Advantages and disadvantages of the online training system in the field of occupational safety and health

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Abstract. In today's context, training in the field of Occupational Safety and Health (OSH) has become essential due to the increase in the number of employees and the diversification of industries. Globalization and the accelerated technologization of jobs have imposed the need to adapt and continuously update knowledge in this field. At the same time, the covid-19 pandemic has led to an increase in interest in online training, making access to quality information and training easier for more people, regardless of location. Thus, occupational health and safety training faces new challenges and opportunities in terms of course delivery and accessibility. In this paper, the advantages and disadvantages of the online training system in the field of OSH are presented, as they emerge both from the specialized literature and from the authors' own experience. This paper also provides a number of recommendations for improving the online OSH training system at the national level.

1 Introduction

Training plays a vital role in ensuring the success of any health and safety management system. Ultimately, it is the behavior and decisions of individuals that can either lead to or prevent accidents and incidents. Therefore, the significance of training cannot be underestimated as it serves as a crucial factor in achieving success in this regard.

In their research, Clarke & Flitcroft [1] examined the effects of a training intervention conducted over a 24-month period. They observed a sample of 10 companies and discovered that these interventions had a notable influence on both the safety culture and productivity of the companies. On average, workplace accidents decreased by 22% as a result. The researchers also noted a considerable rise in employee motivation and engagement in safety practices. The study demonstrated that training could be one of the important factors in creating a positive OSH culture within organizations.

As technology advances and changes rapidly, training methods adapt to keep up with these changes. Online training has become an essential component of employee and employer training, making a significant contribution to protecting the safety and health of workers around the world.

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In today's context, training in the field of Occupational Safety and Health (OSH) has become essential due to the increase in the number of employees and the diversification of industries. Globalization and the accelerated technologization of jobs have imposed the need to adapt and continuously update knowledge in this field. At the same time, the covid-19 pandemic has led to an increase in interest in online training, making access to quality information and training easier for more people, regardless of location. Thus, occupational health and safety training faces new challenges and opportunities in terms of course delivery and accessibility.

1.1 The current state of online OSH training at national and international level

Nationally, online OSH training has evolved in recent years, with public and private institutions offering a diverse range of courses and programs. Institutions like INCDPM, ITM, technical universities, relevant non-governmental organizations, private companies, provide resources, information and online courses for employees and employers. Despite all these developments, there are still opportunities for development in terms of the quality and accessibility of online training in this field.

Internationally, online training in the field of OSH has experienced significant growth, given technological advances and the need to adapt to new working conditions. Organizations such as the International Labor Organization (ILO) and the Center for Disease Control and Prevention (CDC) have developed online resources and courses that promote good OSH practices. Collaboration and information sharing between different countries and institutions have helped to improve the quality of online training. There is also the belief that in order to sustain long-term business and ensure success, employees must be engaged at work and perform to the best of their abilities. One approach to do so is to provide the staff with high-quality learning and development opportunities.

1.2 What is online training?

Online training, also known as computer-based training, remote learning, and e-learning, is a type of instruction that takes place entirely on the internet. The online platform contains many multimedia components, including images, audio, video, and web links. People do online training courses, particularly those given by international institutions, making online training more popular and widely used. Online learning, often known as remote learning or online education, provides students/employees with the opportunity to learn at their own pace while also allowing companies to encourage employee growth.

2 Methods and findings

The methods used for this paper are a quick literature review in all the major data bases, discussions with the specialists in the field as well as authors' own experience. We sorted the findings in two categories: advantages and disadvantages.

2.1 Advantages of online training

The advantages of online training in the field of OSH are represented by aspects such as:

**Flexibility**: Allows employees and employers to take courses at their own pace and according to their schedule, without having to attend sessions in person. According to [2]:

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"Within a self-paced instructional program, an employee may review specific topics on which he/she needs clarification. Or, if familiar with the topic, the employee may quickly complete the course and progress at a faster rate. This is in stark contrast to classroom instruction, in which a group of employees is trained based on a predetermined time and are individually expected to master the topic during that time."

**Accessibility**: Online courses are available to people from any location, eliminating the need to travel to a specific institution or location. "Training can be taken by most employees on a twenty-four-hour basis without leaving the work site. Further, it is accessible almost anywhere a computer can be located" [3]. Also, "the self-pacing learning concept eliminates the need for group instruction and scheduling" [4].

**Low costs**: Online training can often be less expensive than attendance at an external training provider’s premises or providing in-house training and it can often be more affordable as it eliminates the costs associated with travel, accommodation and printed materials since "employees can train on-site avoiding the need to travel to training facilities, this results in savings in costs on travel and accommodation costs" [4]. Not to mention, "the cost of live on-site instruction has certain fixed costs- instructor wages, classroom expenses, any travel fees, and variable costs, such as student materials" [5]. "When the costs are compared, the price of training and retraining drops from possibly hundreds of dollars per student for (live instruction) to thirty dollars or less per employee for computer-based training" [5].

