



International Journal of Innovative Research in Education



Volume 10, Issue 2, (2023) 192-201

www.ijire.eu

Differential impact of risk prevention training for work at height by traditional training and experiential learning methods

Omar Fernando Cortes-Pena* , Universidad Sergio Arboleda, Colombia
Jesus Ricardo Pulcha-Honores, Universidad Nacional Tecnologica de Lima Sur, Peru
Jonathan Julian Poma-Chavez, Universidad Nacional Tecnologica de Lima Sur, Peru
Laura Fausta Villanueva-Blas, Universidad Autonoma del Peru, Villa EL Salvador, Peru
Kassandra Geraldine Coria-Benavides, Researcher and Coach. Comercializadora S&E Peru S.A.C.
Monica Alejandra Gil-Alvarez, Researcher and Coach. Comercializadora S&E Peru S.A.C.

Suggested Citation:

Cortes-Pena, O.F., Pulcha-Honores, J.R., Poma-Chavez, J.J., Villanueva-Blas, L.F., Coria-Benavides & Gil-Alvarez, M.A. (2023). Differential impact of risk prevention training for work at height by traditional training and experiential learning methods. *International Journal of Innovative Research in Education*, 10(2), 192-201
<https://doi.org/10.18844/ijire.v10i2.9275>

Received from May 18, 2023; revised from August 25, 2023; accepted from November 25, 2023.

Selection and peer review under the responsibility of Assoc. Prof. Dr. Zehra Ozcinar, Ataturk Teacher Training Academy, Cyprus

©2023 by the authors. Licensee Birlesik Dunya Yenilik Arastirma ve Yayıncılık Merkezi, North Nicosia, Cyprus. This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Abstract

The central purpose of this article focuses on the analysis of the differential impact of training in accident risk prevention and safety promotion with people exposed to work at heights with traditional training and experiential learning methods. Methodologically, a quasi-experimental study was designed with two experimental and control groups. Procedurally, the workers in the two groups were previously assigned, highlighting that they received the same thematic training units for work at height, specifically with the procedure for work on telescopic ladders, based on the ANSI Z359.1 protocol against the Fall Protection System (SPCC); with the only difference corresponding to the training method (Traditional vs. Experiential Learning). The results allow us to identify significant differences in the level of learning and the performance of the workers, with the performance of the experimental group exposed to the experiential learning method being higher. From the quantitative and qualitative analysis of the findings derived from the study, the need and opportunity to enrich the training processes with the pedagogical component of experiential learning is evident, since it generates a higher level of involvement in the approach to the contents and the specialized training activities that have a higher level of interactivity and simulation of real conditions, positively influencing the development of risk prevention skills and promotion of safety in the working conditions of workers dedicated to one of the most frequently used modalities. accident risk.

Keywords: Work at height, risk of accident, occupational safety, fall protection system, experiential learning.

* ADDRESS FOR CORRESPONDENCE: Mohamed Sayed Abou Elseoud, College of Business Administration, University of Bahrain, Kingdom of Bahrain & Sadat Academy for Management Sciences, Egypt. E-mail address: omar.cortes@usa.edu.co

1. INTRODUCTION

The risk of accidents due to falls from work at height is one of the main critical factors at work level both in the global context, as well as in Latin America and particularly in Peru, based on the analysis derived from the work accident report available in the Official Portal. of the Ministry of Labor and Employment for the period between (2018 - 2020) an average of 25,800 accidents were reported per year and with a reported increase of 28,000 accidents for the year (2021). These data report a trend that oscillates between 70 - 80 work accidents daily, within which those associated with work at height contribute significantly with an index that oscillates between 15% and 20%.

Based on these statistics, it is worth noting the importance of developing programs that contribute to the comprehensive prevention of occupational hazards, safety culture, promotion of occupational health and quality of life, which are characterized by a set of strategies and processes aimed at investigating, analyzing, training, intervening and permanently monitoring the assurance and compliance with quality standards in safety and occupational risk prevention. The relevance of the development of a culture of occupational safety is convergent with the set of strategies and actions that are taken organizationally in terms of accident risk prevention and comprehensive promotion of occupational health. In this case, one of the main barriers is due to the low level of commitment and real involvement of companies and industries in the development of effective programs and necessary conditions to strengthen the culture of safety at work, which generates an impact on the rates of accident rate in the case of Peru, as well as in most Latin American countries (Bacilio, Pulcha and Poma, 2020; Ocampo & Osley, 2016; Onge, et al., 2013).

