

Competent University Teachers for Digital Learning in OSH

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ABSTRACT

With the COVID pandemic, digital learning became a reality not only in higher education. Occupational Safety and Health (OSH) field was highly affected because of the tight connection to the industry. University teachers faced new challenges coming with digital era in OSH education and training. The OSHDIGIT project was an immediate reaction to experienced difficulties within the pandemic crisis. The project fostered knowledge transfer and sharing of best practices and innovative approaches in OSH digital learning among international multidisciplinary teams. Guides for teachers on digital learning, e-platform of teaching resources and new tailor-made teaching tools enabled to bridge the gap between theory and practice in situations when onsite visits and training were not possible. The OSHDIGIT project, along with its approach and outputs, is presented as an exemplar of good practice in OSH higher education.

Keywords: Occupational safety and health, Higher education, Digital learning, Teacher, Competence

INTRODUCTION

A COVID19 pandemic is an unprecedented event which has sent shock-waves into almost all areas of our lives. With interconnectedness and rising complexity, we should anticipate even more changes in the future. Almost all economic predictions of the COVID19 aftermath predicts a serious recession. Education is one of the most vulnerable areas affected by pandemic counter-measures. The first wave lockdowns interrupted not only study programmes, but the way the tertiary curricula has been conducted. Overnight, there had to be made crude adjustments and balancing coherence of curricula with flexibility and needs with capacities. Digital learning became a reality. Some institutions rose to the challenges, some preserved only necessary requirements, and in many cases, the educational process came into a halt. With this abrupt stop came secondary issues such as paused mobility programmes, disruption of partnerships with the industry, the strain on the mental wellbeing of teachers facing uncertainties not only in the work

environment but in family life as well. (Brown et al., 2020; Purcell and Lumbreras, 2021)

Occupational Safety and Health (OSH), as a discipline of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers (Alli, 2008), has a unique position in academic and vocational education and training. At its core, the field cannot be separated from real-world development and must be flexible to respond to the changing world of work, addressing globalization, digitalization, automatization, and emerging risks of today's society.

Higher education in OSH field was highly affected by the pandemic crisis because of the tight connection to the industry. Field work experiences allow students to explore and apply content learned in the classroom and bridge educational experiences with an outside community (Kolb, 1984; Gibbs, 1998). Site visits, trainee-programmes and practical trainings in companies, and face-to-face interviews with OSH professionals present a valuable part of the study programmes dedicated to safety.

University teachers faced new challenges coming with digital era in OSH education and training. There is not a consistent approach to defining digital competence as a key competence across Europe. In Austria and Czechia, the framework for teacher-specific competencies is mandatory for initial teacher education, while in Portugal there are no top-level regulations or recommendations (Eurydice report, 2019). Teachers in tertiary education build their expertise first and then they develop qualification or competence in education. However, this is not mandatory and teachers at universities have other competencies such as publishing activities, doing science, keeping with development in their fields, administration, etc. Digital competence of teachers is even more important nowadays.

The OSHDIGIT project (Erasmus+ Programme, 2020-1-CZ01-KA226-HE-094463) was an immediate reaction to difficulties experienced by university teachers in the OSH field within the pandemic crisis. The project was built on previous collaboration and lessons learned (Kocurkova et al., 2022) during the RISKMAN project (Erasmus+ Programme, 2018-1-CZ01-KA203-048141).

OSHDIGIT APPROACH

The OSHDIGIT project focused on digital learning in OSH higher education and related teachers' competence. The aim was to support the teachers in delivering effective digital education and training in the area of OSH.

The systematic framework of the project was derived from the European Framework for the Digital Competence of Educators (DigCompEdu, 2017). The DigCompEdu is a scientifically sound framework, developed by the Joint Research Centre (JRC), describing what it means for educators to be digitally competent. The self-assessment of pedagogical digital competences within the project was based on this framework and was understood as a starting point for all of the OSHDIGIT activities.

The main project objectives were to enhance digital pedagogic competencies of university teachers in OSH discipline by giving them practical guidance

and training and to equip them with OSH e-resources and tools for the use in digital learning.

The project disposed of the following innovative strengths:

USE OF DIGITAL TECHNOLOGIES: Digital technologies are an inherent part of the project. The intellectual outputs, training activities, as well as multiplier events, were developed and realized with the use of digital technologies. Selected categories of digital tools were applied (e.g. cloud-based tools, canvas tools, webinars, blogs, social networks, games, quizzes, videos, etc).

MODERN EDUCATIONAL PRACTICES: Modern educational practices and approaches were employed within the project, namely peer-to-peer learning, facilitated learning, active learning, blended learning, virtual learning and last but not least gamification.

REAL-WORLD BASED TOOLS: The need to bring the real world into teaching resources and tools drove the development of the tools. Close collaboration among universities and companies was a key prerequisite. Various sectors and working environments were brought into the tools (e.g. metal processing, construction site, robotic workplace, shopping centre).

