

https://dspace.org/

Developing a valid and reliable quality design criterion rubric to evaluate online courses: a case of three entrepreneurial online short courses at the University of the Witwatersrand

Makda, Fatima

2019

https://hdl.handle.net/10539/29314

Makda, Fatima Mahomed, (2019). Developing a valid and reliable quality design criterion rubric to evaluate online courses :a case of three entrepreneurial online short courses at the University of the Witwatersrand, University of the Witwatersrand, https://hdl.handle.net/10539/29314

Downloaded from a DSpace repository. https://dspace.org/



Developing a Valid and Reliable Quality Design Criterion Rubric to Evaluate Online Courses: A Case of three Entrepreneurial Online Short Courses at The University of the Witwatersrand

A research report submitted to the Faculty of Humanities, University of the Witwatersrand, in 50% fulfilment of the requirements for the degree of Master of Education (in the field of Educational Technology).

A Research Report Submitted By
Student Name: *Fatima Makda*
Student Number: *364441*

Supervisor
Reuben Dlamini

Faculty of Humanities
School of Education

September 2019

Abstract

Online learning has been identified as a growing area in the education sector and many educational institutions are expanding their offering of online courses. When designing online courses, there are several design considerations and decisions that need to be made. Despite the development of various instructional design literature and the potential of online courses to support learning, there exists a gap between theoretical knowledge (theory) and practice (reality).

The objective of the current research study is to determine the effectiveness of the design of online courses for teaching and learning, and what designers and instructors of online learning environments should collectively consider in terms of the quality of the design for online courses. The current study found the dimensions (1) course information, course structure and course organisation, (2) interaction and communication, (3) multimedia design, (4) assessment and feedback, and (5) effective use of technology of online courses to be important contributors towards the quality design of online courses. Using these dimensions, a valid and reliable evaluation instrument was developed – a rubric. In the current study, the rubric is used as an evaluation tool to evaluate three online short courses at a university level.

The current study uses a quantitative instrument design methodology as it involves measuring by scoring various criterion on the developed rubric. These scores were measured and analysed using simple descriptive statistics. Qualitative descriptive evaluations of the online short courses were also done. Both the quantitative and qualitative aspects of the online course analysis were integrated to ascertain a summative conclusion of the three online courses and whether the rubric, as a design framework, needed further improvement or not.

The current study provides a contribution towards literature by advancing the development of best practices in terms of quality design and evaluation of online courses. The rubric offers a framework to determine what components contribute towards quality design in online courses. This framework contains a set of benchmarks that will assist instructors and course designers in one of two ways; (1) as a self-evaluation tool for an online course thus advising the appropriate stakeholder on how to revise their current online course, and (2) as a best practice guideline to design a new course within the online environment.

Key Words: Online learning, online course design, quality design criteria, valid and reliable rubric

Declaration

I declare that this report is my own, unaided work. It is submitted in partial fulfilment of the requirements of the degree of Master of Education (in the field of Educational Technology) at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other university.

Name of Candidate: Fatima Makda

Student Number: 364441

Signature: _____

Date: September 2019

Acknowledgements

I would like to thank my family and friends for their unrelenting support, patience, and encouragement which they provided me throughout the completion of my Masters in Education.

I would also like to thank everyone who assisted me. Their knowledge and insight provided indispensable guidance for the completion of my research report.

