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# Virtual OHS Training in Saudi Arabia

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## Introduction

Unsafe acts and conditions in a workplace and unplanned events can lead to catastrophic losses and consequent damages. Trainings and Awareness education are potential tools which are widely used in all industrial workplaces; with the sole objective to save lives, assets and minimize damage but needs proper effectiveness. New digital technologies are helping in the process of enhancing safety training for better knowledge acquisition and retention. Among them, Virtual Reality (VR) can provide an engaging and exciting training experience, and there is a need to evaluate its application and effectiveness in safety training. Virtual safety training, particularly using virtual reality (VR), is revolutionizing workplace safety by offering a more engaging, effective, and immersive training experience. Virtual training platform allows interactive and engaging learning through practice without exposing trainees to hazards. In the recent pandemic (COVID-19) situation, online training is gaining importance as it allows learning with social distancing. VR safety training can lead to pointedly condensed training periods, boosted hazard identification, augmented learner poise, and enhanced knowledge retention when equated to conventional methods like classroom-based or e-learning. Virtual safety training can allow workers to identify hazards and take necessary actions in a very realistic and immersive simulated environment. Safety training is a key activity worldwide for accident prevention strategies that aim to reduce the impact of accidents and disasters on humans and property (Hale, 1984).



In the Kingdom of Saudi Arabia, OSH training programs provide professional employees with the skills and knowledge needed to contribute to safe work. While traditional training programs are conducted in training rooms, advanced technology makes remote training programs more effective and accessible to companies of all sizes, contributing to the faster and more efficient transmission of occupational safety and health information. Virtual Occupational Health and Safety (OHS) training in Saudi Arabia is widely available, with options like NEBOSH and OSHA courses offered through online platforms. These virtual courses provide the flexibility of learning from anywhere, while still offering the same recognized qualifications as traditional classroom settings. In this article, remote training is focused wherein some of the remote training tools commonly used in Saudi Arabia in OSH training programs are discussed. Further discussion looks into the benefits of these programs in improving OSH performance in the companies in Saudi Arabia and their contribution to reducing accidents. We will also discuss the most effective ways to deliver remote training to employees to create a safe work environment.

## Effectiveness of Trainings

The definition of effectiveness must be first described before performing evaluations. According to the Oxford Dictionary, effectiveness is "the degree to which something is successful in producing a desired result." In the case of training effectiveness, the desired result differs depending on what is being trained.

**Virtual Reality (VR) Learning**

Safety training plays a key role in enhancing humans' abilities and skills to identify risks and analyze the magnitude of these risks. These abilities and skills are among the key factors determining humans' behaviour and safety while performing dangerous tasks (Sacks et al., 2013). In OSH, distance learning programs are used to deliver Health and Safety (H&S) information and skills without the need to attend classrooms. Employees can attend these programs from any location and using any digital device, such as a computer or a mobile phone. Virtual OHS (Occupational Health and Safety) training refers to online courses designed to educate employees on workplace safety and health practices. These courses cover various topics like hazard identification, risk assessment, emergency response, and the promotion of a safety culture. They offer a flexible and cost-effective way to train employees, eliminating the need for physical attendance and travel.

Distance learning is suitable for companies with a large number of employees and contractors who cannot be grouped together for training due to the multiple and varied work locations and working hours. This is very true about the companies in Saudi Arabia where thousands of employees and Contractors' work. Distance learning programs in the field of occupational safety and health may consist of lectures, seminars, or workshops. The most well-known immersive VR devices are VR headsets (head-mounted displays, HMDs) and projection-based displays. VR headsets are the most common visual display devices for VR that can deliver the 3i features, and their market size is growing rapidly (Chen et al., 2021). These headsets provide users with a stereoscopic 3D visual experience and often incorporate head-tracking technology to allow users to look around and interact with the virtual world. HMDs are typically lightweight and designed for comfortable wear, making them ideal for extended VR experiences (Ito et al., 2021). Some of the reasons why employers in Saudi Arabia offer distance learning on OSH include:

1. Cost savings : There's no need to transport employees to training rooms or equip training rooms. Speed of induction training for new employees. Using distance learning, occupational health and safety induction training can be quickly delivered to all new employees.

