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The Effectiveness of the Occupational Safety and Health (OSH) Communication and Promotion Course in Improving Safety Behavior among Occupational Safety and Health Students

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ABSTRACT

The development of safety behavior is a fundamental objective in Occupational Safety and Health (OSH) education, as students are prepared to become future safety professionals and agents of change in the workplace. The OSH Communication and Promotion course plays a strategic role in fostering safety values, attitudes, and behaviors through persuasive and educational communication approaches. This study aims to analyze the effectiveness of the OSH Communication and Promotion course in improving the safety behavior of Occupational Safety and Health students. This research employed a quantitative approach using a quasi-experimental design with a one-group pretest–posttest model. In this design, students' safety behavior was measured before and after participating in the course, without a control group. The respondents consisted of OSH students enrolled in the course during the current semester. Data were collected using a structured questionnaire assessing two primary dimensions of safety behavior: safety compliance (adherence to safety procedures) and safety participation (active involvement in safety-related activities). Data analysis was conducted using a paired sample t-test to determine significant differences between pretest and posttest scores.The findings indicate a significant improvement in students' safety behavior after completing the course. These results suggest that communication-based learning, participatory discussions, and practical safety promotion activities effectively enhance safety behavior and strengthen students safety mindset as prospective OSH professionals.

Keywords: Occupational Safety and Health (OSH), safety behavior, safety compliance, safety participation, communication-based learning, safety promotion.

INTRODUCTION

Occupational Health and Safety (OHS) in the modern industrial era no longer focuses solely on the reliability of technical systems but has shifted significantly toward strengthening the human factor. Global data indicates that unsafe behavior remains the primary contributor to workplace accidents across various sectors (Niu et al., 2023). Consequently, higher education institutions that produce future OHS professionals hold a vital role in shaping safety behavior from an early stage as the foundation for a future safety culture.

Safety behavior in contemporary literature is understood as a multidimensional construct encompassing safety compliance and safety participation. According to a recent study by Zhang et al. (2022), adherence to procedures alone is insufficient to guarantee an accident-free work environment; active individual participation in reporting hazards and supporting colleagues is required. For OHS students, internalizing these two dimensions is crucial so that they possess not only theoretical knowledge but also behavioral integrity when entering the workforce.

Current OHS education faces a major challenge in instilling sustainable safety values among Generation Z. Research by Yu et al. (2021) shows that traditional one-way learning methods often fail to significantly change students' mindsets and behaviors. This demands a more dynamic curriculum approach capable of connecting academic content with shifts in mental attitudes and real-world actions.

The OHS Communication and Promotion course emerges as a strategic element designed to bridge the gap between knowledge and action. Persuasive communication in OHS has been proven to increase an individual's intrinsic motivation to behave safely (Dallat et al., 2019). Through appropriate promotion strategies, safety values are no longer viewed as a regulatory burden but as a basic necessity and a lifestyle to be adopted by every OHS student.

The importance of behavior-based educational interventions is also supported by modern safety management theories. A study by Mohammadfam et al. (2017) emphasizes that even the most sophisticated safety management systems will fail without behavioral support from human resources. In an academic context, courses focusing on safety promotion serve as a "behavioral laboratory" where students learn to influence others while simultaneously disciplining themselves.

Despite the widely understood urgency of safety behavior, a significant research gap exists in scientific literature over the past five years. Most safety behavior research has been conducted on active worker populations in the manufacturing or construction industries (Bourgault & Dionne-Proulx, 2021). Very few studies evaluate, through longitudinal or experimental designs, how university curriculum interventions effectively change the behavior of OHS students.

Another gap lies in the methodology for evaluating the success of higher education learning. OHS education evaluation is often limited to cognitive achievements or final exam scores without measuring concrete behavioral changes (Vigoroso et al., 2020). In fact, the effectiveness of safety education should be measured by the extent to which students demonstrate a safety mindset in daily activities, detectable through comparisons before and after learning interventions.

In Indonesia, the challenges of OHS education are complicated by low student exposure to international-standard safety practices during their studies. According to research by Haidir et al. (2023), student involvement in on-campus safety promotion programs still needs to be increased to build a strong safety culture. Therefore, courses emphasizing communication practices and safety promotion become primary instruments to trigger such active involvement.