Contents

Abstract ii

Declaration iii

Acknowledgements iv

1. Introduction 1

1.1. Problem Statement 1

1.2. Objective of the Study 1

1.3. Purpose of the Study 2

1.4. Context of the Study 2

1.5. Significance of the Study 3

1.6. Assumptions and Limitations 4

1.7. Definitions of Terms 4

1.8. Research Questions 6

1.9. Outline of Research Paper 6

2. Literature Review 7

2.1. Introduction 7

2.2. Strategic Approach 7

2.3. Definition of Topic and Background Discussion 8

2.3.1. Course Information, Structure and Organisation 14

2.3.2. Interaction and Communication 18

2.3.3. Multimedia Design 21

2.3.4. Assessment and Feedback 24

2.3.5. Effective Use of Technology 26

2.4. Concluding the Selection of Dimensions 28

2.5. Conclusion 28

3. Research Design and Methodology 30

3.1. Introduction 30

3.2. Research Design 30
3.3. The Research Instrument – The Rubric 31
3.4. Validity and Reliability 34
3.4.1 Validity 34
3.4.2 Reliability 35
3.5. Pre-testing and Pilot Testing 36
3.6. Procedure for Data Collection 36
3.7. Limitations of the Study 37
3.8. Ethical Considerations 38
3.9. Conclusion 38
4. Analysis and Research Findings 39
4.1. Introduction 39
4.2. Methods of Data Analysis and Presentation of Data 39
4.3. Analysis of Data 40
4.3.1. Overview of Evaluated Courses 40
4.3.2. Summary per Dimension 41
4.4. Discussion of Research Findings 45
4.4.1. Course Information, Structure and Organisation 46
4.4.2. Interaction and Communication 61
4.4.3. Multimedia Design 68
4.4.4. Assessment and Feedback 76
4.4.5. Effective Use of Technology 87
4.4.6. Concluding Remark of Research Findings 93
4.5. Conclusion 95
5. Conclusion and Recommendations 96
5.1. Introduction 96
5.2. Overview of the Study 96

5.3. Overview of the Results 97
5.3.1. Quality Design Considerations 97
5.3.2. Feedback from the Evaluation Process 100
5.3.3. Valid and Reliable Instrument 100
5.4. Contributions for Research and Practice 101
5.5. Recommendations for the University 102
5.6. Recommendations for Future Research 104
References 105
Appendices 113
A1 – Letters of Course Access Information Sheet and Consent Form 113
A2 – Ethics Clearance Certificate 117
A3 – The Research Instrument: The Rubric 118

List of Tables

Table 1: Brief Description of QM Dimensions 11
Table 2: Brief Description of Sloan-C Dimensions 13
Table 3: Summary of Scores per Dimension for Each Course 41
Table 4: Course Information, Structure and Organisation Components Scores 42
Table 5: Interaction and Communication Components Scores 43
Table 6: Multimedia Design Components Scores 43
Table 7: Assessment and Feedback Components Scores 44
Table 8: Effective Use of Technology Components Scores 44

List of Figures

Figure 1: Selected Dimensions 28
Figure 2: Sample Extract of the Proposed Rubric 33
Figure 3: Graphical Representation of Dimensions Scoring for the Three Courses 41
Figure 4: Course Dashboard 45
Figure 5: PDF Link and PDF Summary of Module 0 Front Page 46
Figure 6: Calendar Containing Course Events 47
Figure 7: Side Calendar Displaying Important Dates 47
Figure 8: Contact Us Page 49
Figure 9: Screen Displaying Instructor Background Information 50
Figure 10: About Us Page Displaying the Learning Journey Manager Background 50
Figure 11: Screen Displaying Course Co-ordinator Contact Methods 51
Figure 12: Aim of the Course 52
Figure 13: What You Will Learn 52
Figure 14: Expectations and Key Questions 52
Figure 15: Main Features of the Dashboard 53
Figure 16: Chunking of Topics within Modules 54
Figure 17: Example of a Topic Summary Page 55
Figure 18: Example of a Progress Check 55
Figure 19: Topic Overview Page 56
Figure 20: Navigation Help Screen 57
Figure 21: Screen to Display the Various Navigation Components 57
Figure 22: Summary of the Various Modules Content 58
Figure 23: Modules and Topics of the Course 58
Figure 24: Requirements to Complete the Course 59
Figure 25: Explore Further - External Resources for Students 60
Figure 26: Appendix for Accounting Concepts 60
Figure 27: Discussion Board Home Page 63
Figure 28: Example of Instructor Participating and Guiding Students 63
Figure 29: Some Use of Graphics within the Course 68
Figure 30: Use of Animations within Videos 69
Figure 31: Use of Animations for Videos 70
Figure 32: Example of Scenarios Provided by Videos 71

