmes are not isolated one-time workshops but collaborative and reflective long-term developmental endeavours that are seamlessly integrated in teaching practice. While these success factors have been known, there has been demand for research that addresses how these factors can be implemented in oPD. This study has provided an example of such an intervention.

In this study, the effectiveness of an oPD programme has been evaluated with the help of a narrative inquiry. Stories of the participants have been analysed to examine both the experiences of the participants during the learning process and the perceived impact on professional growth and changes in their classroom practice, attitudes and perceptions. This investigation has illustrated the diversity of the participants' learning goals, learning needs and ways of engaging with the course and interacting with each other. The collaborative, authentic e-learning approach does not come without challenges, but the results of the study clearly underline the transformative value of stepping out of the comfort zone instead of accommodating for familiar and preferred ways of learning. All participants who endured through a difficult 'plot point' or 'climax' in their learning journey described a powerful experience of professional growth. However, this would have been unlikely to happen without the advanced self-regulation skills that they all demonstrated. Designing online learning environments that promote the development of self-regulation skills as well as strengthening the facilitation of collaborative learning are therefore

constructivist approach to conference participation. She found that the participants experienced the collaboration-based conference activities in vastly different ways, depending on the 'cultural patterns, which are enactments of deep seated epistemological beliefs about teaching and learning' (2012, p. 235). Some participants reported 'feeling lost', which, according to Dobozy's observations, may be either a sign of a minor confusion, or a more deep-rooted dissonance between the approach and the respondent's conceptions of teaching and learning. These findings support the notion that in order to transform the beliefs of teaching and learning, an adequately scaffolded step out of the comfort zone is more effective than staying in the familiar and the preferred.

Most of the narrators described events that could have been avoided or made less stressful with adequate online facilitation. Authentic e-learning assumes expert assistance being available and takes a sceptical stance to self-contained e-learning courses. In authentic e-learning, teachers are required to take new roles as coaches and this is seen as a fundamental and integral part of an authentic e-learning course (Herrington *et al.* 2010). However, the model does not go into much detail in explaining these roles. The role of an online facilitator is not easy: often it is hard for teachers to give up the traditional control, or, alternatively, they may try so hard to avoid the old 'sage on the stage' role that they end up being invisible and absent (Mällinen 2007). While excellent guidelines for online facilitation exist (for example, Collison *et al*. 2000), authentic e-learning is a very different context for teaching and learning. At present there are no resources for online facilitation in authentic e-learning contexts. The crucial role of online facilitation becomes evident in the stories and it should not be underestimated. Further research is required in order to address the specific needs of facilitation in collaborative, authentic e-learning contexts.

Limitations of the study

While the current study sheds light on the experiences of participants of an authentic e-learning-based oPD programme, there are limitations to it. A methodological limitation arises from the fact that the measure of impact was not conducted with randomised control groups, nor was there a pre-programme or post-programme test in place. The outcomes of this study are therefore not to be interpreted as an objective measurement of the development of the teachers' performance. Instead, the focus is on interpreting the meaning that the participants themselves make and the impact they themselves experience in their professional development.

There are also certain limitations related to the researcher's positioning and its potential impact on the research. Firstly, the narrative method brings about a question of objectivity. It is traditionally expected of scholarly research that the researcher is objective and presents accurate findings that can be verified. In the case of narrative research, these are not assumed in a similar way. Instead, as Riessman (2002) points out, the perspectives of both the narrator and the analyst come into view. During an interview, the narrator tells her story to a particular person, who may shape the telling of the story by reacting to it – for example, by encouraging, empathising with, interrupting or resisting it (Chase 2003). This is an aspect that should be kept in mind with regard to the stories of this investigation. It is also to important to bear in mind that all narrators were sent a set of questions that they were asked to reflect upon in their narratives. I thus influenced all of the stories by indicating the areas I was interested in hearing about. The narrators may therefore

strategies that can be recommended for successful development and delivery of oPD in the higher education context.

The narrative method revealed knowledge that might otherwise have been left uncovered. For example, numeric questionnaire information would not offer insight into Mahmoud helping out the other learners, into Aniya employing a different learning strategy that had its implications for the group dynamics later on or into Faisal, Colin and Souad persisting through difficult 'plot points' and ending up expanding their views on teaching and learning, overcoming fears and growing professionally. Therefore, it would also not offer as many useful tools for improving online collaborative activities. Hearing the stories of the participants makes participant experience visible, reveals team dynamics and issues arising from different learning styles and different approaches to the same learning situation, and thus promotes the understanding of different learners. This knowledge can be a powerful tool when designing authentic collaborative tasks in an online environment and it gives highly useful insight for improving scaffolding and facilitation in an online collaborative learning context.

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