



“An Integration of Immersive Virtual Reality Technology in Teaching the Laboratory Skill for the Usage of Gamma Irradiator”

VHand

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Please scan me!



Challenge

Research techniques in biomedicine is a core introductory course of the programme. As core knowledge of the programme, students are required to learn the principal of radiation sources and radioactive chemicals, and to know how to handle and use them in proper ways under the government ordinance, which are adopted widely in the protocols of biomedical research and healthcare occupational settings. Concerning the laboratory safety, training of the skills in handling radioactive chemicals is difficult as the chemicals are highly hazardous and harmful to health causing potential problems of high-risks and impacts. The students are subject to the risks if the handling procedures are improper during the practical training. Nonetheless, the concept of "experiential learning" has become hostable to the undergraduates who must be well-trained for good laboratory practice and etiquettes.

Objective

The primary objective of the project is to build up innovative courseware using VR technology for training skills in handling chemicals that are harmful to health. We also aim to investigate whether virtual reality (VR) technology is helpful in instructing students with limited laboratory experience in managing radioactive chemicals, preventing unpredictable accidental issues, and supporting active and constructive educational sectors.

Methodology

Our team created the learning simulator called, "Virtual Radioactive Chemicals Handling (VHand)" to reinforce knowledge of biomedical techniques in the operation of gamma irradiator.

The Survey for the Trial Run

	5-point Likert Scale				
	Strong disagree Strong agree				
	1	2	3	4	5
The immersive VR system gives me the perceptual feeling to manipulate the virtual experiment				5	2
I can get in hands-on experience in operation of gamma irradiator by playing the immersive VR system				3	4
It is amazing by using the VR system for my learning progress				2	5
The VR system can facilitate my learning capability			3	4	0
Overall, I like to play VHand operation Game with fun				5	2

Benefits to Students and Teachers for the Learning Outcome

Deliverables	Learning Outcomes
Hands-on activity: VHand	<ul style="list-style-type: none">VHand stimulates students to learn autonomously with the experiential experience.In the classroom teaching, the students and teacher can effectively discuss the teaching material interactively, rather than a one-way effort.
Flipped Classroom: Micro module	<ul style="list-style-type: none">It enhances the slow learner to have another opportunity to access the learning content.

Future Plan

VR is widely adopted in the application of education as the immersive virtual three-dimensional world makes the learning process more effective and active than the traditional one. Significantly, our project team will further dissimulate the VHand to other tertiary institution for the practical training related to the usage of radioactive materials.

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