UNIVERSITI TEKNOLOGI MARA

INVESTIGATING THE LEARNER'S PERFORMANCE IN LEARNING PROGRAMMING BY INTEGRATING VISUALIZATION PROGRAMMING AND PAIR PROGRAMMING IN PROGRAMMING COURSES

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Dissertation submitted in partial fulfillment of the requirements
for the degree of

Master of Computer Science

Faculty of Computer and Mathematical Sciences

July 201**5**

ACKNOWLEDGEMENT

My highest gratitude to the All Mighty, Most Gracious Most Merciful, for the opportunity and blessing; which provide me strength to face all tribulations and trials in completing this master program. I am very grateful to Allah because I was able to finish my study. A bunch of thanks goes to Universiti Teknologi Mara as giving me the opportunity to go through such a memorable experience. There were also many people who have had a hand during this program and without them, it would be very impossible for me to finish it successfully. Firstly, I would like to thank my UiTM supervisor, Dr.Marina Ismail, whom had sacrifice most of her time and strength to guide me patiently in this endeavor. Here, I would like to express my deepest gratitude to him for his assistance and constructive comments. Besides, I owe the warmest gratitude to the people my parents, understanding husband loyal family and cooperative colleague for their endless support and prayers. Not forgotten, to other staffs of KPTM-Ipoh for their guidance and endless support. Finally, I am totally grateful for your uphill support and co-operation. May Allah pay all of your kindness towards me. In shaa Allah. Thank you.

ABSTRACT

Abstract— This paper investigates the possible learning approach for novices in learning programming. Novices have problem in learning programming because many reasons. One of it is the incorrect use of study methodology. Many approaches have been introduce, however, there are no empirical evidence showing the best approach to learn programming by novices. In this study, four experiments were conducted with four groups of students for four different learning approaches, that are the conventional method for Group A, pair programming for Group B, using the visualization programming tool for Group C and combination used of visualization programming tool and pair programming for Group D. The visualization programming tool used is Ville. Each group consists of 30 students of mixed gender. The students were grouped randomly except when doing pairing which requires the pair to have different capability which is determined by their CGPA and SPM Mathematics' results. Each group will be given the pre-test, treatment and post-test. Pre test were carried out by all groups using the conventional method, while post-test were performed according to the different methods for each group. The differences in score for pre- and post-test were analyzed for each experiment. The result showed that Group D showed a significance improvement in score as compared to other groups. Thus, it gives an indicator that teaching of programming for novices is best performed by combining the pair programming and using the visualization tools. The combination of the two techniques has improved the performance of the students.

Index Terms*— learning programming, *pair programming, software visualization, visualization programming

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