2. Flexibility and convenience : Employees can attend training from a location that suits them, and sometimes at a time that suits them.

3. Professional development : Distance training allows for the delivery of multiple programs in a short period of time, contributing to improved job performance.

4. Distance Learning Methods: In occupational health and safety training, the types of methods a distance trainer uses in their programs may depend on the program's objectives and whether the program focuses on conveying information or enhancing understanding.

The following are some methods a trainer may use in a distance training program:

1. Slideshow Software: Trainers may use slideshow software to create presentations to present information to trainees. These programs allow the trainer to add images, text, and video clips, which can be viewed during the training.

2. Video Conferencing Platforms: Distance training programs often use video chat or conferencing software. Anyone in the training group can log in and meet. These programs can also allow trainers to broadcast live webinars to hundreds of employees at the same time.

3. Interactive Activities: Trainers may use quiz websites or other resources to create interactive activities for trainees. These activities can be used to test trainees' knowledge of the program content or to teach them new concepts.

4. Shared Documents: One of the easiest tools a remote trainer can use is the document sharing service found in some corporate email accounts. Trainers can send the training schedule, syllabus, or other written content via a link or dedicated folder.

5. Upload Videos: If the trainer has videos explaining specific content, such as the company's mission statement or human resources policies, they can share them with their training team so trainees can watch them at their convenience. Trainers may also include activities to review the information learned or a quiz to ensure training completion.

6. Chatbots: In addition to video conferencing software, trainers may use a chat app to send messages to trainees during the course. Trainees can use it to ask their trainer questions about the content or program schedule.

7. Task Management or Training Platforms: Specialized training and task management software automates the training process by tracking the time participants complete specific training modules and activities. These tools allow trainers to upload all training content at once and deliver a training path to participants.

**Considerations before delivering occupational health and safety training remotely:**

1. Set clear objectives: Researchers have been developing virtual environments using different virtual training platforms for various industries to learn safety concepts. For example, Sacks et al. [9] built an environment for understanding the effectiveness of implementing virtual reality based safety training in the construction industry.

The effectiveness of remote training programs comes from setting clear objectives that link the different modules and training methods. Defining program objectives during the development phase allows you to create quizzes and other activities that test trainees' understanding of the required concepts. Depending on the length and purpose of the program, you may have one or several main objectives. If the program has multiple objectives, try dividing it into several parts, each focusing on a single objective. For example, a new employee onboarding program might include separate sections on the company's mission statement, organizational structure, and human resources policies.

2. Test the platforms through which you will deliver the training: Various tools are used in remote training programs, such as video conferencing software, chat platforms, and online modules, each with specific requirements and procedures. Before starting the training session, conduct a pilot session using each tool you plan to use to ensure that the software runs smoothly and includes the features you want to use. You can ask a colleague to role-play the role of a trainee and ask you simple technical questions, so you can prepare your answers if the trainees encounter any difficulties.

3. Organize Training Materials: Employees in the training session may have access to a wide range of materials, such as the session schedule, login information, activities, and any additional reading. Depending on the type of training, employees may also have other responsibilities.
For example, new employees receiving onboarding training may meet with HR team members and attend private training sessions with their managers. You can help trainees stay organized by creating a single training resource, such as a PDF or Google Drive folder, containing all the materials they need for the training session.

4. Familiarize Trainees with the Tools: At the beginning of the training session, provide a tutorial for trainees about the tools you will use in the session. In onboarding programs, participants may come from a range of professions and may have varying levels of technical expertise. Therefore, explaining how to use each tool can reduce the number of technical questions trainees may ask you during the course, making training sessions more efficient. You can share your screen via video conferencing software and explore the different functions of each tool.