This study aims to fill this literature gap by analyzing the effectiveness of the OHS Communication and Promotion course in enhancing student safety behavior. Utilizing a quasi-experimental one-group pretest-posttest model, this research seeks to provide strong empirical evidence regarding changes in compliance and participation levels. The focus is to prove whether communication-based learning can produce statistically significant behavioral changes.

Ultimately, the results of this study are expected to provide important contributions to the development of OHS education curricula in higher education. By confirming the positive impact of the OHS Communication and Promotion course, educational institutions can more confidently implement behavior-centered learning methods (Newnam & Goode, 2019). This research is not merely an academic exercise but an effort to prepare OHS professionals with a deeply ingrained safety culture.

RESEARCH METHODOLOGY

This study employs a quantitative approach with a quasi-experimental design using a one-group pretest–posttest model. This design is applied to evaluate the effectiveness of an educational intervention by comparing the subjects' safety behavior levels before and after taking the OHS Communication and Promotion course, without involving a control group. The participants consist of all students in the Occupational Health and Safety (OHS) Study Program currently enrolled in the course during the current semester, totaling 31 respondents selected through total sampling. This number of respondents is intended to provide a comprehensive overview of the class population directly involved in the learning process.

Data were collected using a structured questionnaire validated to measure two main dimensions of safety behavior: safety compliance (adherence to safety procedures) and safety participation (active involvement in safety activities). Each item in the questionnaire

was measured using a Likert scale to accurately capture respondents' perceptions and behavioral frequencies. Once collected, data were analyzed through several statistical stages, beginning with a normality test as a prerequisite for analysis.

Given that this study compares results from the same group at two different times, the data were analyzed using a paired sample t-test. This analysis aims to determine whether there is a significant average difference between scores before and after the intervention, which serves as an indicator of the course's effectiveness in shaping students safety behavior.

RESEARCH RESULTS

Data analysis was conducted on 31 OHS Study Program students to measure behavioral changes before (pre-test) and after (post-test) attending the OHS Communication and Promotion course.

a. Distribution of Student Safety Behavior Categories

This classification demonstrates a significant shift in the quality of student behavior between the periods before and after the intervention.

Table 1. Distribution of Average Safety Behavior Scores

Behavior Category	Score Range (%)	Pre-test (n)	Pre-test (%)	Post-test (n)	Post-test (%)
High	76% – 100%	3	9,7%	25	**80,6%**
Moderate	56% – 75%	22	71,0%	6	**19,4%**
Low	< 56%	6	19,3%	0	**0%**
Total		**31 respondents**	**100%**	**31 respondents**	**100%**

There was a surge in the number of students in the High category, increasing from only 3 students (9.7%) to 25 students (80.6%). This indicates that the learning intervention successfully and drastically transformed the behavior profile of the majority of the class.

b. Significance Analysis Results (Paired Sample T-Test)

To validate the frequency and percentage data above, a difference test was conducted to ensure that the observed changes were not due to chance.

Table 2. Significance Test Results

Variabel	N	*Mean Difference*	t-value	*Sig. (2-tailed)*
Safety Behavior (Pre-Post)	31	18,15%	12,450	0,000

Analysis of Findings:

(1) All respondents (31 students) experienced an increase in individual scores, with an overall average increase of 18.15%.

(2) The Safety Participation dimension showed the strongest growth (30.3%). This indicates that students did not merely comply with rules but became significantly more active in promoting safety after completing the course.

(3) The Sig. value of 0.000 ($P < 0.05$) confirms that the increase in frequency and percentage is statistically significant, proving the effectiveness of the OHS Communication and Promotion course.

DISCUSSION OF RESULTS

The results of the study indicate a significant increase in student safety behavior after attending the OHS Communication and Promotion course, with an average score increase of 18.15 points, equivalent to a 28.2% increase in effectiveness. The finding that 80.6% (25 students) reached the "High" category by the end of the semester proves that a structured educational intervention is capable of drastically shifting the subjects' behavioral patterns. This interpretation is supported by statistical findings through the

paired sample t-test with a Sig. value of 0.000, confirming that this change was not a result of chance but a product of an effective learning process.

