CASE STUDY

Empowering students in co-creating eLearning resources through a virtual hackathon

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I. INTRODUCTION

Recommended strategies for the development of eLearning resources have largely focused on teachers rather than students. Co-creating eLearning resources with students has received increasing attention driven by learner-centric design and dialogical learning models (Gros & López, 2016). Engaging students as co-creators is beneficial, leading to better engagement and academic performance as students take ownership of the learning experience (McDonald et al., 2021). However, challenges to engaging students as creators include the lack of clear processes, the lack of content expertise among students, students feeling threatened or uncomfortable with an unfamiliar role, power relations between learners and teachers, and teachers feeling insecure about giving up control of curricular elements.

Hackathons began as computer programming competitions which aimed to solve problems through intensive collaboration over a short time. In healthcare, they have been used to spur innovation in mHealth and surgery. In this paper, we report an innovative approach to engaging students as co-creators in eLearning resource development by using a virtual hackathon as well as the evaluation outcomes of this approach.

II. METHODS

A hackathon approach was used to develop reusable learning objects (RLOs). RLOs are open-access, interactive, multimedia web-based resources based on a single learning objective (Lim et al., 2022). A one-day hackathon was organised to create storyboards on patient safety topics. There were two phases: Stakeholder Engagement and Hackathon Day.

Phase 1 was stakeholder engagement where we engaged the university management and obtained funding support for the program. Next, we engaged the faculty's Medical Education & Research Development Unit (MERDU), educators (as mentors) and students (as storyboard creators) to join the hackathon.

Phase 2 was the Hackathon Day was held as an online event (via Zoom) during the COVID-19 pandemic. It started with a briefing of RLO co-creation and storyboarding. Students were divided into groups to create their storyboards using an online platform called MURAL (https://www.mural.co/). The mentors were present to provide guidance. The students presented their storyboards to a panel of judges at the end.

We used a pre-post questionnaire survey method to evaluate students' experience. The pre-hackathon questionnaire examined students' knowledge and confidence in co-creation using Likert scale. The post-hackathon questionnaire had additional questions examining students' perception about the hackathon using a Likert scale and open-ended questions (Appendix is available in Figshare repository, https://doi.org/10.6084/m9.figshare.26502910.v1).

All quantitative data were analysed descriptively using proportion and means. The qualitative data obtained were analysed using the thematic analysis approach. HML coded the answers to the open-ended questions and discussed with the team. The codes were then categorised into themes. Both analyses were conducted using Excel.

III. RESULTS

We reached out to 726 medical and nursing students (Appendix). 22 students participated and were assigned to 7 groups with 2 mentors per group. Seven storyboards were created (Appendix).
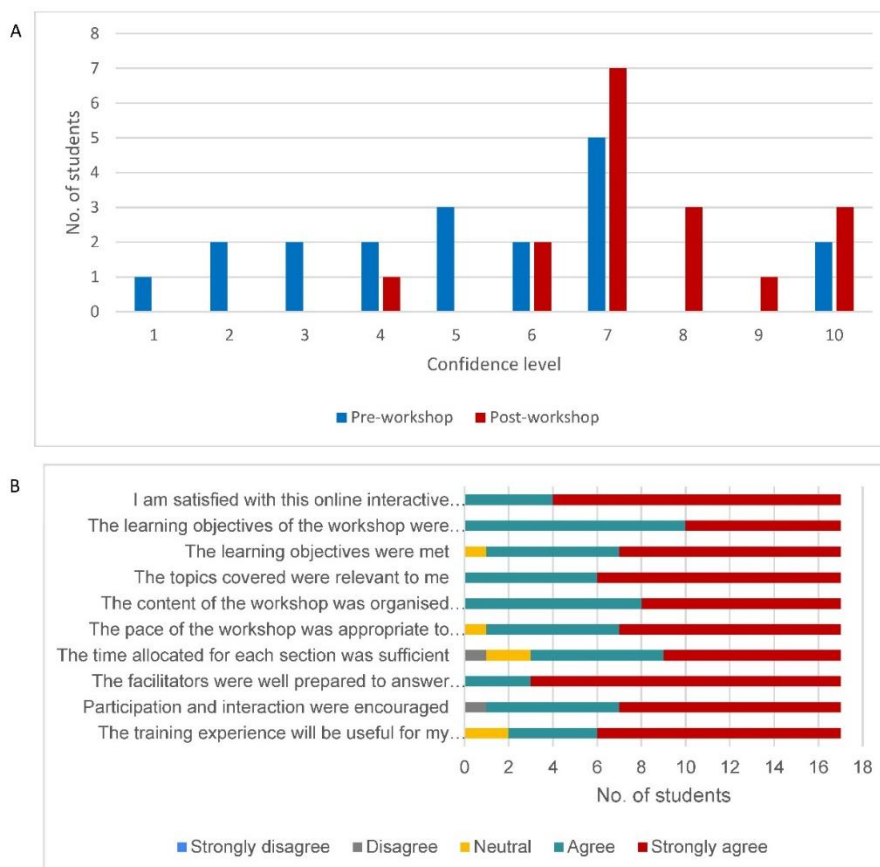