**Addresses all skill levels**: Traditional in-person training often proceeds at a pace tailored to accommodate the individual with the least amount of expertise in the group. Consequently, if a highly skilled worker is learning alongside someone with less skill, the former may not acquire the desired level of knowledge. On the other hand, online training offers the advantage of swiftly and efficiently meeting the specific learning needs of employees across all levels within the organization.

**Reduces learning time for employees**: Time is one of the most significant barriers to employee participation in training programs. According to a study from Brandon-Hall Group, online training may save an employee’s learning time by up to 60%. However, while online skills training takes far less time, employees must still make time for it. Workers are interrupted every 11 minutes, according to research. (1) Online training allows to break up hour-long sessions into shorter learning parts (also known as microlearning) in order to accommodate distractions.

**Up-to-date resources**: online platforms can be quickly updated and adapted to reflect the latest OSH regulations, research and best practice, ensuring participants have access to relevant and up-to-date information.

**Interactivity**: Enables the use of multimedia technologies and resources, such as videos, animations and simulations, which can enhance the learning process and keep participants engaged: "Content retention is increased by engaging multiple senses (auditory, visual, and kinesthetic) during the learning process" [4]. Well-designed online courses may "incorporate full-color animation, product simulation and supportive narration to create a professional, yet inviting tone. Also, it offers realistic, on-the-job scenarios to simulate hazardous situations which tests a worker’s skills and responses. Its detailed, high-resolution graphics and animations enhance learning and promote a better understanding and knowledge of the material" [3].

**Monitoring and evaluation**: Online platforms allow continuous monitoring and evaluation of participants' performance and progress through tests and exercises, making it easy to quickly identify areas where improvement is needed. Measurability can be accomplished using self-check questions, pre-tests and post-tests [2].

**Customization**: Allows content and materials to be tailored to the specific needs of different industries and employee groups, ensuring training is as relevant and effective as
possible. "Through customization features, a company can tailor a genetic program to match its own policies and procedures" [2].

**Scalable for any number of employees.** Online training has been shown to have a favorable impact on any business. Employees will be more equipped for the challenges that lie ahead. The more effective the training becomes, the more employees they can use the same training for, and the sooner they can reduce the cost of training an employee. Online courses improve an individual’s capacity to learn and use the newly acquired knowledge in everyday duties. It also helps improve one’s ability to remember knowledge for extended periods.

**Collaboration between stakeholders:** online platforms facilitate collaboration and communication between participants and lecturers, as well as between colleagues, thus contributing to the sharing of knowledge and the development of an organizational culture focused on occupational safety and health

### 2.2 Disadvantages of online training

**Lack of hands-on learning.** One of the disadvantages of online employee training is that not every topic can be addressed conceptually. Certain types of knowledge lend themselves better to online learning than others. Learning math or biology online, for instance, will be elementary, but if a new ice cream maker has started at the ice cream factory, the best method to teach the employees is to provide them with in-person practical training. Online training is unfavorable when a large portion of the training session is based on practical knowledge, and Online training cannot replace the information gained via hands-on training. When considering highly hazardous industries such as heavy industrial construction, power generation and petrochemical, the need for effective training is heightened. Many organizations use hands-on or on-the-job training to increase the effectiveness of safety training programs.

**Lack of face-to-face interaction:** Online training can reduce opportunities for direct interaction between participants and lecturers, as well as between co-workers, which can affect the development of professional relationships. Every healthy communication process is built on social interaction. When you think of a typical training room, you may see group discussions, active participation, brainstorming, and the trainer answering questions. One of the most significant disadvantages of online training sessions is the lack of face-to-face interaction. Unfortunately, there will not be enough time to meet with other trainees and discuss important matters. These face-to-face interactions are essential for certain people to bring the content to life.

**Need for technical skills:** Online training participants must have adequate technical skills to navigate online platforms and access learning resources, which may be a barrier for some employees or employers.

**Poor quality training can result in poor quality work:** Teachers must understand how to employ digital modes of learning to teach online. However, this doesn’t always happen. Teachers may have a weak understanding of technology and lack the requisite resources and technologies to offer online classes. Creating high-quality training materials and hiring qualified teachers takes time and effort. It may be tempting to sacrifice quality in favor of convenience. However, if the training instills undesirable patterns and inaccurate information in your employees, it can swiftly backfire.

**Technical issues:** Technical difficulties, such as slow internet connections or equipment problems, can affect the learning process and create frustration among participants. Another significant problem of online classrooms is technological limitations such as internet access. While internet coverage has increased by leaps and bounds in recent
years, a constant connection with adequate speed remains a challenge in smaller cities and villages.

**Self-discipline and motivation**: Online training requires a high level of self-discipline and motivation on the part of the participants, as there is no structured framework and fixed schedule as in face-to-face training.

**Difficult assessment of practical skills**: In some cases, the assessment of practical skills and OH&S skills can be difficult in an online environment because the application of knowledge in a real context cannot be directly observed. If you let your employees pick their courses, you’ll need a measure to assess the instructors’ quality. Outsourcing training implies that you will have a less direct influence on how a course is delivered. This is both a benefit and disadvantage of using MOOCs in corporate training contexts.

**Potential Security and Privacy Issues**: Online training involves the transmission and storage of personal and professional data on digital platforms, which may raise security and privacy issues if appropriate safeguards are not implemented.