The higher increase in the Safety Participation dimension (30.3%) compared to Safety Compliance (26.1%) provides interesting insights. This suggests that the persuasive communication approach and promotional practices used in the lectures successfully triggered students' intrinsic motivation. Students did not just feel "forced" to obey rules (compliance) but began to feel a sense of social responsibility to be actively involved in safety activities (participation). This phenomenon aligns with research by Zhang et al. (2022), which states that effective safety communication is the primary key to encouraging voluntary behavior beyond formal compliance.

These results also confirm the theory proposed by Vigoroso et al. (2020), who studied the effectiveness of OHS training programs for university students. In their study, Vigoroso emphasized that learning methods involving simulations and communication strategies can enhance risk awareness, directly contributing to improved safety behavior. In this study, the OHS Communication and Promotion course acted as a catalyst, transforming students' theoretical knowledge into real action through practical safety promotion assignments.

When linked to the research of Yu et al. (2021) regarding education for Generation Z, these findings strengthen the argument that participatory learning methods (such as discussions and promotion projects) are far more effective than passive lecturing. OHS students, as part of Generation Z, tend to be more responsive to interactive materials. The success of all 31 respondents in increasing their scores demonstrates that a curriculum emphasizing communication aspects can meet the learning style needs of today’s students to form a solid safety mindset.

Furthermore, this significant increase is consistent with the research of Mohammadfam et al. (2017), which concluded that behavioral change is a result of the interaction between knowledge and an individual's perception of the importance of safety. Through this course, students gained a new perception that OHS is not just about technical machinery or regulations, but about building relationships and influencing the behavior of others. This is crucial for future OHS practitioners to have the confidence to provide safety inductions or training in the professional world.

Overall, the results of this study provide empirical evidence that university-level educational interventions have a positive long-term impact on preparing a workforce with a strong safety culture. This study successfully bridges the literature gap mentioned by Bourgault & Dionne-Proulx (2021) regarding the need for behavioral evaluation in young workers starting from their education. With the post-test score reaching 82.40%, it can be concluded that the OHS Communication and Promotion course is a highly effective and essential instrument in the Occupational Health and Safety Study Program curriculum.

CONCLUSION AND RECOMMENDATIONS

a. Conclusion

Based on the data analysis and discussions conducted with 31 OHS Study Program students, the following main conclusions can be drawn:

- Significant Increase: There is a statistically significant increase in safety behavior (P = 0.000) after students completed the OHS Communication and Promotion course. The average score increased from 64.25% (Moderate category) in the pre-test to 82.40% (High category) in the post-test.
- Category Shift: The learning intervention successfully transformed the class behavior profile drastically, where the number of students in the "High" category jumped from 9.7% (3 people) to 80.6% (25 people), and completely eliminated the percentage of students in the "Low" category.
- Dominance of Participation: The Safety Participation dimension experienced the highest increase (30.3%) compared to Safety Compliance. This indicates that a persuasive communication approach is highly effective in fostering initiative and internal motivation for students to be actively involved in safety culture, moving beyond mere compliance with written rules.
- Curriculum Effectiveness: The OHS Communication and Promotion course is proven effective as an instrument to shape a safety mindset and safe behavior in students, which serves as a primary asset before they enter the industrial world as OHS professionals.

b. Recommendations

Based on the findings above, the researcher proposes several practical and academic recommendations:

- For Educational Institutions: Maintain and strengthen practice-based learning methods (such as safety campaign simulations and promotional media creation), as they are proven to change real student behavior more effectively than conventional lecture methods. Integrate safety communication elements into other technical courses to ensure safety behavior becomes a consistent culture within the campus environment.
- For Students: Maintain the consistency of the safety behaviors that have been formed and act as safety influencers for fellow students outside the OHS program.
- For Future Researchers: Conduct further research using a control group to strengthen the validity of the findings and eliminate other external factors. A longitudinal study is also recommended to evaluate whether the increase in

safety behavior remains permanent as students transition from the university to the professional world.

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