Figure 1. (A) Students' confidence level in using the co-creation approach to develop digital educational resources (B) Students' feedback on the hackathon

Only 15.8% (n=3) of students rated their knowledge about co-creation as 'Good' or 'Excellent' pre-hackathon compared to 82.4% (n=14) students post-hackathon. There was an increasing trend in the students' confidence level in using the co-creation approach after the hackathon (Figure 1A). Students were satisfied with the hackathon (Figure 1B). They agreed that the learning objectives were clearly defined and met, the topics covered were relevant and the content of the hackathon was organised and easy to follow.

Students expressed their enthusiasm to be co-creators. They liked the interaction with educators and found the guidance helpful.

"Gave me the chance to build something, feels like I'm contributing something positive plus being creative for once in medical school."

"An exciting one! Looking forward to more hackathons in the medical world, with close interaction and guidance from lecturers!"

Students liked how the online hackathon was conducted using a collaborative tool. "Awesome online tools (Mural)!". They enjoyed the teamwork between students and educators in co-creating the storyboard.

"And I really enjoy when the teammates and facilitators come together and discuss how to make our topics better as an online learning material."

Students expressed that they embraced the use of eLearning materials to enhance their learning. They were more encouraged to co-create and use the digital resources.

"I am more encouraged to utilise online resources to increase my knowledge."

Students expressed that they would carry out more self-directed learning using eLearning objects and technology to strengthen their learning experience.

"I will conduct more self-directed learning and improve my technology skills for better e-learning and view e-learning as a good alternative for face-to-face teaching."

IV. DISCUSSION

Our case study demonstrated that the hackathon method is feasible for co-creation in learning, fostering partnership between the teachers and learners and offering meaningful and fun learning experiences to the students.

Our results showed that students had an increased level of knowledge and confidence in using the co-creation approach. Students expressed their enthusiasm and appreciated the added values of co-creation in medical education as students played the role of teaching material developers, fostering a positive learning culture. The collaborative effort between teachers and students enhances mutual agreement, partnership, creativity, originality and valuable shared meaning in the development of materials (Bovill, 2020).

The RLOs co-creation process enhanced student teamwork, communication and self-directed learning. Compared to traditional methods of engaging students such as student-led teaching sessions and problem-based learning, the hackathon method added the values of joy and fun of creating learning resources that can be used by their peers. Also, co-creating eLearning resources provided an opportunity to reflect on their learning style, how they use technology as a tool to learn and how they appraise and select high-quality eLearning resources (Bringman-Rodenbarger & Hortsch, 2020).

Our case study had several limitations. The relatively short training and co-creation sessions limited the ability to develop actual RLOs. There was a small sample size with potential selection bias towards already-interested students.

V. CONCLUSION

The co-creation activity using the hackathon method can be an approach to promote interprofessional collaboration and enhance student-educator partnerships in eLearning resource development.

Notes on Contributors

All authors conceptualised and wrote the paper. HML, CHT, WHH and CJN contributed to designing methods and data collection. HML analysed the data. All authors read and approved the final manuscript.

Ethical Approval

We have obtained research ethics approval from the University Malaya Medical Centre Medical Research Ethics Committee for our case study (MREC No: 2024319-13606).

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Declaration of Interest

The authors do not have any conflict of interest to declare.

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