Figure 33: Highlighting of Steps....72
Figure 34: Use of Arrows and Highlighting Blocks....73
Figure 35: Highlighting of Figures....73
Figure 36: Highlight Using Red Ink....73
Figure 37: Feedback Display....74
Figure 38: Instruction Display....75
Figure 39: General Assessment Instruction Home Page....77
Figure 40: Formative Assignment Instruction Screen....79
Figure 41: Self-assessment....80
Figure 42: Summary of Assignment Submission....81
Figure 43: Feedback on Incorrect Answer....81
Figure 44: Feedback on a Correct Answer....82
Figure 45: Summary of Previous Attempts....82
Figure 46: Snippet of a Discussion Board....82
Figure 47: Screen Displaying and Optional Progress Check....83
Figure 48: Quiz Submission Page....84
Figure 49: Gradebook Snippet....85
Figure 50: Feedback Home Screen....86
Figure 51: Some of the Feedback Responses by Students....86
Figure 52: Administrative Support Orientation Video Snippet....89
Figure 53: Technical Support Mechanisms....89
Figure 54: FAQs Page Extract....90
Figure 55: Academic Support Orientation Video Snippet....90
Figure 56: Customer Support Screen....91
Figure 57: Contact Us Help Bubble Should Students Require Assistance....91
Figure 58: Queries Response Time Bubble....91
Figure 59: Final Examination Home Screen....93
Figure 60: Summary of dimensions and revised components of what constitutes quality design of online courses....99

1. Introduction

This section of the research paper introduces the details of the entire study titled: *Developing a Valid and Reliable Quality Design Criterion Rubric to Evaluate Online Courses: A Case of three Entrepreneurial Online Short Courses at The University of the Witwatersrand*. The objective of the current study is to determine the effectiveness of the design of online courses for teaching and learning. This section sets out the current study's research problem, purpose and significance, the context of the study, the assumptions and limitations, the research questions, and outlines the remaining sections of the research paper.

1.1. Problem Statement

Online learning has been identified as a growing area in the higher education sector (Bergeron and Fornero, 2018) and many educational institutions are expanding their offering of online courses. When designing online courses, there are several design considerations and decisions that need to be made. There is much scrutiny with regards to the quality of the design of online courses (Bergeron and Fornero, 2018). Poorly designed online courses can limit learning and exasperate both students and instructors. This may result in high failure rates and low rates of retention. At times design decisions are made instinctively – based on the instructor's interpretation and understanding of learning. However, the development of an effective online learning environment should be based on a combination of proven learning theories and previously developed empirical research.

Despite the development of various instructional design literature and the potential of online courses to support learning, there exists a gap between theoretical knowledge (theory) and practice (reality). In addition to this problem, there exists an issue on a literature level as well. There is numerous design literature, however, there is limited comprehensive literature on the evaluation of good quality design models and frameworks – the existing models and frameworks do not adequately address and evaluate the design quality of online courses.

1.2. Objective of the Study

The objective of the current study is to determine the effectiveness of the design of online courses for teaching and learning, and what designers of online learning environments and online courses should collectively consider in terms of the quality design of online courses. This will result in the development of a valid and reliable evaluation instrument that will enable

the assessment of the design quality for online courses and act as a best practice guideline during the design process of a new online course. The focus of the current study is on the actual design of online courses and not on the delivery of the online courses.

1.3. Purpose of the Study

The purpose of the current research study is to determine a best practice evaluation criterion and develop a framework to evaluate and measure the effectiveness of the design of online courses for teaching and learning. A criterion for (1) course information, course structure and course organisation, (2) interaction and communication, (3) multimedia design, (4) assessment and feedback, and (5) effective use of technology of online courses will be developed into a framework to compare and evaluate the design quality of online courses. This will result in a tool with a set of best practice criterion that can be useful for online course development, benchmarking and evaluation. In doing so, a new level of quality can be established in the online learning environment. This will contribute towards an effective educational experience.