In this context of low level of concern for risk prevention and the promotion of occupational health and accident rates, the case of work at heights and the failures in the implementation processes of effective protocols to strengthen the development of appropriate behaviors in work at heights that by their nature are considered high risk. In addition, it allows questions about the empathic level, awareness, awareness of risks and labor dangers. Specifically, this research highlights the levels of relevance and relevance of the development of training, induction and permanent training processes for workers as a necessary strategy to strengthen the development of job performance skills in the prevention of fall risk. in work at heights, incorporating the pedagogical model of experiential learning, to enrich and increase the levels of effectiveness and positive impact of risk prevention and the promotion of occupational health and work safety culture (Ramírez-Asis, et al., 2020; Stuart. 2014: Guldenmund, 2007).

World Health Organization WHO adds that safety at work promotes physical, mental and social well-being through the functional effectiveness of a company (ILO, 2020; Arenas, 2014). Safety at work is the way to prevent accidents within the workplace, as well as diseases, risk control, safety conditions; which implies that the worker is in the best healthy and safe conditions to carry out his work without risk (Restrepo, Madrid and Safar, 2013). Over the past three decades, safety culture has been considered an important component of safety management systems in many industries for safety, including transportation, power, and oil and gas (Stemn, Bofinger, Cliff, & Hassal, 2019).

For their part, Stemn et al. (2019) mention that the safety culture is more important than other internal strategies; since this improves security performance, increases supervision, commitment and develops laborious procedures that are effective. Its application reduces accidents and becomes an important element within the statistics of accidents within a company. The concept of safety culture is grouped into perspectives on normative beliefs, in the way that people think or behave in relation to safety, involving values and attitudes. On the other hand, it is crucial to highlight that the safety culture is more useful when viewed as a set of collective organizational practices, since this approach promotes change and specific knowledge. As a consequence of a good establishment of the safety culture in an organization, accident rates decrease compared to other companies that do not have a good level of

Cortes-Pena, O.F., Pulcha-Honores, J.R., Poma-Chavez, J.J., Villanueva-Blas, L.F., Coria-Benavides & Gil-Alvarez, M.A. (2023). Differential impact of risk prevention training for work at height by traditional training and experiential learning methods. *International Journal of Innovative Research in Education*, 10(2), 192-201 <https://doi.org/10.18844/ijire.v10i2.9275>
safety culture (Onge et al., 2013; Ramírez-Asis, et al., 2020).

Organizational programs that promote and protect safety conditions and initiate measures that would make a significant contribution to the prevention of illnesses and accidents have the potential to reach all members of the organization, thus generating a culture of safety at work. The programs provide adequate information to the people (Ayala, 2020).

It is essential on the part of individuals to acquire a proper understanding of it and put it into practice effectively. A clear example is that of India where people who work full time normally spend six days a week and ten to twelve hours a day to carry out their work tasks. In some cases, as their job duties allow, they are also required to go to the fields. Therefore, job duties are challenging. Employers have a responsibility to create a safe and friendly work environment. They are also required to care for the health and well-being of employees and promote a healthy environment (Workplace Health Promotion, 2015; Palmer et al., 2021).

In this sense, the importance of the development of strategies aimed at the prevention of occupational risks is highlighted, involving the processes of planning, training and preventive training, contingency systems to increase occupational safety and emergency first aid in case of accidents. Initially, it is important to develop risk assessment studies and establish security measures; On the other hand, emergency planning is based on systematized procedures for situations where taking safe actions within a crisis is a priority. The evaluations require permanent monitoring face-to-face and virtual, to manage effective solutions that allow controlling risks in adverse conditions (Bacilio, Pulcha and Poma, 2020; Velandia-Gomez, 2020; Salas, 2018).

