

Elevating Laboratory Safety Education in Chemistry with Virtual Reality Simulations: Transforming Student Engagement and Preparedness

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Introduction

Addressing safety in chemistry laboratories is of paramount importance due to the occurrence of severe accidents worldwide, often resulting from inadequate training and improper conduct. A significant contributing factor may be the perception that safety topics are dull and uninteresting for students. A potential remedy to this issue is to actively involve students in the learning process by adopting a game-based approach to safety education. In this study, we explored the virtual lab simulations (VLS), an effective learning intervention that has a measurable impact on learning outcomes to teach first-year Pharmaceutical Chemistry students essential safety knowledge. Our findings showed that VLS effectively increased safety awareness, knowledge retention, and reduced risks, potentially revolutionizing safety education by providing a dynamic, risk-free platform for students to practice safety procedures, identify hazards, and respond to emergencies.

Aim

This project explores the potential of VLS as an innovative pedagogical approach with the capacity to transform safety education by offering students a dynamic, immersive, and risk-free platform for practicing safety procedures, identifying hazards, and responding to emergency situations. In this project, Labster's pioneering VLS approach is used as the primary tool for imparting critical safety knowledge. After the completion of the activity, students' feedback was collected to determine the impact on their learning.

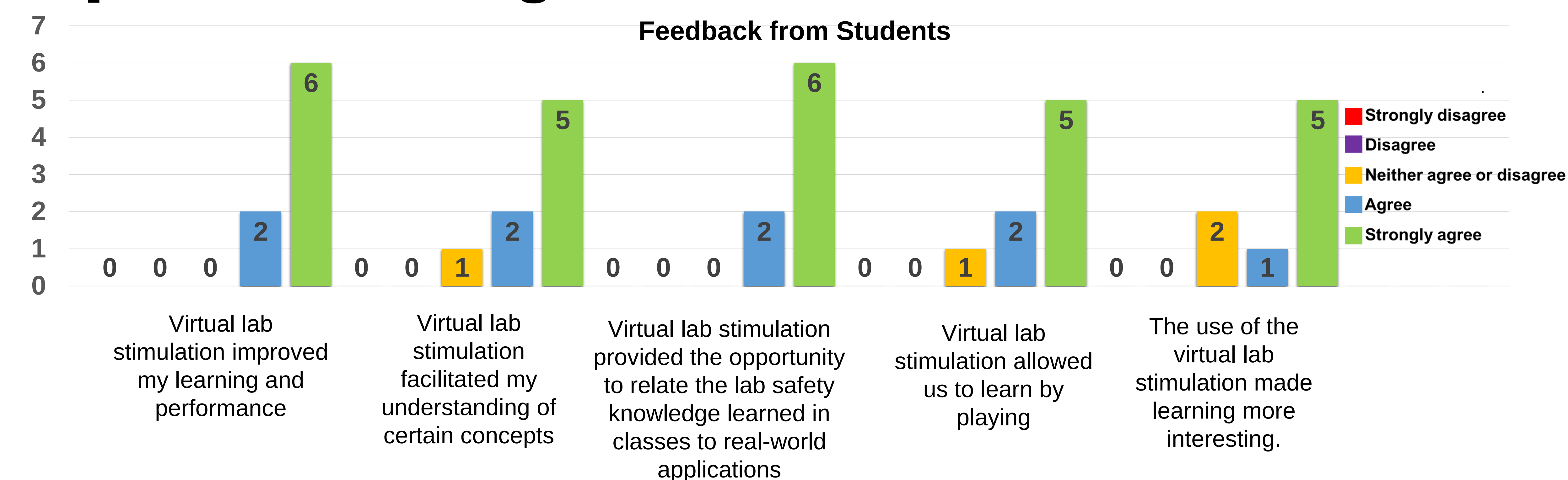
Practicality and Usefulness

- Engaging Learning Approach
- Improved Understanding
- Reduced Safety Risks
- Preparation for Real Work
- Knowledge Retention
- Accessible Learning
- Broad Applicability

Inventiveness

- The VLS approach not only makes safety lessons more engaging but also enhances students' comprehension and retention of essential safety protocols.
- Students acquire critical safety knowledge and practical skills in a dynamic, risk-free environment, effectively preparing them for real lab work while significantly reducing safety risks.

Impact on Learning



Conclusions

- Virtual lab simulation makes safety education dynamic and adaptable.
- It has the potential to benefit students in various fields and contexts.

Reference

- Krug, M.; Huwer, J. Safety in the Laboratory - An Exit Game Lab Rally in Chemistry Education. Computers 2023, 12, 67.