

DESIGN AND DEVELOPMENT OF QUIZ-BASED PROBLEM-SOLVING  
MODULE FOR ENHANCING OCCUPATIONAL SKILLS AMONG THE  
FINANCIAL ACCOUNTING STUDENTS

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*I would like to dedicate this piece of intellectual work for all my beloved mentors who have meant and continuously support me in my PhD journey. First and foremost, a special feeling and dare gratitude to my wonderful family, my wife, and my pillar of success, Sureka Hemali, and two little angels Kevin and Nash for their encouraging thoughts and wishes. Next my parents, Livinston and Briatrice Hettiarachchi, truly I am blessed to have you two in my life. Last but not least, I am dedicating this thesis to my academic supervisor, Dr. Tamil Selvan, and Co-supervisor, Dr. Sarala Thulasai for their immense contribution in my scholarly work. Thank you very much for being in my aspiration and targets.*



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Success in life is full of teamwork and dedication and together we are miraculous. Success is the tenderness of achievement that you feel when you reach your ultimate goal. We do not find the secret of success but yet it is the outcome of physical and mental preparation, hard work, and being ready to accept failures and learn from them. Believing in Lord Buddha and his preaching will find you a path to success. Succeeding with desired goal is not possible unless it shapes and fine-tunes with teamwork.

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## ABSTRACT

Occupational skills are a set of knowledge and skills that employees need for career success and workplace readiness. Financial accounting (FA) students who are having a high caliber of occupational skills such as Problem-Solving Skills (PSS), Communication Skills (CMS), and Creativity (CRE) often will get more attention and demand than others. There is a gap between FA classroom knowledge and skills required in work setting. The objective of this research is to bridge this gap by developing a Quiz-Based Problem-Solving (QBPS) module application and to find the effectiveness of this module for enhancing occupational skills among FA students. The methodology adopted for this thesis is 'Design and Development Research (DDR) and it consists of three phases: The need analysis (Phase 1), design and development (Phase 2) and evaluation (Phase 3). The findings of the need analysis, both students' and teachers' questionnaires reflect a high level of agreement on the need of QBPS module application. The findings of the design and development phase reveal a high-level agreement of module objectives, contents, logistics, operational platforms, and required skills, which was executed with the questionnaire and a checklist for experts interviews. Initially, the alpha version of QBPS module application was developed and then amended to derive the beta version with expert consensus. According to the usability test for QBPS in the evaluation phase, all students and teachers complement the module. The effectiveness of this module was tested by using a quasi-experimental design. The experimental group's post-test scores for PSS, CMS, and CRE had improved to a greater extent. This thesis will impact the body of knowledge immensely in enhancing occupations skills and contribute to the framework in designing Quiz-Based Problem-Solving module. Future researchers may test this module for different domains other than FA and will test other occupational skills required for a knowledge gap.

## ABSTRAK

Kemahiran pekerjaan ialah satu set pengetahuan dan kemahiran yang diperlukan oleh pekerja untuk berjaya dalam kerjaya dan juga kesediaan di tempat kerja. Pelajar perakaunan kewangan yang mempunyai kemahiran pekerjaan yang tinggi seperti kemahiran penyelesaian masalah, kemahiran komunikasi dan kreativiti selalunya akan mendapat perhatian dan permintaan yang lebih daripada pekerja yang lain. Terdapat jurang antara pengetahuan dan kemahiran yang diperlukan dalam persekitaran kerja. Objektif kajian ini adalah untuk merapatkan jurang ini dengan membangunkan modul penyelesaian masalah berasaskan kuiz dan menilai keberkesanan modul ini untuk meningkatkan kemahiran pekerjaan dalam kalangan pelajar perakaunan kewangan. Metodologi yang digunakan untuk kajian ini ialah penyelidikan Reka Bentuk dan Pembangunan (DDR) dan ia terdiri daripada tiga fasa iaitu analisis keperluan (Fasa 1), reka bentuk dan pembangunan (Fasa 2) dan penilaian (Fasa 3). Dapatan dari analisis keperluan melalui soal selidik pelajar dan pensyarah menunjukkan tahap persetujuan yang tinggi terhadap keperluan modul QBPS. Dapatan kajian dari fasa reka bentuk dan pembangunan pula menunjukkan tahap persetujuan yang tinggi dari aspek objektif modul, kandungan, logistik, platform operasi dan kemahiran yang diperlukan dimana data diperolehi dari soal selidik dan temubual. Pada mulanya, versi alfa telah dibangunkan dan kemudian versi beta untuk mendapatkan konsensus pakar. Dapatan kebolegunaan modul dalam fasa penilaian menunjukkan modul memenuhi keperluan pelajar dan pensyarah. Keberkesanan modul ini telah diuji menggunakan reka bentuk kuasi eksperimen. Markah ujian pos kumpulan eksperimen untuk kemahiran penyelesaian masalah, kemahiran komunikasi dan kreativiti telah meningkat ke tahap yang lebih tinggi. Kajian ini telah menyumbang kepada korpus ilmu dalam meningkatkan kemahiran pekerjaan dan kerangka bagi merekabentuk modul penyelesaian masalah berasaskan kuiz. Kajian lanjutan boleh menguji modul ini untuk domain bidang yang berbeza dan kemahiran pekerjaan lain yang diperlukan untuk jurang pengetahuan.