OSH LINK: The OSH link in the project was not only content-based, which means focused on bringing OSH content with digital tools into higher education. There was an extra dimension related to OSH, where the OSH played an active role. University teachers were supported in taking care of their own health and safety in a digital environment.

KNOWLEDGE TRANSFER & COOPERATION: All the project outputs and training events were developed in close cooperation among transnational multidisciplinary teams representing key stakeholders in the field of OSH education and training (i.e. universities, the insurance company, industrial companies and professional organizations and networks). The project benefitted from their teaching experience and professional work in the OSH field. Knowledge transfer and sharing of good practices in OSH digital teaching were key elements of the project.

TRANSFERABILITY: All the project outputs are directly transferable to other universities and training organizations. The tools are independent, are not firmly bound to a particular university's study programmes and courses. They are designed to be directly used by university teachers outside the partner consortium.

OSHDIGIT OUTPUTS

The three main outputs which have been achieved within the OSHDIGIT project are described in a detail: OSH Digi Guides, OSH e-Platform and OSH e-Toolkit. All the outputs are freely available via Erasmus+ Project Results Platform and project website.

Guides for Teachers

OSH Digi Guides were developed to navigate the teachers in various digital tools (E-tools guide on Padlet platform), to implement blended project-based learning (Blended PBL guide) and to protect their health and well-being within the process of digital education (Wellbeing guide).

The core element of the guide is interactive glossary of core terms in OSH digital learning. E-tools guide includes various categories of e-tools: Online collaboration, Project management, Kanban-based platforms, Messaging, Quiz and Polling, Interactive presentation, Reference managers and free sources, and Others. Each category is provided by micro-guide, pros and cons, examples and useful tips, and direct links to particular e-tools.

Project/problem-based learning is understood as a key method aimed at preparing students for real-world settings. The guide to help the teachers with implementation of the PBL carried out in a blended mode present a valuable tool in digital learning.

Wellbeing guide addresses the inherent value of the project which is promotion of health and safety when working with digital technologies. The strong focus is on mental stress and musculoskeletal disorders (MSDs).

Platform for Sharing Teaching Resources

OSH e-Platform was developed in Microsoft SharePoint to enable sharing of teaching resources on OSH. It includes internal (developed by project partners) and external (developed outside the partner consortium, publicly available) resources such as presentations and texts, videos, infographics, games, quizzes etc. The platform is organized in two tiers: Tier I “E-resources for generalist applications”, Tier II “E-resources for technical/specific applications”. Teaching resources may be sorted by multiple criteria. Tier I is organized by Topic, Resources’ Category, Complexity Level, Time needed to apply/explore and Resource type. Tier II enables to sort resources by Topic or Risk Category, Risk Management Subprocess, Resources’ Category, Complexity Level, Time needed to apply/explore, Resource type.

Teacher Toolkit

OSH e-Toolkit provides the teachers by new tailor-made digital teaching tools on current OSH topics. The Toolkit contains videos from workplace simulations (XVR Simulation), site visits and occupational hygiene measurements, interviews with OSH professionals and interactive presentations on current OSH topics (digitalization of work, risk assessment of nanomaterials in the workplace, psychosocial risks and stress at work, MSDs etc.). The tools reflect the need to bring the real workplace experience close to the students in situations when the site visits and onsite training are not possible and to facilitate the learning process at a distance. University students were involved in tools development which proved itself to be a great benefit.

Support Activities

The development of project outputs was accompanied by roundtable discussions, focus groups and training workshops. Multiplier events, when the OSHDIGIT went to public, focused on digital competences of university teachers in OSH were part of two international conferences (WOS 2022 in Algarve Portugal and OSH 2023 in Ostravice Czechia).

CONCLUSION

The OSHDIGIT project responded to the current urgent needs of university teachers in the field of digital learning in a direct relation to the covid pandemic situation in higher education.

The project fostered knowledge transfer and sharing of good practices and innovative approaches in OSH digital learning among international multidisciplinary teams consisting of universities, insurance companies, enterprises and professional networks.

It enabled to develop teachers' competence and equip them not only with useful skills, but also provide them with useful tools and resources for attractive digital learning.

OSHDIGIT approach contributed to EU initiatives addressing enhancement of the quality in higher education in the area of OSH. This joint endeavour of multidisciplinary team may be seen as a good practice example in higher education in the extensive complex and extremely important field of Occupational Safety and Health.

ACKNOWLEDGMENT

The OSHDIGIT project was supported by the Erasmus+ Programme, KA2 – Cooperation for Innovation and the Exchange of Good Practices, KA203 – Strategic Partnerships for higher education.

The authors would like to acknowledge all the OSHDIGIT partners and team members for cooperation. Many thanks to Ulrike Bollmann (DGUV, ENETOSH) for her continuous support.

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