1.4. Context of the Study

Information and Communication Technologies (ICTs) have developed over the decades and the effective integration of these technologies into education has positive effects on how and what students learn (Harvey, 2003). Distant learning is an economical and feasible development that extends access to various courses to people across different locations (Asunka, 2008). Online learning is one of the forms of distant learning (Carliner, 2004).

With the growth of technology, online learning has become a popular tool used to teach and learn. Globally, educational institutions are implementing online learning as an alternative to the traditional based offered courses, or to act in conjunction with the traditionally offered courses (Asunka, 2008). Online courses are becoming more popular because it provides flexible access to a variety of quality course content in higher education at any given time from any location (Davis, Sauber, Edwards, 2011). In addition to this, online learning provides opportunities for the average working professional to continue studying and for students to gain knowledge and skill without the clashing of their time (Dahalan, Hasan, Hassan, Zakaria, Noor, 2013).

Online courses can be described as courses delivered online in a synchronous or asynchronous manner (Gedik, Kiraz, Ozden, 2013) that give access to educational opportunities and resources that are available via some sort of technology (Carliner, 2004). Clark and Mayer (2016) define

e-learning as "instruction delivered on a digital device (such as a desktop computer, laptop computer, tablet, or smartphone) that is intended to support learning." In online environments, students access the course content via electronic devices. The content of online courses can be presented as text, audio, pictures, pre-recorded videos, online assessments, or even a combination of these (Carliner, 2004; Clark and Mayer, 2016).

Traditional teaching methods and the online environment differs significantly, especially in terms of interaction. Therefore, it is important that online courses are of high quality and are as effective as courses that are delivered through traditional teaching methods. A technique to ensure this is the design of the online course that allows students to engage in the content of the course (Swan, Day, Bogle, Matthews, 2014). Consequently, instructors should provide an investment of time and attention to instructional design as this contributes towards student learning (Dahalan *et al.*, 2013).

Dole and Bloom (2008) found that the design of a course positively influences student learning when it comes to problem solving. This gives students the opportunity to develop their own understanding and improve their knowledge construction (Dahalan *et al.*, 2013). When designing online courses, it's imperative to choose the correct components that help enhance student learning and allow the students to engage with the course and its content (Lister, 2014).

The current study will look at the various components that ensure the effective design of online courses. Although there exists a substantial amount of research for various design components of online courses, there is a limited amount of literature on the evaluation and quality assurance of online courses. While the researcher was completing the literature review, an incomplete and unbalanced body of knowledge around comprehensive evaluation frameworks of online courses arose. This may be addressed with an adequate best practice evaluation criterion and developed framework that will help to evaluate and measure the effectiveness of the design quality of online courses for teaching and learning.

1.5. Significance of the Study

The aim of the current study is to develop an effective, valid and reliable instrument, using best practices of effective quality design that assists in evaluating and measuring the design quality of online courses. This model will be used in the future to evaluate (1) course information, course structure, and course organisation, (2) interaction and communication, (3) multimedia design, (4) assessment and feedback, and (5) effective use of technology of online courses. The

framework will contain a set of benchmarks that will assist instructors and course designers in one of two ways: (1) as a self-evaluation tool for an online course thus advising the appropriate stakeholder on how to revise the design of their current online course, and (2) as a best practice guideline to design a new course within the online environment.

1.6. Assumptions and Limitations

Evaluations will only be conducted on three entrepreneurial online short courses offered at the University of the Witwatersrand. The choice of three entrepreneurial online short courses stems from the researcher having a commerce background. Therefore, the researcher should be familiar with the content of the online short courses allowing the researcher to focus more on the design of the online short courses. The limitations with this are that it may not represent an entire population of online short courses and the design of online short courses may differ from the design of standard online courses.

Once the evaluation criteria are developed, the criterion will be applied to the three online short courses. A limitation of this method is that the current study might be influenced by the idiosyncrasies of the researcher.