**Initial Technology Investments**: To implement an effective OSH online training program, organizations may need to invest in technology such as learning platforms, software and equipment, which can be a significant cost at the initial stage.

Basically, what online learning gains in productivity, it loses in interpersonal engagement. It’s hard to recreate the effect of working together in a classroom, establishing trust and rapport through face-to-face conversations. In addition, not all businesses are technologically equipped to offer online safety training – or at least, not effectively. And even if your business is equipped to offer it, you have to ensure that employees at home have the technological access necessary to complete the training on their own time. Also, there are some learning experiences that online learning simply cannot recreate. You can offer videos of hands-on learning, but it isn’t quite the same as having employees practice a procedure with their own two hands. This leaves hands-on workers at a critical disadvantage in a digital learning environment.

### 2.3 Recommendations for improving the online training system in the field of OSH

Training should not be provided on a random basis. It must be based on an assessment of requirements and this can often involve a training needs analysis (TNA). TNA is the systematic collection of data to find out where there are gaps in the existing skills, knowledge and competence of personnel and can also be used to analyse where there are deficiencies in attitudes, perceptions and other human factors important to health and safety in the workplace. A TNA is usually applied from three perspectives.

- **At organisational level.** Training may encourage change or input in terms of improving or maintaining the organisation’s standards of health and safety
- **At job level.** All jobs should have a training specification for skills and competence
- **At an individual level.** TNAs are very important for individuals and should be linked to personal development.

Following the training needs analysis, choices must be made about the type of training to be provided, whether the training be provided in-house or will a training provider be used, where will the training take place, who will do the training, what will be the cost, can the training be provided online, will this be effective and should this option be taken up? The challenge is the ever-increasing success of the quality of online training systems. Thus, we can talk about aspects such as:
- **Content customization**: Courses and materials should be tailored to the specific needs of different industries and employee groups so that training is as relevant and effective as possible.

- **Quality improvement**: Online training materials and resources must be up-to-date and compliant with the latest OSH regulations, research and best practices.

- **Interactivity and engagement**: Online courses should engage and maintain the interest of participants through interactive elements such as practical exercises, quizzes, games and simulations.

- **Support and feedback**: Course participants should receive adequate support and timely feedback from lecturers and OSH experts to reinforce their learning.

- **Accessibility**: Access to online training should be facilitated for all employees, regardless of educational level, technical skills or other potential barriers, by adapting available formats and resources.

- **Monitoring and evaluation**: Monitoring and evaluation systems should be implemented to measure the effectiveness of online OSH training and to identify areas where improvements can be made.

- **Promoting collaboration**: Collaboration and exchange of information between different institutions and organizations involved in online training, nationally and internationally, should be encouraged to continuously improve the quality and relevance of the courses offered.

- **Awareness raising**: Information and promotion campaigns on the importance of OSH training and available online resources should be developed to encourage employee and employer participation in continuous learning.

### 3 Conclusions

Online OSH training is a viable and useful alternative to traditional training. It represents a modern and effective solution to provide knowledge and skills necessary to prevent accidents and improve working conditions. Although there are some disadvantages associated with this training method, its advantages far outweigh these negative aspects. It is important that organizations consider using this training system and invest in the ongoing training of their employees.

By addressing these challenges and implementing effective strategies, online OSH training has the potential to become a valuable tool for strengthening knowledge and practices in this field, thus contributing to the promotion of a safer and healthier work environment for all employees, with impact on organizational health and safety.

There is definitely a place for online OHS training but those organising training must consider the drawbacks as well as the advantages. It is also important to consider these from the learner’s perspective and not just that of the organisation. It is likely that online learning lends itself more comfortably to basic or fundamental training, such as induction or display screen equipment training. This is in contrast to higher level, more complex training, where contact with others and the trainer during the training is probably less important.

This looks to be the biggest drawback for online training; there is no interaction with other learners or with the trainer at the time of training and it is difficult to quantify what may be lost through this omission. Discussion with and listening to others during training is an important part of the learning process. This may be offset to some extent by blended learning options (a mixture of online and classroom training).
It should not be forgotten that a good trainer can sometimes be inspirational and change a learner’s attitudes and behavior. It is difficult to see how online training could replicate that and achieve the same result. Basically, what online training gains in productivity, it loses in interpersonal engagement. It’s hard to recreate the effect of working together in a classroom, establishing trust and rapport through face-to-face conversations. In addition, not all businesses are technologically equipped to offer online safety training – or at least, not effectively. And even if your business is equipped to offer it, you have to ensure that employees at home have the technological access necessary to complete the training on their own time. Also, there are some learning experiences that online learning simply cannot recreate. You can offer videos of hands-on learning, but it isn’t quite the same as having employees practice a procedure with their own two hands. This leaves hands-on workers at a critical disadvantage in a digital learning environment. The provision of training can be an expensive investment and it is important that the training is effective. Those organizing training need to carefully consider their options before opting for online training.

The results presented in this paper are partial results from the project PN 23 45 03 03 „Development of informative content and online training system of occupational safety and health information in the context of intelligent specialization”.

References