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Employing Participatory Design in Health Cluster Mobile Apps Development: An Approach for PBL

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Abstract: One of the most common issues first-year students with a Bachelor of Computer Science (Multimedia) degree have is uncertainty about the program's outcome. Some of them thought that the course would teach them how to create creative content. As a result, project-based learning (PBL) and participatory design (PD) were implemented, with assistance from two agencies involved to support better comprehension of expected outcomes. Both approaches benefit all parties in the teaching and learning process, and the ultimate result will be used by the agencies, based on student reflections and agency input.

Keywords: Computer science education, pandemic, mobile learning

1. Introduction

One of the most prevalent problems encountered by students pursuing a Bachelor of Computer Science (Multimedia) degree is that they are unsure of the program's outcome. Some of them believed the curriculum would teach them how to develop creative content. While some are completely oblivious! These comments were acquired during informal meetings with students throughout their first semester. To address this issue, a combination of two well-known teaching approach is presented to give insights to the students about the program output: project-based learning (PBL) and participatory design (PD). PBL is a type of learning that is often used in Computer Science courses and is based on one or more projects (Jaime., Blanco, Domínguez, Sánchez, Heras & Usandizaga, 2016)). The PBL emphasises centrality, driving questions (questions that encourage students to solve issues), constructive exploration, independence, and realism (Thomas, 2000). PBL implementation in Computer Science degrees has been documented in several cases, highlighting the benefits of PBL for students, including motivation, the creation of more complex and higher-quality products, engagement and independent learning, teamwork experimentation, content and process understanding, and soft skills development (Chandrasekaran, Stojcevski, Littlefair & Joordens, 2012); Dong, Qin & Chen, 2014); Jaime, Blanco, Domínguez, Sánchez, Heras & Usandizaga, 2016) ; Amamou, & Cheniti-Belcadhi, 2018); Fioravanti, Sena, Paschoal, Silva, Allian, Nakagawa, Souza, Isotani & Barbosa, 2018); Cavalcante, Viana & Vidal, 2018). In this way, students develop a greater knowledge of professional practise as well as how to apply what they've studied to real-world challenges (Prince & Felder, 2006).

Another approach that has been used often in Computer Science classes is participatory design (PD). According to Namioka & Schuler (1993), the basic principle of PD is for target learners to participate actively in the learning and teaching process. It's also a collaborative learning process in which co-designers are empowered to make real-world design decisions (Carroll , Chin, Rosson & Neale (2000); Vincini (2001)). Based on current research, the PD concludes that students can play a key role as co-designers and that the end-products are better suited to fulfil the goals and expectations of their collaborators (Vincini (2001); Cooper, Lauren & Daria (2003)).

2. Method

In semesters 2 2019/2020 and 2020/2021, these two teaching styles were used in the Multimedia Application Development (SKM3300) course. This course was available to first-year Bachelor of Computer Science students (Multimedia). In semester 2019/2020, only one agency - Rehabilitation Center Tun Abdul Razak (PERKESO) - is involved in the PD process. In semester 2020/2021, two organisations are involved: the Tun Abdul Razak Rehabilitation Center (PERKESO) and Hospital Serdang. Each semester, students were placed into four groups, each with a representative from one of the agencies. PBL and PD sessions lasted 14 weeks. Each representative from an agency will share their shared challenges to be resolved as part of the PBL. On the other hand, students will propose solutions to the problems. The cooperation will result in a product — a mobile application. Due to pandemic Covid-19 and the government's Movement Control Order (MCO), online meetings were held to ensure the success of the PBL and PD. Soft-skills such as negotiation and communication were introduced throughout the process, and representatives from agencies were obliged to monitor the students' soft-skills. Students were obliged to show the product to agencies and external reviewers from both inside and outside Malaysia at the end of the semester.

3. Results and discussion

The students' reflections and clients' feedback on the PBL and PD sessions were then gathered. Google Jamboard was used to gather reflections from students (Fig. 1).

Figure 1. Reflections from the students

A Whatsapp platform was used to obtain feedbacks from the clients. The clients are satisfied with the communication skill of the project manager (representative from the group) – this is the common practice in the group management work. According to the clients, most groups able to have a social communication with them (Fig. 2).

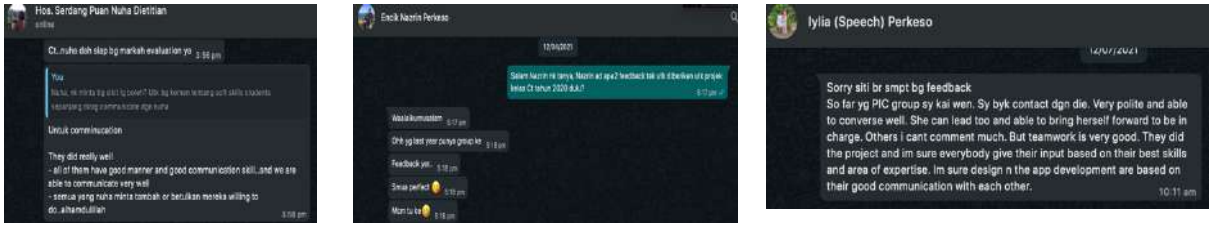

Figure 2. Feedbacks from the clients

4. Conclusion

Students in both semesters comprehended the Bachelor of Computer Science (Multimedia) program outcome based on feedback on Jamboard and online chats. The students were able to communicate, exchange ideas, and learn how to talk with professionals in the business by implementing the PBL and PD, and the generated products would be utilized by the agencies. As a result, the PBL and PD can provide students with knowledge about their future professional roles industry problems can be solved.

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