Understanding Users of Adaptable E-Learning as Heterogeneous Groups of Work-Integrated Learners

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Abstract— The increasing adoption and use of E-Learning at workplaces outside of academia, create challenges and problems for the future of designing sufficient E-Learning solutions. Workplaces are challenged on daily basis by the constant implications of digitalization in society. In turn, practitioners need to adapt toward the implications and learn new technologies that are aligned with their practice. Their practice however, varies due to factors such as, workplace culture, professional roles, areas of responsibilities, etc. This makes it difficult for workplaces to adopt traditional E-Learning solutions that are configured for traditional E-Learning users such as, students and teachers in academia. As an attempt to discuss such problem, this paper problematizes users of E-Learning at workplaces outside of academia, as practitioners that are heterogeneous. Subsequently, this paper introduces learning outcomes from a research case, where the concept of Adaptable E-Learning was incorporated. Additionally, the contribution of this paper emphasizes users of Adaptable E-Learning as heterogeneous groups of work-integrated learners. Work-integrated learning is thus incorporated to problematize the aspect of heterogeneity and to advocate adaptable E-Learning solutions that integrate theory with practice.

Index Terms—Adaptable E-Learning, Work-Integrated Learning, Users, Heterogeneous

I. INTRODUCTION

E-Learning is understood as pedagogy empowered by technology that involves learning through interaction with digital artifacts (e.g. computers, smart-devices), which are connected to a network, giving people the opportunity to learn at almost anytime, anywhere [1-2]. Universities in particular, have a prolonged history of adopting and using E-Learning to provide distance learning environments (e.g. MOOC’s) for students and teachers. The past two decades have seen extensive changes in higher education in terms of increased access to education, lifelong learning, increased choice in areas of courses, and the personalization of learning [3-4]. Additionally, workplaces in the industry (outside the context of higher education) have adopted E-Learning to help practitioners acquire necessary skills and knowledge for their work [5]. And due to large variety of workplace characteristics - with respect to culture, practitioners, professional roles, etc. – the need of adopting supportive E-Learning at work, increases efficiently over time.

Consequently, workplaces face challenges with determining how to adopt E-Learning successfully [6]. Such challenges include: whether adopting traditional E-Learning is successful or not [7]; strategizing flexible E-Learning methods and techniques that are adaptable toward situated needs and requirements [8-9]; bridging pedagogical and theory-based guidelines for flexible design of E-Learning at work [10]. Another problematic issue concern practitioners’ individual abilities of learning how to use E-Learning technologies for their work, sufficiently. This issue is affected by practitioners’ heterogeneity in terms of their age, background, culture, language, professional roles, education, knowledge expertise, and overall worldview (e.g. beliefs, norms, values). Different practitioners are thus in need of different learning styles that are adaptable toward their heterogeneous needs and requirements.

In this paper, we will address the issue of practitioners’ heterogeneity, by problematizing their roles as users from a work-integrated learning perspective [11-14]. More specifically, we will introduce the concept of adaptable E-Learning as a response by arguing that: (1) E-Learning at work needs to be adaptable in order to successfully address practitioners’ heterogeneous needs and requirements; (2) subsequent workplace culture needs to enable learning at work through participation and embodiment of practitioners’ work experiences, continuously; and (3) learning tasks need to be integrated with practitioners’ work activities, rather than be presented as detached learning objects. In order to incorporate our arguments, we will present learning outcomes from a case where adaptable E-Learning was introduced to support heterogeneous groups of practitioners. Based on the learning outcomes, we understand such practitioners as heterogeneous groups of work-integrated learners.

The remainder of this paper is structured as follows. Section 2 discusses related work on users of E-Learning at work and work-integrated learning. Subsequently, section 3 introduces learning outcomes from a case of adaptable E-Learning. Finally, section 4 concludes the paper.

II. RELATED WORK

A. Users of E-Learning at Work

Since more than a decade, the subject of E-Learning at work has become an interesting topic for researchers (see, e.g., [15-18]). The use of E-Learning at work has enabled workplaces to support their practitioners in developing skills, competencies, and knowledge. Positive motivators of using E-Learning at work include factors such as, ease of accessibility (e.g. online-tutorials); cost-effectiveness; delivery-efficiency; self-directed learning; and flexibility.
in time and place [19-20]. However, users of E-Learning at work do also experience negative associations with using traditional E-Learning at work. Such associations include, that it is impersonal; too framed and stiff; frustrating; lonely; time-wastage (easily distracted); unreliable; and poor quality or too gimmicky learning programs [21].

According to Freund [21], individual needs of E-Learning users at work, are difficult to address sufficiently. Their needs vary heavily due to the variation of them as individuals, and the variation of their domain of work (e.g. practice, roles, expertise). Thus, traditionally E-Learning solutions are experienced as restricted, lack of personalization, lack of collaboration and interactivity, as well as not learner-oriented toward the heterogeneity of users [10] [21].

