Chapter 16

Exploring Collaborative Learning for Programming Course to Enhance Students’ Interest and Achievement: A Case Study of Universiti Utara Malaysia

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ABSTRACT

As programming is one of the core subjects for BSc IT students, it is vital for them to have programming skill. However, students are often terrified of programming since it is a challenging subject. Traditionally, the programming teaching and learning process are limited to lectures and lab exercises. This approach is no longer appropriate in today’s learning environment and required skills in the 21st century. Collaborative learning is acknowledged as an approach that fits the programming students. Thus, this chapter has adapted the collaborative approach in Programming 1 class. Three techniques were applied namely problem-based learning, buzz groups, and pair programming. At the end of the semester, an online survey to obtain students’ opinions and a focus group discussion were conducted. In addition, the examination results of the repeaters were also compared. Results from the survey and focus group indicate that the collaborative approach is able to increase students’ interest and the grade of the repeaters in the Programming 1 subject.

INTRODUCTION

Human capital is an important element in a country’s economic growth and it is highly needed in this globalization era. It provides extremely competitive workers towards the nation which in turn promotes the economic growth. The lack of qualified human capital resource will cause a country to become weak. Thus, Malaysia is now working towards producing comprehensive and world class level human capital.
resources. Nowadays, excellent academic achievement is not a guarantee for graduates’ employment in Malaysia and also does not prove them to be of highly skilled workforces (Zaliza, Mohd Safari, & Arasinah, 2015). The industry expects them to have the necessary soft skills which are essential in their working life prior to starting their jobs. Unfortunately, there are Malaysian graduates who do not possess those important skills thus it contributes to the unemployment problem in Malaysia. Unemployment is also a global issue since the fresh graduates are not equipped with comprehensive capabilities. The unemployment rate for the year 2017 was 10.8% and it was at its highest, according to a report issued by the MIDF Research (2018). One of the reasons for the unemployment is the inappropriate skills matching for the adolescents aged between 15 to 24 years old.

Zaliza and Mohd Safari (2014) stated that graduates’ attributes, lecturers’ competency and education quality are the employability factors among graduates. Additionally, Rahmah, Ishak and Lai (2011) highlighted that the cause of unemployment is that there is no balance between supply and demand for graduates. This has caused 30% of the graduates to get salaries that did not match their qualifications. Moreover, the quality of the graduates also plays an important role whereby employers may not satisfy with their skills and work quality that do not meet the requirements. On the other hand, Ranjit (2010) in Zaliza et. al (2015) mentioned that Malaysian graduates lack of ten main weaknesses such as management flaw, problem solving, communication, leadership, creativity, critical thinking, proactive, self-confidence and interaction skills. In short, employers are not only seeking for high grade achievers, but also those who are excellent in soft skills. Therefore, students need to obtain the appropriate soft skills during their studies in the university and not only depend on the academic qualification to survive in the future career world. Eventually, those skills will permit the graduates to compete at the global level (Sarker, Davis, & Tiropanis, 2010).

Similarly, students of the School of Computing (SOC), Universiti Utara Malaysia (UUM) need to have excellent academic qualification as well as the necessary soft skills by the time they graduate. In order to produce high quality students, the teaching and learning process is influenced by many factors, namely the course itself, the level of professionalism besides the lecturers’ teaching style and the classroom conditions (Zamali, Fatihah, Munirah, & Tamsin, 2016). Interestingly, lecturers play an important role in increasing students’ interest in class (Wasserman, 2013) as well as influencing students’ achievement (Zaliza & Mohd Zafari, 2014). Therefore, a suitable approach needs to be adapted in the Bachelor of Science in Information Technology (BSc. IT) students of SOC. A comprehensive and systematic planning need to be done to ensure that the implemented teaching and learning process helps to produce students who can compete globally.

Programming is one of the core subjects for students who choose to enroll in the IT undergraduate programs. This has always been the most challenging and difficult subject for students (Isong, 2014). Only a small number of students find that learning programming is fun and enjoyable. Majority are usually not interested in this subject as they have a bad impression that this subject is complex and hard to be understood. As a result, the rate of failure is usually high for this subject as pointed out in the literature (Malik, 2018; Costa, Fonseca, Santana, de Araújo, & Rego, 2017). Nevertheless, students need to acquire and excel in the subject since programming is one of the essential skills for an IT student to survive in the working environment (Law, Lee, & Yu, 2010). Programming skill cannot easily be attained just by reading books without hands-on practice by doing programs. Students should put more effort by doing more programming exercises on their own initiatives particularly during their free time outside from the classroom since in-class practice is not sufficient. Hence, they need to more persistent, motivated and daring in order to make it work.