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## ABBREVIATIONS

AAF	Accounting, Auditing and Finance
ACCA	Association of Chartered Certified Accountants
ADDIE	Analysis Design Development Implementation, and Evaluation
AI	Artificial Intelligence
ARG	Alternative Reality Games
BBA	Bachelor of Business Administration
CBFS	College of Banking and Financial Studies
CBL	Competition-Based Learning
CG	Control Group
CMS	Communication Skills
CON	Class OneNote
CRE	Creativity
DDR	Design and Development Research
EB	Evening Batch
EG	Experiment Group
ET	Educational Technology
EV	External Verifiers
FA	Financial Accounting
GBL	Game Based Learning
HEIs	Higher Education Institutes
ICT	Information Communication Technology
ISD	Instructional System Designs
IV	Internal Verifiers
MB	Morning Batch
MSF	Microsoft Forms

MST	Microsoft Teams
MVS	Maximal Variation Sampling
OAAAQA	Oman Authority for Academic Accreditation and Quality Assurance
PSS	Problem-Solving Skills
QBL	Quiz Based Learning
QBPS	Quizzed Based Problem Solving
SAOC	Societe Anonyme Omanaise Close
SAOG	Societe Anonyme Omanaise Generale
SDL	Self-Directed Learning
SPCC	Self-Perceived Communication Competence Scale
TQT	Total Qualification Time
TTCT	Torrance Tests of Creative Thinking
TTCT	Torrance Tests of Creative Thinking
UG	Undergraduate
ULH	Unsupervised Learning Hours
VLE	Virtual Learning Environments



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## LIST OF PUBLICATIONS

### Journals:

- (i) Title: Educating Financial Accounting: A Need Analysis for Technology-Driven Problem-Solving Skills

Authors: Nuwan, Lakmal, Hettiarachchi; Dr. Tamil, Selvan, Subramaniam; Dr. Sarala Thulasi Palpanadan

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- (ii) Title: Infusing Communication Skills into the Financial Accounting Curriculum: A perspective from the Digital Era

Authors: Nuwan, Lakmal, Hettiarachchi; Dr. Tamil, Selvan, Subramaniam; Dr. Sarala Thulasi Palpanadan

Source: International Journal of Information and Education Technology

Publisher: FPTV, UTHM

Status: Accepted

## LIST OF AWARDS

- (i) Student Research Papers Peer Review Team member- for Block Funding Research Program of the Research Council for April 2020 cycle.
- (ii) Faculty Research Interest Seminar- Presenter Award for “The Impact of Online Game-Based-Learning (GBL) on Financial Accounting Students’ Academic Achievements”.



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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Introduction**

Financial accounting (FA) is the process of recording, summarizing, and reporting monetary transactions of a given business entity. So that relevant stakeholders may make economic decisions pertaining to their wealth creation and it will align with sustainable business growth. According to Harold (2021), FA is a genre of accounting that helps in preparing financial statements for businesses to assess their financial performances. This is an external purpose reporting hence, makers of these financial reports require a good understating and application of occupational skills. Learning FA will mature at the graduate level, where students need a better instructional design to combine knowledge and skills. Knowledge will be nurturing in classroom set-up, whereas skills come from industry set-up. The teaching and learning process of financial accounting has become a challenging task for both students and teachers, in fact, it requires a strong caliber of occupational skills such as problem-solving skills (PSS), communication skills (CMS), and creativity (CRE) in preparing financial statements for various types of business organization. The gap between knowledge and skills can be bridged by exposing industry experience with strong occupational skills.

Financial Accounting involves recording, summarizing, and reporting financial transactions and communicating financial performance to interested stakeholders (Annapoorna, 2022). It includes Income Statement, Balance Sheet, and Cash Flow Statement as basic financial statements. Technically, accounting is the language of business. Annapoorna (2022) stated that “a financial accountant's duties may differ from those of a general accountant, who works for himself or herself rather



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The researcher was born on 27<sup>th</sup> May 1978, Colombo, Sri Lanka. Science College, Mount Lavinia was his alma mater until 1997 for secondary education and then started his preparation for higher studies in seeking university entrance. In 2000, he pursued his bachelor's degree in commerce (Accountancy Special) at University of Sri Jayewardenepura, Sri Lanka. Upon completion of his Bachelor of Commerce in 2005 and started his career as a Teaching Assistant at Leeds International school. Then he joined Royal Institute of Colombo (RIC) in 2007 as Demonstrator/Lecturer in Corporate Finance, Finance Management and Principles of Accounts: University of London (UoL) International Programs. At RIC, he had played many roles including Accounting Teacher, Headmaster-upper school and Lecturer in degree program. During his tenure at RIC, he enrolled in University of Colombo, Sri Lanka as a part-time student and pursued a Master of Business Studies in 2010. After acquiring teaching experiences in various levels, in 2019 he signed up with Universiti Tun Hussein Onn, Malaysia to pursue his PhD in Education in Faculty of Technical and Vocational Education. During the period of studies he wrote two journal entitled "Educating Financial Accounting: A Need Analysis for Technology-Driven Problem-Solving Skills" and "Infusing Communication Skills into the Financial Accounting Curriculum: A perspective from the Digital Era", both are under the journal reviews. Furthermore, he had attended series of training programs including "Faculty Development Program on How To Write And Publish Papers in Scientific Journals". He is passionate in Education Technology, Instructional System Design(ISD), Education in Financial Accounting and Artificial Intelligence (AI) and started his research endeavors in the same field.