In this order of ideas, the prevention of risks, accidents, injuries, is strategically oriented to minimize the probability of occurrence of occupational accidents, as well as the possible risks of affectation in the resources of physical and technological infrastructure and economic resources of the companies. In addition, both internal control and benchmarking techniques must be exercised. Internal control is responsible for verifying to what extent objectives are achieved, as well as the degree of compliance with internal regulations. Regarding comparative evaluation techniques, which measure the degree level between differentiated security actions and performance in relation to other companies (Fernandez-Muniz, et al., 2007; Rojas, 2019; Palmer et al., 2021).

In this sense, Stemn, et al. (2019) suggest that all risk and hazard management must maintain indicators to make it measurable, for which reason they propose that the following be established within management: Occupational safety techniques, to execute them and control risks and hazards; informal risk assessment, through the use of direct communication; formal risk assessment, which involves communication through documents that support the assessment; and, Report of dangers, where the process or situation of a possible risk or danger is specifically detailed.

Safety training and the formation of procedural competencies in the safety culture have been characterized by preventive actions focused on safety aspects. It is usually an active training and produces experiential knowledge in the people involved. Active feedback is generated in the participants; which presents a reflective and applicative character using intelligence to cope with dangerous situations (Martinez and Montero, 2015). In convergence with the approaches of Stemn, et al. (2019) this category must follow a systematic structure since it is of an applicative nature. Safety training should be considered with activities that help generate active competencies in specific situations; In addition, these activities must maintain evaluations of their performance and development (Briceno, Rivas and Lobo, 2019).

Among the main pedagogical models that can have a positive impact on the training, induction and training processes is Experiential Learning, understood as an active and permanent process, which is built based on the experiences of people, together with the development of functional and significant

Cortes-Pena, O.F., Pulcha-Honores, J.R., Poma-Chavez, J.J., Villanueva-Blas, L.F., Coria-Benavides & Gil-Alvarez, M.A. (2023). Differential impact of risk prevention training for work at height by traditional training and experiential learning methods. *International Journal of Innovative Research in Education*, 10(2), 192-201 <https://doi.org/10.18844/ijire.v10i2.9275>

integration strategies between theory and practice. This type of learning can be built voluntarily or involuntarily, where the teaching concepts must be complemented by activities and strategies that reinforce what is being learned. Additionally, it is a type of learning that is closer to the development of labor competencies in contextualized simulated environments and allows a better level of application in real environments, being in turn the basis for the gradual and permanent development of processes of self-control, self-efficacy and collaborative social learning (Marcillo, et al., 2019; Baena, 2019).

Based on the previously formulated approaches, the following question arises as the central problem of this study: Is there a differential impact between the induction training processes of workers for the prevention of falls at heights based on traditional training methods and the implementation of an enriched model of experiential learning?

To address the formulated problem, a strategic alliance was created between the academic sector with the Universidad Autonoma del Peru, Universidad Nacional Tecnologica de Lima Sur y Universidad Sergio Arboleda – Santa Marta, Colombia, with the Commercial Company S&E Peru S.A.C and the Company VARBUS of Peru, to carry out an experimental pilot study and comparative cut, aimed at identifying if there are differences in the learning processes and development of the skills that workers have during the induction and training corresponding to the Fall Risk Protection System (SPRC) associated with work at height, assuming the guidelines established for training according to the regulatory protocol (ANSI Z359.1).

2.METHOD

The methodological approach of the study assumed an empirical-analytical paradigmatic perspective, with a randomized quasi-experimental design of two groups: Experimental Group: Experiential Learning (GEAE) and Control Group: Traditional Training (GCCT).

Participants

There was the participation of (n: 15) workers who were assigned to each of the two conditions (GEAE and GCCT). It should be noted in the first place that for the development of the study the procedures for ensuring ethical conditions were followed with the request for informed consent, together with the verification of the occupational safety protocols stipulated by regulations.

Instruments

For the development of the study, the assessment instruments corresponding to the Attitudinal Scale for Work at Height (EAFTA) made up of 12 items with six Likert-type response degrees were designed and validated with the criteria of expert judges. Additionally, the same exams were designed to advance the final evaluations of the theoretical and practical components of the induction, training and training process.

