Study of Junior Software Engineers' Awareness on Abstraction and Reflective Practise as Techniques of Program Comprehension

By

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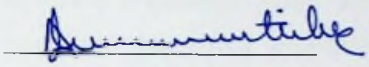
Declaration

I confirm that, except where indicated through the proper use of citations and references, this is my own original work. I confirm that, subject to final approval by the Board of Examiners of University of Moratuwa, a copy of this Dissertation may be placed upon the shelves of the library of the University of Moratuwa and may be circulated as required.



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To best of my knowledge the above particulars are correct.

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Abstract

The local software industry elapses a period of steady growth. The key factor which contributes for the development of the software industry is the expansion of the outsourcing opportunities received from developed countries. To sustain this steady growth the quality of exported software should be constantly maintained. The main factor behind the quality of software is the skill level of the software engineers. Specially, the junior software engineers' contribution towards the quality of software is high, because, the junior engineers represent a larger segment of the local software engineering community.

Empirically, abstract thinking and reflective practise has been identified by international researchers as two important factors, which contribute on the development of the skill level of the software engineers. Further, they consider program comprehension as a core function of junior software engineer. Therefore, it is an important requirement to identify the level of awareness on abstraction and reflective practise as techniques of program comprehension by junior software engineers.

Due to the complexness and the broadness of the population a stepwise approach is more suitable in the area of the study. Therefore, the research focuses on the last two batches of graduates from the department of Computer Science and Engineering, University of Moratuwa. Nevertheless, the methodology and the findings of this research intend to broaden the local academic information pool while enlightening the future research work.

Most importantly, the study reveals that the level of adoption of abstraction and reflective practise as a technique of program comprehension is very high within the concentrated population. Therefore, the CSE software engineering syllabus could be considered as a benchmark in the local context. Nevertheless, further findings suggest few minor improvements to the CSE syllabus worth satisfying by additional subject areas. Lastly, accepting the research findings as a baseline, it

recommends the local universities to offer different subjects based on students' cognitive development to increase the level of abstraction and reflective practise on software engineering. This requirement forces the universities to eliminate any preset syllabuses.

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List of Abbreviations

ACM	- Association for Computing Machinery
CSE	- Computer Science and Engineering or Computer Science and Engineering department
CTO	- Chief Technology Officer
IT	- Information Technology
IEEE-CS	- Institute of Electrical and Electronics Engineers – Computer Science
ICT	- Information and Communication Technology
RP	- Reflective Practise
SDLC	- Software Development Lifecycle
SE	- Software Engineering
SPSS	- Statistical Package for the Social Sciences
UI	- User Interface
UOM	- University of Moratuwa