The current study includes an assumption that the instructors and designers of the University of the Witwatersrand can deliver quality online courses that are supported through a framework of evidence-based pedagogical techniques that are integrated well with the use of online learning technologies.

Throughout this research paper, the readers will find predominately a cognitivist view of teaching and learning but will also see elements of constructivist thinking adapted as appropriate.

1.7. Definitions of Terms

Assessment and Feedback: Assessment focuses on instructional activities designed to measure and evaluate students achieving the learning outcomes and the quality, type, and structure of the assessments used. Feedback is used to provide students with verification of their progress in terms of their readiness for future concepts, knowledge and skill gain.

Components: Constructs that identify the trait or features which need to be measured and exist within each dimension.

Course Information: Course information entails a clear description and overview of the online course. Online courses should encompass clear instruction, clear course objectives and outcomes, a list of requirements and policies, a course schedule, important dates, lists of assignments with deadlines and the required hours.

Course Structure and Organisation: Course structure and organisation refers to elements of instructional design in an online course which includes the structure, instructional strategies, and the overall course set-up.

Criteria: Explicit descriptions of the performance of the online course and depict how the score is derived and what quality is expected of online course.

Criterion/Descriptors: Describes each level of performance for each component at a point on the Likert scale.

Dimensions: A concept that was identified in the literature as an important contributor to the quality of online course design. Also, used as an umbrella term for the various components.

Effective Use of Technology: Effective use of technology refers to the successful integration of technology into the online course.

Interaction and Communication: Interaction and Communication refer to the extent at which there is student-to-instructor, student-to-student, and student-to-content interaction. Collaboration is a subset of interaction and refers specifically to those activities in which groups work interdependently toward a shared result.

Likert Scale: A tool to measure something.

Multimedia Design: Well-designed and well-structured multimedia consist of a variety and combination of pictures, audio, video, and text to allow for deeper student learning.

Module: Modules are sections within an online course.

Rubric: A template that is used as an evaluation instrument that assists in improving teaching, contributing towards a sound assessment, and is seen as a source to improvement. Within the current study, the use of the developed rubric promotes a developmental process for online course design, as well as, enables instructors/designers/developers to assess their own course.

Topic: Topics are sections within a module in the online course.

1.8. Research Questions

What constitutes quality design of online courses?

How can the data collected from the rubric during the evaluation process provide feedback on the actual design of the course?

Is the developed rubric a valid and reliable instrument?

1.9. Outline of Research Paper

The research paper takes the following format:

Chapter one focused on the introduction of the topic, providing the reader with a general overview of the research. It outlined the research problem, the purpose, and significance of the study, the context of the study, the assumptions and limitations of the study, the definitions of the main terms used within the current study and the research questions.

Chapter two of the current study contains the literature review which begins with an outline of the strategic approach taken to the literature review and the development of the rubric, it provides a discussion on the context of the study, the definition, and the background of the topic on the design of online courses is explained. A framework is developed based on previously developed theories, models, tools and studies on the design of online courses. Lastly, the selection of specific dimensions that contribute towards the quality design of online courses is summarised.

Chapter three presents the research design and methodology used in the current research. This chapter provides the audience with information pertaining to the research design, research instrument, the procedures for data collection and analysis, checks to ensure the validity and reliability of the research instrument (the rubric), the pre and pilot testing, any limitations that may exist and ethical considerations.

Chapter four comprises of the analysis, presentation, and interpretation of data collected during the evaluation process using the rubric. Descriptions and implications of the research findings are also discussed.

Chapter 5 concludes the current research paper by providing an overview of the study, answering the research questions, discussing contributions for research and practice, providing recommendations for the University of the Witwatersrand and providing suggestions for future research.

2. Literature Review

2.1. Introduction

The literature review will begin with an outline of the strategic approach taken towards completing the literature review and the development of the rubric, followed by a discussion on the context of the study. The definition and background of the topic on the design of online courses will be explained and a theoretical framework will be developed based on the use of previously developed theories, models and studies on the design of online courses. The selection of specific dimensions that contribute towards the quality design of online courses will also be discussed.