Procedure

The two groups of workers (GEAE and GCCT) received their induction in occupational risk prevention with the Fall Protection System, based on the regulatory protocol (ANSI Z359.1), for Work at Height, specifically with the work procedure on telescopic ladders. It should be noted that the two groups received the corresponding information with the same thematic contents, with the only difference centered on the pedagogical training model that corresponds to the Traditional Model (GCCT) and the Experiential Learning Model (GEAE). In the case of (GCCT), training was advanced with the components of the Fall Protection System, based on the normative protocol (ANSI Z359.1), particularly with emphasis on: the fall protection hierarchy, retention system and positioning system, fall arrest system, administrative controls, specific personal protection equipment and the work procedure on telescopic ladders.

Cortes-Pena, O.F., Pulcha-Honores, J.R., Poma-Chavez, J.J., Villanueva-Blas, L.F., Coria-Benavides & Gil-Alvarez, M.A. (2023). Differential impact of risk prevention training for work at height by traditional training and experiential learning methods. *International Journal of Innovative Research in Education*, 10(2), 192-201 <https://doi.org/10.18844/ijire.v10i2.9275>

Figure 1.
Training Process with the Traditional Method



Note: Own elaboration of the training program INFORME GVB-INFORME-S&E-019-2022: GVB-TEA-1-2022.

In the case of (GEAE), training was advanced with the components of the Fall Protection System, based on the normative protocol (ANSI Z359.1), with the pedagogical model enriched from Experiential Learning, with the same thematic units stated for the case of (GCCT) and incorporating the development of (5) workshops associated with their corresponding theoretical-practical articulation.

Figure 2.
Training Process with the Experiential Learning Method





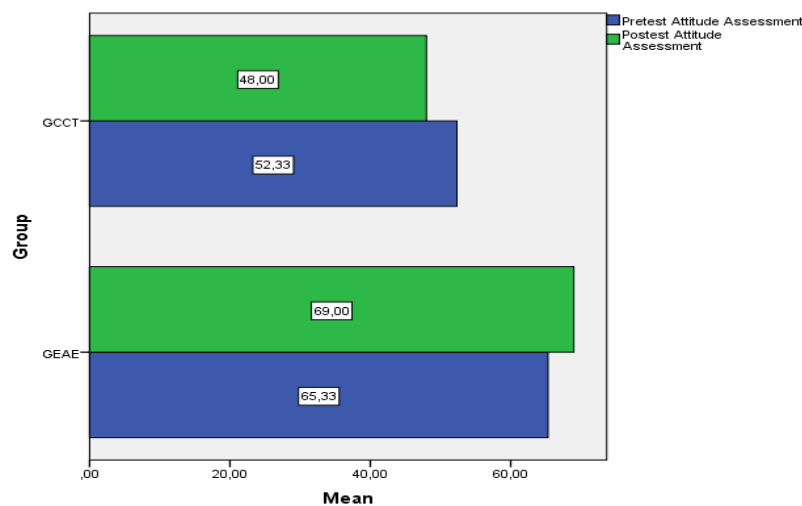
Note: Own elaboration of the training program INFORME GVB-INFORME-S&E-019-2022: GVB-TEA-1-2022

During the development of the induction and training processes, a strict permanent control was carried out to ensure the safety and integrity conditions of the participants, as stipulated in the protocol and guidelines of the Ministry of Labor and Employment. In the two groups, the measurements derived from the evaluation of the induction and training process with the two components (Theoretical and Practical) were developed.

3.RESULTS

The main findings derived from the analysis of results with the two study groups (GCCT) and (GEAE) are presented below. In the first instance, compared to the analysis of the results in the Attitudinal Scale towards Work at Height (EAFTA), due to its conformation of 12 items with values from (1 to 6) the theoretical scores oscillate in a range between 12 and 72 points. The results at the pretest level did not present significant differences between the means (GEAE: 65 and GCCT: 52) with values of the mean comparison test for two independent samples ($t: 0.99$ and $p_v: .340$). While at the level of the posttest comparison, 95% significant differences were found between the two groups (GEAE: 69 and GCCT: 48) with values of the mean comparison test for two independent samples ($t: 2.22$ and $p_v: .045$). It should be noted that there was an increase of (4 points) in the Group's attitudinal assessments (GEAE) between the pretest and the posttest, as illustrated in Figure 3.

