Scaffolding database system on mobile phone using relational SQL

By

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Declaration

I declare that this dissertation is my own original work. Where collaboration with other researchers are involved, or materials generated by other researchers are included, the parties or materials are acknowledged or are explicitly referenced as appropriate.

This work is being submitted for the degree of Master of Computer Science at University of Management and Technology. This Thesis has not been submitted to any other university or institution for any other degree or examination.

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Dedication

To my parents and family

Acknowledgement

Firstly I am very thankful to Allah Almighty for helping me achieve this difficult task. Throughout this process I was blessed with power and passion to compile and finish this dissertation. I am very thankful to Dr. Adnan Abid for always backing me up and focusing on my mistakes. I learned a lot from his experience which benefited me a lot.

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Abstract

Learners face difficulties while studying the Database management system course. Especially in understanding the practical part of the course which consist of understanding the relational SQL queries. This is one of the main reasons for learner to lack in gaining the practical skills. Scaffolding (support) can be provided to the learners in order to enhance their learning ability while they learn how to work with the relational SQL queries. This guidance provided to learners in the forms like curriculum, pedagogy and tool can enhance their mental model. Whereas as the learner make the transition from novice to expert stage then the support provided to the learner is faded away.

With a rapid evolvement in the mobile phone technology, there is an ever growing market of the mobile phone users. In this dissertation, we proposed a scaffolding framework to cater with the difficulties of learners of the relational SQL. Based on the proposed framework a scaffolded environment called 'MobiSQL' is proposed for facilitating learning on the mobile phone. Further, the proposed environment is evaluated by understanding the impact of mobile phone on the learners. Whereas the evaluation on the environment is conducted based on the parameters; number of errors, task success and time taken by the learners.

The initial evaluation showed an overall positive response from the learners based on working with the scaffolded environment as compared to the non-scaffolded. Learners showed significant better result while working with the 'MobiSQL' in number of errors, task success while completing the tasks. There was also significant

difference with respect to the time while completing the task. Whereas there was not much difference in the time taken by the learner while attempting the tasks in scaffolded and non-scaffolded environment.

Chapter No 1: Introduction

1.1 Introduction:

The Database System is one of the core course at university level. Some of its concepts are very hard to grasp especially which require practice like learning relational query language of SQL. To bolster, the teaching of database systems core concepts, learners have been provided help in the form of constructivist epistemology which provides high order skills to the learners in order to perform analysis and design of the database systems [1]. Different scaffolding (supportive) methods have been used in order to support the learning of database systems in which the cognitive load of the students was reduced and results showed positive results overall [2]. Database design is taught at undergraduate level using the direct and reverse engineering methods and the result of this methodology which was covered five years showed positive results among students [3].To support the process of learning in another computer science subject; software engineering. Game based environment is proposed to the learners in order to learn concepts of the subject [4]. Similarly, with the use of Microsoft SQL Server and Oracle 10g, database security and auditing is being used to teach. Students have shown satisfying results based on this approach [5].