Their needs of developing new skills, competencies, and knowledge, are thus not equivalent to the needs of traditional E-Learning users such as students of higher education. Rather, their needs are heterogeneous and explicitly directed toward their domain of work (rather than a formal education). As an implication, scholars (e.g. [10] [15] [21]) argue and call for alternative thinking that help understanding users of E-Learning at work, their heterogeneous needs, and how future E-Learning solutions can address them.

B. Work-Integrated Learning

One major challenge of incorporating users of E-Learning at work, is how to integrate their personal development of skills and knowledge, with competencies that are sufficiently relevant for their work. This create tensions for how to pedagogically structure E-Learning environments, and how to enable online support through the learning process [10].

From a broader perspective of learning at work however, this tension is directed toward socio-cultural ideas of work-integrated learning. This include theories of learning as situated within communities of practice in learning [22-23]; the emphasis on supporting practitioners’ reflection in practice [24-25]; a dual continuity of integrated work and learning activities [11-14]; and learning activities that are intuitively embedded in everyday practices [26].

Consequently, traditional E-Learning solutions tend to reduce the capacity of adapting toward these different modes of work-integrated learning, and are thus experienced as detached (both form and content) from practitioners’ everyday practice. Additionally, the heterogeneity of practitioners affects the tension and have an effect on the conditions and processes of which work-integrated learning is supported through. For these reasons, scholars (e.g. [10] [27]) have indicated that: different modes of work-integrated learning need to incorporate research knowledge from various sources, which help understanding the complexity of learning at work. This is argued to be important for providing adaptable E-learning solutions. We will therefore adopt a work-integrated learning perspective that we find especially useful from the viewpoint of incorporating a case of adaptable E-Learning.

III. A CASE OF ADAPTABLE E-LEARNING

A. Empirical Setting

The empirical setting of our case was organized and executed within a municipality in the West region of Sweden. The municipality is responsible for supporting the integration work of newly arrived immigrants in Sweden (also known as, newcomers), through a supportive program that incorporates newcomers’ civic orientation. The purpose of the civic orientation program is to inform newcomers fundamental phenomena of society such as, democracy, laws and regulations, and everyday practicalities of living in Swedish society.

Originally, the program was provided through 60 hours of classroom teachings, divided into different sessions for different groups of newcomers (e.g. from Somalia, Syria, etc.). However, due to the highly intense arrival of newcomers in Sweden, the municipality decided to support the program (between 2013-2016) by introducing E-Learning solutions that help providing civic orientation sessions to a larger throughput of newcomers in Sweden – for more detailed information about the case and prior research outcomes, please address the references [27-30].

A crucial objective of the case was to support the practitioners of civic orientation (known as integration workers) through E-Learning solutions. The integration workers are practitioners that have different roles and areas of responsibilities, including: content producers that are responsible for producing civic orientation content (e.g. text, media); tutor that are responsible for teaching civic orientation; directors that are responsible for coordinating activities of teaching and content distribution. Tutors in particular, are a heterogeneous group of practitioners due to their background, culture, language, education, and worldviews in general (e.g. beliefs). Furthermore, the tutors do not share a common knowledge domain (e.g. formal education), pedagogies for teaching, and they are all responsible for teaching a particular group of newcomers through their native language.

Subsequently, the integration workers were involved in a process of continuous work-integrated learning, where they actively participated in iterative cycles of design and evaluation of proposed E-Learning solutions. The E-Learning solutions were thus implemented and tested through a work-integrated philosophy [11] [14], which enabled a linkage between theoretical underpinnings of E-Learning at work [10], the use of the integration workers’ practical and experiential know-how (e.g. areas of responsibilities), and a continuous reflection and learning. This process of work-integrated learning generated significant learning outcomes, which helped us address the E-learning solutions as adaptable E-Learning, and subsequently, to address the integration workers as heterogeneous groups of work-integrated learners.

B. Adaptable E-Learning Solutions

Based on our learning outcomes, we identified and defined the following adaptable E-Learning solutions:
• **Adaptable levels of distribution**: E-Learning content that is distributed on various levels of availability and authenticity. Different tutors need to access and manage different form of content for their sessions. Subsequently, E-Learning features need to be adaptable toward the heterogeneity of tutors and newcomers, with respect to factors such as language, culture, IT-literacy, and worldviews.

• **Adaptable support of multimodality**: E-Learning features that are adaptable and support multimodal and large variation of IT-literacy among tutors and newcomers. For the tutors, this include features for content distribution; various pedagogies (e.g. online, classroom); modes of interaction (e.g. dialogues, instructions); customization of content (e.g. embedded learning objects). Whereas for the newcomers, E-Learning features need to be adapted toward newcomers’ heterogeneity with respect to factors such as, language; culture; general IT-skills; handicaps (e.g. trauma due to war).