Figure 3. Comparison of Pretest – Posttest Attitudinal Assessments (GEAE and GCCT)



Note: EAFTA Scale averages with theoretical ranges (12 – 72) points, for the GEAE and GCCT Groups at the pretest and posttest level.

Secondly, the results derived from the comparisons between the GEAE and GCCT Groups corresponding to the evaluations of the theoretical, practical and general components of the training process with the Fall Protection System, based on the normative protocol (ANSI Z359 .one).

In relation to the theoretical component, no statistically significant differences were found between the means (GEAE: 17.0 and GCCT: 14.83) with values of the mean comparison test for two independent samples (t: 1.787 and pv:.097). although it is evident that the average obtained by the GEAE is higher compared to that obtained by the GCCT.

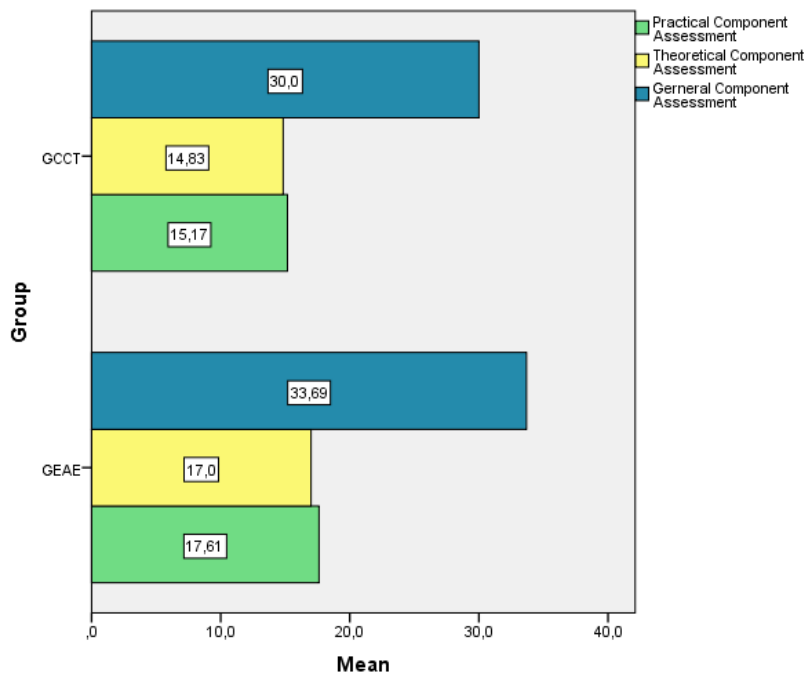
Unlike the theoretical component, in the comparison of the practical component, statistically significant differences were found at 95% between the averages (GEAE: 17.61 and GCCT: 15.16) with values of the average comparison test for two independent samples (t: 2,993 and pv:.010), the performance obtained by the GEAE group being higher.

Finally, in the consolidated evaluation at a general level, integrating the theoretical and practical components, statistically significant differences were found at 95% between the averages (GEAE: 33.69 and GCCT: 30.0) with values of the average comparison test for two independent samples (t: 2,993 and pv:.010), the performance obtained by the GEAE group being higher.

The results corresponding to the comparisons between the GEAE and GCCT groups, with their theoretical, practical and general components are illustrated below with figure 4.

Figure 4.

Assessment Comparison Theoretical - Practical - General Components (GEAE and GCCT)



Note: Comparison of the Averages in the Theoretical - Practical - General Components, for the GEAE and GCCT Groups.

4.DISCUSSION

The findings derived from this study allow us to identify the importance and potential of the Experiential Learning Pedagogical Model, as a positive factor that qualitatively and quantitatively enriches

Cortes-Pena, O.F., Pulcha-Honores, J.R., Poma-Chavez, J.J., Villanueva-Blas, L.F., Coria-Benavides & Gil-Alvarez, M.A. (2023). Differential impact of risk prevention training for work at height by traditional training and experiential learning methods. *International Journal of Innovative Research in Education*, 10(2), 192-201 <https://doi.org/10.18844/ijire.v10i2.9275>

the experience, quality and effectiveness of the training, induction and prevention training processes. of the risk for people who are exposed to work at height, specifically applying the guidelines of the Fall Protection System, based on the normative protocol (ANSI Z359.1).