2.2. Strategic Approach

The current study initially began with the researcher attempting to gain insight, discover ideas and increase her knowledge of quality online course design through conducting a thorough literature review. The extensive research consisted of searching various academic journals and books using sources containing the words *quality*, *design*, *evaluation*, *online learning*, *online courses*, *best practice*, *eLearning* or a combination of these words as part of the readings to identify the most relevant papers to review and to determine existing research on quality design practices in online courses. Studies were identified primarily using various research search engines, campus dissertation databases, campus library, and further readings were recognised through the references used in the identified readings. The objective of this exercise was to identify the most common favourable dimensions and components of online learning that contribute towards the effective quality of online course design. Additional readings such as empirical research and books were also provided by experts in the field.

The researcher used this newly acquainted knowledge to write up the literature review; that follows; on what constitutes quality design of online courses while simultaneously developing the first draft of the research instrument (rubric) of the current study. Information on various design considerations was used to construct new or improved statements of criterion on the quality criteria of online courses, rather than just taking a set of existing questions and hypothesis and testing it (Kothari, 2004) when completing the first draft of the rubric.

In addition to the literature review, a search was conducted using search terms such as *quality online course design rubric*, *best practices for instructional design*, *online course design checklist* and *instructional design quality* to investigate existing course evaluation instruments.

Several results were found but had to meet the following criteria to be included as part of the design of the rubric in the current study: (1) evaluate the actual design of online courses, (2) not be part of a blog, and (3) be of an empirical research base. The researcher made notes of the various components within each study and existing evaluation tools. She analysed these to identify the components that reoccur in previous studies and the ones that contributed most significantly and successfully to quality online course design. The researcher used this analysis to design her own dimensions, components, and criterion for the rubric. This is elaborated on further in chapter 3.

2.3. Definition of Topic and Background Discussion

Many educational institutions are embracing the use of online learning as it is essential to their long-term viability (Allen and Seaman, 2008). Educational institutions that do not invest time in their design and quality assurance for their online courses may put themselves in a compromising position that may lead people to undermine the institutions' course offerings as well as the brand of the institution itself (Davis *et al.*, 2011). Online courses need to include both information and instructional methods that can assist students in learning the content. These methods, according to the knowledge construction metaphor, should not only deliver information but instructions also need to be provided to guide the students cognitive processing, thus enabling students to actively engage and process information (Clark and Mayer, 2016). Chickering and Gamson (1987) established seven principles for undergraduate teaching: (1) encourage faculty-to-learner interaction, (2) encourage learner-to-learner interaction, (3) promote active learning, (4) communicate high expectations, (5) facilitate time on task, (6) provide rich rapid feedback, and (7) respect diverse learning. These principles can apply both to face-to-face and online teaching. The quality of online instruction affects the way students learn in an online environment. Course design includes looking at the instructional design (Daukilas, Kaciniene, Vainoriene, Vascila, 2008).

Clark and Mayer (2016) describe three types of demands on cognitive processing viz. extraneous processing, essential processing, and generative processing. Extraneous processing (extrinsic load) involves processing that does not support the instructional objectives, a solution to this is to minimise cognitive processing that is not related to instructional goals by using instructional methods that decrease required processing. Some techniques include the exclusion of unnecessary objects, such as pictures or sounds or words, displaying incremental instruction for learners, using two components to promote redundancy and not too many e.g. a

combination of pictures and audio, and not pictures, audio and words as this may cause overload (Clark and Mayer, 2016). Essential processing (intrinsic) focuses on the relevant and core material, and the most crucial aspect of this process is to only represent the key content of the online course (Clark and Mayer, 2016). Some techniques used here are segmenting lessons into manageable chunks, using audio instead of only online text and making use of pretraining to help learners develop the various concepts separately. Generative processing (germane cognitive load) is processing that is required to build deeper meanings and understandings of the content (Clark and Mayer, 2016). Generic processing is important as it assists students in organising, integrating and engaging with the content of the course. Techniques to promote generic processing is to make use of words and pictures rather than words alone, request and allow learners to engage and elaborate on the learning materials and incorporate practical examples and exercises. In summary, a point raised by Clark and Mayer (2016) is that the three goals that exist for instructional designers are: (1) to minimise cognitive processing that is not related to the instructional goal, (2) cognitive processing to only represent the key content, and (3) foster generic processing.

