

Data and Process Modelling: Investigating the gap between education and industry expectations in New Zealand

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ABSTRACT

This poster represents the current research whose main objective is to investigate if there exists a gap between what is currently taught in a typical System Analysis and Design Undergraduate course in New Zealand universities and will compare and contrast with the needs of the local software industry. This research examines the System Analysis and Design which is a core course taught to the second year undergraduate students in various universities in New Zealand in Information System/Information technology/Computing curriculum. This research examines the contents of the current courses taught and maps it with the present need of the software industry in New Zealand.

Keywords: System Analysis and Design Course, Data and Process Modelling

1. INTRODUCTION

System Analysis and Design (SA&D) core courses are taught in an undergraduate Information System/Information technology/Computing curriculum. At Auckland University of Technology (AUT), this course is taught as Data and Process Modelling. According to the guidelines of the Association for Computing Machinery's undergraduate curriculum, this course is one of the ten Software Engineering Education Knowledge areas (ACM, 2014).

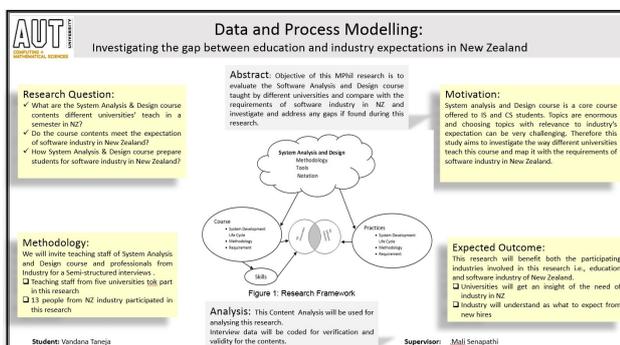
It is considered an essential course as its aim is to provide experience in determining system requirements and developing conceptual design of systems that meet the needs of the stakeholders. Not only this it aids and validates the tools and techniques to develop a system that is efficient and effective (Fatima & Abdullah, 2013). According to them, better learning comes when there is an involvement in learning phase that makes students active participant as well as recipient of the knowledge. Thus, the course prepares students for the workplace by incorporating key concepts related to requirements analysis, elicitation, use of relevant modelling tools and techniques, and skills such as team building, communication and time management.

Therefore, the main objective of this research is to investigate if there exists a gap between what is currently taught in a typical SA&D undergraduate course in New Zealand universities and the needs and expectations of the local software industry.

2. LITERATURE REVIEW

It is mandatory for undergraduate Students from Information System, Software Engineering, and Computer Science background to take the SA&D. For such a course there are no set guidelines known to universities. In 1998, Institute of Electrical and Electronics Engineers (IEEE) and ACM got together to perform a major review of curriculum guidelines for undergraduate programs in computing (The Joint Task Force on Computing Curricula - ACM/IEEE-Computer Society, 2013). They constituted ten areas as Software Engineering Education Knowledge (SEEK) area and placed Software Modelling and Analysis (MAA) in it. Researcher is not aware of any guidelines that NZ universities mutually agree or follow in designing the course.

In NZ research has taken place in SA&D. Groves, Nickson, Reeve, Reeves, and Utting (2000) have researched about the requirement engineering phase of SA&D. Though the data was not adequate but gave an idea of the time spent on requirement elicitation and testing the requirements. Pais, Talbot, and Connor (2009) investigate the issues that highlight the gap between the research and practice in Requirement Engineering and provided some recommendations to minimize the gap. Kemp, Phillips, and Alam investigated the tools used by software engineers (2003; (Phillips, Kemp, and Hedderley, 2005); Sung and Paynter (2006) looked at the software testing. The Contribution of Erturk (2014) from academia was for effective student learning, improving the use of learning technology and informally deciding the contents of a SA&D based on the research. Kirk and Tempero, (2012) investigated the software practices used in software industry that included the methodology, tools used. However none of these studies



However, to the best of the researcher's knowledge, there is not sufficient information available on practitioners' view of which topics and skills are essential in such a course.

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investigated what was being taught at university level and if there existed a gap between academia and industry.

3. APPROACH

This research uses qualitative approach that is based on the semi-structured interviews. gives flexibility to probe more during the interviews (Myers, 2009).

Due to the complexity of data collection and time constraint semi-structured interviews were preferred to investigate the university course and the practices followed in the software industry. Not only this but the semi-structured interviews also helps to explore the perceptions and needs of continuing professional education among a diverse group (Barriball & While, 1994).

Two categories of participants were invited for this research:

- (i) Professionals from industry who are mainly involved in requirements analysis, modelling, and design such as Business analysts, SCRUM masters, product owners
- (ii) University teachers who are involved in teaching and delivering this course

Participation is voluntary and participants can withdraw themselves at any stage. Since the participants are from different sectors, two sets of interview questions were prepared for each category to get the clear picture of the practices followed in these sectors.

4. RESEARCH IN PROGRESS

The data collection is complete. It is in the initial stages of analysis and will be analysed using the qualitative analysis techniques. It seems appropriate to use Content Analysis for this research because the interview questions are mostly straightforward and consistent and quantifiable of the qualitative text (Myers, 2009). Researcher is using NVivo 11 for analysis.

It is expected that findings from this study will familiarise the researcher with the prevailing practices of the software industry and will also provide valuable insights about the practices of relevant stakeholders from academia and industry. It is also anticipated that this research will also highlight the gaps, if any, between the contents taught in this course and the needs of the software industry in New Zealand.

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