The modality of Experiential Learning from the ANSI Z359.1 standard, allowed enriching the approach of the course indicating that the procedure and PPE used have not changed more if the way of referring to them, as is the case of the Descender, now Regular Device of hand winding. The Fall Protection Hierarchy and the Retention System were presented, learning to manipulate PPE from an integrative perspective at an experiential level. New elements were also identified that allow expanding the level of practical mastery in the ladder deployment procedure, placing the hands on the external rails to prevent possible hand accidents. Likewise, it should be noted that the design of the workshops allowed us to deepen the development of good practices applied in the process of installing the Fall Arrest system on the stairs, simulating 100% how it would be using the holes made in the training wall.

In addition, the experiential learning methodology favors collaborative learning processes and reflection on the importance of combining the Fall Arrest System with the Positioning System on the ladder to keep hands free and be able to handle tools safely, applying the 3rd and 4th level of the fall protection hierarchy, as well as the need to pre-secure fall factor 1 items, carrying the automatic lanyard over the shoulder when on the ladder and illustrating participants in a more The contingency strategy is effective when the device is below the shoulder. It should be noted that all the processes associated with the execution of force movements were carried out in compliance with ergonomic procedures. Additionally, from the Experiential Learning Method, the workers learned the strategic importance of having a rescue contingency in case of Harness Syndrome as an important part of the Fall Protection Program (Ayala, 2020; Lozano & Mazonett, 2012).

Another important aspect of the Experiential Learning Method corresponds to the strengthening of social interaction and teamwork, which were evidenced when the participants developed the five workshops with the support of group dynamics, or experiential simulations, which consolidate understanding and contextualization. of the theoretical component. In this way, theoretical learning is solidified and ensures that participants avoid making learned errors and prevent risk behaviors with good risk control and mitigation practices, thus increasing the culture of occupational health and occupational safety (Ayala, 2020; Sossdorf, 2009; Kolb and Kolb, 2013).

On the other hand, it was evidenced how the strategies of experiential learning allow us to know in a better way to monitor and assess the scenarios in a contextual manner and to identify, control and minimize the probability of risk of accidents in this case in conditions of work at heights with telescopic ladders. This makes it possible to propose solution strategies and prevent accidents (Rojas, 2019; Fernandez-Muniz, et al., 2007). Exposure to photographs as a method of experiential learning is effective to the extent that it predisposes the student to better learning. On the other hand, the application of the IPER matrix is recommended to promote a safety culture because it helps to know the measurement indicators and achieve better preventive, contingency and assistance management against the risk of occupational accidents (Chaparro, 2020; Stemn, et al., 2019; Baena, 2019).

As evidenced in the development of the study, experiential learning enhances the effectiveness of safety training and safe performance job skills, with each of the activities incorporated into the workshops to move from theory to practice situated in context, promoting thus the development of risk prevention competencies. In this sense, the dynamics help the participants reflect and critically analyze the situations to apply the best strategies and contingencies learned. In summary, the importance of training is related to the acquisition of concepts, that is, when strategies such as role-playing, dynamics, drills, among others, are applied, it is possible to assimilate theoretical concepts more easily. Even, the students showed interest in feedback as an experiential learning method, which turns out to be necessary

Cortes-Pena, O.F., Pulcha-Honores, J.R., Poma-Chavez, J.J., Villanueva-Blas, L.F., Coria-Benavides & Gil-Alvarez, M.A. (2023). Differential impact of risk prevention training for work at height by traditional training and experiential learning methods. *International Journal of Innovative Research in Education*, 10(2), 192-201 <https://doi.org/10.18844/ijire.v10i2.9275> to achieve understanding, assessment, analysis, decision making and implementation of preventive actions (Fuentes, et al., 2019; Granados & Garcia, 2016; Martinez & Montero, 2015; Callizo, 2015; Kolb and Kolb, 2005).