Therefore, the lesson contents should guide students' cognitive processing while learning. Course design further involves organising the course in a manner that the course follows a logical, efficient, structured, clear and systematic presentation that is easy to navigate with planned learning outcomes (Ascough, 2011). The online course needs to encompass sequencing and provide scaffolding i.e. lower order thinking skills to higher order thinking skills (Ascough, 2011).

Notable design quality of online courses needs to be guaranteed so that courses offered in higher education are valuable. The more well designed and well implemented online courses allow students to learn more effectively (Clark and Mayer, 2016). Many institutions are developing or updating previously developed practices to provide high-quality online learning (Davis *et al.*, 2011). Some factors that influence the quality of courses are learning material of the course, course content, course structure, and the virtual environment, communication and interactivity, student assessment, support for student and instructors, course staff qualifications and experience (Daukilas *et al*., 2008).

Quality is one of the key determinants of effective and successful learning (Conole, 2013). Regardless of the growth of demand for online courses, there is still a concern for online course quality. There exist a few individual models which set guidelines for educational institutions

in developing or evaluating online course quality. Two popular and widely used models are Quality Matters and the Sloan-C Five Pillars of Quality in Distance Learning (Wang, 2008).

Quality Matters (QM) originated in 2003 as a faculty centred peer review process designed to improve the quality of online courses (Roehrs, Wang, Kendrick, 2013). QM is a tool that allows for quality assurance using a rubric. The QM rubric contains eight dimensions: (1) course overview and introduction, (2) learning objectives, (3) assessment and measurement, (4) instructional materials, (5) course activities and learner interaction, (6) Course Technology, (7) learner support, and (8) accessibility and usability. A brief description of each dimension is illustrated in table 1. Spread across the eight dimensions are forty standards of course design (Roehrs *et al.*, 2013) that provides excellent standards for instructional designers to follow when developing online courses (Bento and White, 2010). The rubric was originally designed for peer review, however, the rubric is being used as a guide for online design, a checklist for design elements, and a faculty development tool (Ralston-Berg and Nath, 2008).

Dimension	**Description**
Course Overview and Introduction	The course overview proposes ideas for the initial course overview and introduction to welcome students to the online course environment. Online design should include clear and detailed instructions on course structure and accessing course content.
Learning Objectives (Competencies)	Learning objectives or competencies should describe measurable outcomes. Objectives should be written from the perception of students, so the students know what they can measurably achieve.
Assessment and Measurement	The assessment and measurement are aligned with the learning objectives. Thus, providing multiple opportunities for students to complete self-assessment and gather feedback.
Instructional Materials	Course and instructional material need to support the course learning objectives.

	Resources should help students make meaningful connections with the objectives that they can achieve.
Course Activities and Learner Interaction	Investigating the course activities and the way in which learners can interact provides recommendations on the strategies for student engagement in an online environment. The design and development of the course's activities need to support the course and module objectives. These activities assist in the development of an online learning community and assist students in becoming active students.
Course Technology	Course technology determines the selection and integration of technology in the online course. The technology used should be up to date and support the course objectives. Instructions on the use and access of the technology need to be provided.
Learner Support	Learner support involves providing students with examples, resources, and support such as library information, technical support, writing centre, career centre etc.
Accessibility and Usability	Accessibility and usability demonstrate practices in course design that sees to the various needs of students e.g. design for impaired hearing or vision.