5. Schedule time for networking during training: Training programs can give colleagues the opportunity to build strong professional relationships. Use icebreaker activities during the course to encourage participants to get to know each other. If the training session includes more than 10 people, it may be difficult to engage everyone in conversations. In this case, you can divide trainees into small groups to work on icebreaker activities. One can also use social activities to reinforce

training information. For example, you might offer a virtual trivia game at the end of the training program, containing questions about the topics covered in the course.

6. Use a variety of activities: During the training program, you can present information in a variety of ways to engage and maintain the interest of different types of learners. Combining independent and self-paced training with group meetings and webinars can help trainees understand the information and enjoy the training. For example, in a series of remote professional development courses for customer service representatives, you might ask trainees to read through customer service scenarios and write down how they would respond to each customer. Afterward, small groups of trainees might meet via video conferences to share their responses and create a guide for each type of situation.

7. Evaluate the training methods you use: Evaluating your training program can help you improve modules and make the program more efficient. After the course, you can ask participants to provide feedback to help you improve the program for future trainees. You can also use digital tools, such as surveys and online feedback forms, to obtain anonymous feedback and responses from trainees. This can increase response rates and provide more insightful answers. Ask participants for feedback on every aspect of the training, such as training objectives, digital tools used, content, and activities.



**Potential drawbacks of adopting VR technology**

1. Physical hazards: Crashing into tables, walls and other objects are an obvious concern to keep in mind. It is recommended to prohibit trainees from walking more than 30 feet in any direction – unless it's "important and supported."

2. 'Simulator sickness': Visually induced motion sickness, also known as "simulator sickness," stems from a disconnection between the eyes/brain and the body. While experiencing simulated movement, your eyes communicate to your brain that you're in motion, although your body is not. Symptoms include nausea, sweating, dizziness, vomiting and fatigue, and may not appear immediately.

3. Costs: Although the price of some VR headsets have dropped to hundreds of Riyals per unit, NIOSH experts caution that organizations need to factor in the development or purchase of training content in their VR costs. Development costs are significant for quality VR/AR training," It can be deceptive because the development tools and head-mounted displays are relatively inexpensive."

4. Implementation challenges: Successful implementation of VR, requires "a multidisciplinary team to create impactful content," such as programmers, graphic artists, user interface designers, subject matter experts and use case experts. Having several different end users participate in any beta testing to ensure training is usable by most people without issue. When developing safety content, the interaction between user and computer shall be designed as simple as possible.

5. Ergonomics issues: When VR users extended their arms straight out during an exercise, some experienced discomfort in as little as three minutes. They also found that VR headsets can place stress on the cervical spine, potentially leading to a strained neck. As a preventive measure, developers and programmers need to ensure participants or trainees interact with "objects" at eye level as often as possible, and those "objects" should be close to the body.

6. Generational differences: Reluctance among older workers to embrace new technology is another possible hurdle.

**Conclusion:**

Advancements in VR technology and its availability, along with the realization of the opportunities that VR technology presents are among several factors that have contributed to the rapid increase in research related to the use of VR technology for safety-relevant training. Despite this increase, research focusing on how effectiveness evaluations for VR training are conducted remains limited. In OSH, distance learning programs have become an essential part of career development and performance improvement, providing flexible learning tools that help individuals acquire knowledge and develop skills regardless of time and place. These programs include a range of digital resources such as interactive videos, simulations, and educational platforms that offer updated content and accredited certificates, enabling learners to achieve their professional and personal goals easily and effectively. E-learning models vary between online courses, interactive learning, and technical training, providing employers and individuals with integrated opportunities to meet their needs. This type of training enhances interaction and participation, reduces costs, saves time, and is a sustainable and environmentally friendly option. As technology advances, there is an increasing focus on providing a comprehensive learning experience that combines self-learning and social interaction, making e-learning a fundamental pillar for developing competencies and enhancing individuals' competitiveness in the labor market.

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