Experiential learning has a strategic impact on the processes of investigation, control, prevention and mitigation of accidents at work, since the participants are immersed in the investigation processes of incidents at work and can thus develop a better analysis enriched by the practices prior training, together with the continuous improvement of labor competencies; integrating as much as possible the augmented reality spaces to consolidate the theoretical-practical articulation (Bacilio, Pulcha and Poma, 2020; Gonzalez-Acosta, et al., 2020).

In conclusion, this study highlights the importance of designing and implementing training, induction and training programs from the Pedagogical Model of experiential learning, understood as a key factor that increases the levels of recognition, analysis, assessment, decision making and actions. strategies with good practices to prevent risks, promote occupational health and strengthen teamwork and permanent commitment to the culture of occupational safety (Díaz-Lopez, et al, 2020; Alarcon-Díaz, et al, 2019; Coa, 2018; Martinez & Montero, 2015; Fernandez-Muniz, et al. 2007).

REFERENCES

- Alarcon-Díaz, H., Alcas, N., Alarcon, M., Ocana, F., Hernandez, R. & Rodríguez, A. (2019). Influence of a program for the development of experiential learning in farmers. *Avances en Psicología*, 27(1), 65-72. <https://doi.org/10.33539/avpsicol.2019v27n1.1469>.
- Arenas, G. (2014). *Los riesgos del trabajo y la salud ocupacional en Colombia*. Bogota D.C. Editorial Legis.
- Ayala, R. (2020). *Immersive learning and virtual worlds in university education*, (Master's Thesis), Universidad Cesar Vallejo, Peru.
- Bacilio, J., Pulcha, J. & Poma, J. (2020). *Experiential Learning Research and Development of the Safety Culture in Students of Industrial Engineering Program (VII – Cycle) of a Private University*, (Master's Thesis), Universidad Tecnológica del Peru.
- Baena, V. (2019). *Experiential learning as a teaching methodology*. Madrid, Espana: Narcea S.A. Ediciones.
- Briceno, J., Rivas, J. & Lobo, H. (2019). Experimentation and its Integration in the Teaching-Learning process of Physics in Secondary Education. *Revista Latino-Americana de Estudos em Cultura e Sociedade*, 5(2). <http://periodicos.claec.org/index.php/relacult/article/view/1512/1111>.
- Callizo, M. (2015). Prevencion de riesgos laborales en Paraguay Principales consideraciones. *Revista de la Facultad de Derecho*, (39),15-38. <https://www.redalyc.org/articulo.oa?id=568160375002>
- Chaparro, C. (2020). *Design for the Implementation of the Occupational Health and Safety Management System for Compañía Ingeaceros de Colombia S.A.S.* (Master's Thesis). Universidad Nacional Abierta y a Distancia, Colombia.
- Coa, R. E. (2018). *Experiential learning and the Edpuzzle in the solution of contextualized problems of systems of equations of basic mathematics in students of a private university 2018-I*. (Master's Thesis). Universidad Tecnológica del Peru.
- Díaz-Lopez, L., Tarango, J. & Romo-Gonzalez, J. R. (2020). Virtual Reality in learning processes in university students: motivation and interest to awaken scientific vocations. *Cuadernos de Documentacion Multimedia*, 31, 1-14.
- Fernandez-Muniz, B., Montes-Peon, J. & Vasquez-Ordas, C. (2007). Safety culture: Analysis of the causal relationships between its key dimensions. *Journal of Safety Research*, 38, 627-641
- Fuentes, D.; Toro, J.; Ahumada, P.; Espinoza, M. I.; & Oyarte, M. (2019). Change of attitude of Nursing students towards mental illness through experiential learning. *Revista Cubana de Educacion Medica Superior*. 33(1), 1-13.
- Gonzalez-Acosta, E., Almeida-Gonzalez, M., & Maqueira-Caraballo, G. C. (2020). Enterprise software as a