• **Adaptable space of collaboration**: E-Learning features that incorporate integration workers’ communities of practice through collaborative features. These features include adaptable functionality for producing, maintaining, updating, and distributing content; scheduling of sessions; assessment; information distribution, and communication. An adaptable space, supported by a framework of IT-tools (see [28] for more information), were therefore designed and established to incorporate various forms of collaboration (e.g. content production, instructions) between the integration workers.

• **Adaptable co-delivery and interaction**: E-Learning features that are adaptable toward co-delivering content and interaction with heterogeneous groups of participants such as the newcomers. This include features that incorporate adaptable mode of delivery (e.g. face-to-face, online, blended); adaptable modalities, text, graphics, picture, video; and adaptable modes of interaction (e.g. dialogues, online-instruction, video tutorial).

• **Adaptable content**: E-Learning features that enable production and delivery of content that is adaptable to cope with heterogeneous elements such as, age, education, literacy, gender, culture, norms and values, and worldviews (e.g. beliefs, prejudices, conceptions). E-Learning content shall thus be adaptable toward different levels of advancement such as, basic modules (e.g. facts about society); advanced learning modules (e.g. exercises); personalized content that incorporates multimodality and different use of language.

C. **Heterogeneous Groups of Work-Integrated Learners**

Based on the learning outcomes of introducing and implementing adaptable E-Learning for civic orientation, we used work-integrated learning knowledge (e.g. [11-15]) to theorize our learning outcomes. More specifically, we focused on theorizing an understanding about: (1) who the users of adaptable E-Learning are; (2) what makes them significant as users of adaptable E-Learning; and (3) how can this knowledge contribute to an overall discussion about heterogeneity in E-Learning.

Starting with the first point, we address users of adaptable E-Learning as heterogeneous groups of work-integrated learners. Here, we explicitly emphasize on the integration workers and their practice of civic orientation. They are heterogeneous due to their practice, roles, areas of responsibilities, education, and worldviews in general. They do for instance not share a common formal education, – as for instance teachers at universities do – nor do they have a generalized set of IT-skills. However, their development of skills, competencies, and knowledge, was incorporated through work-integrated learning. Such activities included, a progressive problem-solving orientation (e.g. updating online content); continuous evaluation of learning outcomes through real dialogues; learning tasks that lead integration workers to examine their work in light of the provided E-Learning features; integration of E-Learning features with face-to-face learning situations whenever possible.

The second point opens up for an epistemic discussion about the significance of heterogeneity among users of adaptable E-Learning. For instance, through work-integrated learning, we could encourage collaboration and knowledge exchange between the integration workers. From an epistemic perspective, this means that we helped a group of heterogeneous practitioners to share and exchange different knowledge perspectives, which incorporate their different domains of knowledge, areas of responsibilities, professional roles and expertise, etc. The dimension of heterogeneity is thus essential for making users of adaptable E-Learning, significant.

The third and final point problematizes the notion of users in E-Learning situations. A transition from a traditional notion of E-Learning users (e.g. students, teachers of higher education) to notion that comprises heterogeneous groups of users, motivates for E-Learning solutions that are in situ adaptable toward heterogeneity. Work-integrated learning as a process and philosophy, becomes thus a facilitator for integration of heterogeneous forms of representation and learning activities (e.g. training, discussing, using metaphors, audio, visual etc.), which support heterogeneous groups of practitioners. Henceforth, we propose to frame a notion of adaptable E-Learning users, as heterogeneous groups of work-integrated learners. As an implication, we argue that such framing enables E-Learning designers to re-think who the learners and users of their E-Learning solutions are, and how they can be supported through solutions of adaptable E-Learning.
IV. CONCLUSION

Understanding who the users of E-Learning at work are, is an important task in order to design sufficient E-Learning solutions. Traditional E-Learning solutions are experienced as stiff, narrowly framed, and too demanding for dynamic workplaces outside the context of higher education. Users of E-Learning at work are thus different than users of traditional E-Learning in higher education (e.g. students, teachers). Due to their differences, they tend to be heterogeneous with respect to their age, gender, education, culture, language, etc. This create demands and challenges on how well E-Learning solutions are designed toward heterogeneity of various kind.

In order to meet such demands and challenges, we suggest that E-Learning solutions need to be adaptable toward different kind of workplaces and practitioners. We therefore introduced the concept of adaptable E-Learning and proposed its essential features within a particular case. Subsequently, we used work-integrated learning as a philosophy and process to incorporate continuous learning activities, which help understanding and problematizing the dimension of heterogeneity. Our results were theorized into an understanding of adaptable E-Learning users, as heterogeneous groups of work-integrated learners. We impose to elaborate our notion of work-integrated learners by applying and evaluating this notion through further research.

REFERENCES


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