- Cortes-Pena, O.F., Pulcha-Honores, J.R., Poma-Chavez, J.J., Villanueva-Blas, L.F., Coria-Benavides & Gil-Alvarez, M.A. (2023). Differential impact of risk prevention training for work at height by traditional training and experiential learning methods. *International Journal of Innovative Research in Education*, 10(2), 192-201 <https://doi.org/10.18844/ijire.v10i2.9275>
- technology for learning and knowledge: an experiential approach. *Formacion universitaria*, 13(3), 101-110.
- Guldenmund, F. W. (2007). The use of questionnaires in safety culture research—an evaluation. *Safety science*, 45(6), 723-743.
- International Labour Organization - ILO. (2020). *Safety and health at work in the face of the pandemic*. <https://www.ilo.org/global/publications/lang--en/index.htm>
- Kolb, A. & Kolb, D. (2005). Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education. *Academy of Management Learning & Education*, 4(2), 193-212.
- Kolb, A.; & Kolb, D. (2013). *A Comprehensive Guide to the Theory, Psychometrics, Research on Validity and Educational Applications*. Philadelphia, PA: Hay Group.
- Lozano Socarras, S. L., & Mazonett Florez, J. E. (2012). Determinacion riesgo ocupacional en poblacion laboral con trabajo en altura por medicion serica de marcadores. *Duazary*, 9(1),23-32. <https://www.redalyc.org/articulo.oa?id=512156307004>
- Marcillo, M., Veloz, E., Solís, M. & Haro, A. (2019). *Aprendizaje experiencial y su aplicacion en el proceso de enseñanza y aprendizaje*. Guayaquil, Ecuador:Editorial Grupo Compas.
- Martínez, C. & Montero, R. (2015). La cultura de la seguridad en una empresa constructora: evaluacion e interpretacion de sus resultados. *Salub trab.*, 23(2), 115-126.
- Ocampo, J. G. & Osley Garzon, M. (2016). El sistema de riesgos laborales frente al trabajador del sector informal. *Opinion Jurídica*, 15(30),183-203. <https://www.redalyc.org/articulo.oa?id=94550080009>
- Onge, J. S., Hodges, T., McBride, M., & Parnell, R. (2013). An innovative tool for experiential learning of nursing quality and safety competencies. *Nurse Educator*, 38(2), 71-75.
- Palmer, L. E., Pagoto, S. L., Workman, D., Lewis, K. A., Rudin, L., De Luna, N., ... & Waring, M. E. (2021). Health and education concerns about returning to campus and online learning during the COVID-19 pandemic among US undergraduate STEM majors. *Journal of American College Health*, 1-8.
- Ramirez-Asis, E., Palma, M., Huerta-Soto, R., & Lazaro, R. (2020) Labor behavior and safety at work in construction companies in Peru. *Revista de Investigacion en Gestion Industrial, Ambiental, Seguridad y Salud en el Trabajo- GISST*, 1(1), 30-42.
- Restrepo, J., Madrid, H. & Safar, A. (2013). Analisis de la evolucion normativa y jurisprudencial de la responsabilidad laboral por culpa del empleador en Colombia. *Advocatus*, 21, 193-206.
- Rojas, J. (2019). *Design of a management tool to assess the culture of safety at work*, (Master's Thesis). Universidad Nacional Mayor de San Marcos, Peru.
- Salas, M. (2018). *Application of experiential learning to develop the social skills of the students of the II Cycle of the Accounting Professional School of the Huanuco branch ULADECH – 2017*, (Master's Thesis), Universidad Catolica Los Angeles de Chimbote, Peru.
- Sossdorf, D. K. (2009). *Uso de imagenes y videos digitales para el mejoramiento de la seguridad y prevencion de riesgos en obras de construccion* (tesis de pregrado). Universidad de Chile. http://repositorio.uchile.cl/bitstream/handle/2250/103333/sossdorf_d.pdf?sequence=3
- Stemn, E., Bofinger, C., Cliff, D. & Hassal, M. (2019). Examining the relationship between safety culture maturity and safety performance of the mining industry. *Safety Science*, 113, 345-355.
- Stuart, A. (2014). A blended learning approach to safety training: Student experiences of safe work practices and safety culture. *Safety science*, 62, 409-417.
- Velandia-Gomez, H. (2020). *Virtual laboratories (LV): a didactic tool for practical learning of electricity in basic and secondary education institutions* (Master's Thesis), Universidad de la Sabana, Colombia.