Table 1: Brief Description of QM Dimensions

Swan *et al.* (2014) found that QM provides some standards for the design of online courses. QM stimulates the development of alignment between the course design and learning objectives. It enables instructional designers to select better resources, schedule course activities and ascertain different types of assessment (Bento and White, 2010). QM encourages the organisation of courses resulting in easier navigation and accessibility to important

information for students (Bento and White, 2010). There are some limitations that exist with QM. While evaluating massive open online courses (MOOCs), Lowenthal and Hodges (2015) identified that a simple designed course can pass as a quality course, thus implying that the QM model might focus too much on the basics and not sufficiently on the instructional design and methods. Another limitation that exists in the QM model is that it does not consider the new dynamics of online learning technologies and learner interactions. The QM model addresses the concept of design effectively, however, lacks in addressing the issues of course delivery (Little, 2009). Therefore, QM allows distance educational institutions to easily review the setup and design of online courses but does not address the effectiveness of the delivery of the course to students using various pedagogical methods (Little, 2009).

Online courses and their learning objectives within each module of the course should align with four key elements viz. assessments, instructional materials, course activities and learner interaction (Quality Matters, 2014). These elements collectively work to assist students in meeting their intended learning outcomes. Therefore, it is imperative that all learning objectives be clearly stated. Although not in an online context, Biggs and Tang (2007) introduced a concept known as '*constructive alignment*' based on the theory of constructivism and alignment to the design of teaching and assessment. Students' actions lead to learning taking place rather than the doings of a teacher. Therefore, when learning objectives are clearly stated, it is important that students actively engage in the content to meet the desired intended outcome. The teacher's role is to create a learning environment that promotes students to complete the various learning tasks and assess/compare the students work with the intended outcomes (Biggs and Tang, 2007). Accordingly, in an online environment, constructive alignment relates to the instructor specifying the learning outcomes for the students and then aligning them with teaching and assessment. This will aid the instructor in aligning and selecting relevant content of the course and plan accordingly all appropriate activities.

To promote awareness and improvement in distant learning, The Sloan Foundation developed a program to guide online courses development for higher education (Wang, 2008). The Sloan-C Five Pillars of Quality Distance Learning (Sloan-C) model consists of five dimensions: (1) learning effectiveness, (2) access, (3) student satisfaction, (4) faculty satisfaction, and (5) cost-effectiveness (Moore, 2005). A brief description of each dimension is illustrated in table 2.

Dimension	Description
Learning Effectiveness	The educational institute demonstrates that the online course quality can be compared to its traditional teaching.
Access	Students who would like to be involved in online courses may do so by accessing a wide range of courses.
Student Satisfaction	Students are happy with their experiences in online learning. This includes but is not limited to, interaction and collaboration with peers and instructors, learning outcomes matching their initial goals/expectations, and general course services.
Faculty Satisfaction	The faculty achieves success and are pleased with teaching online, citing appreciation.
Cost Effectiveness	Reduction in costs and continuous improvement in services.

Table 2: Brief Description of Sloan-C Dimensions

Sloan-C model provides guidance for the design of online programs (Wang, 2008). Educational institutions can interpret and use the five dimensions of the Sloan-C model at their own discretion to determine the level of educational quality. The Sloan-C model is focused on the construction and the educational institutions' support of the online course (Wang, 2008). The limitations with the Sloan-C model are it is unsuccessful in addressing the use of distance education technology, instruction in online courses, teaching practice, and learning activity (Bourne, Harris, Mayadas, 2005).

Previous studies have examined different elements of quality design in online courses such as structure, content, the role of the various stakeholders, learning outcomes (Davis *et al.*, 2011), structure and security, course feedback, presentation of content, collaboration and interaction (Lister, 2014). Conole (2014) states that characteristics of good learning include the encouragement of reflection, enabling of dialogue, fostering of collaboration, applying theory learnt to practice, creating a community of peers, enabling creativity and motivating students.

Creasman (2012) states that courses should be designed around collaboration, social presence, connection, and balancing the quantity of course information with student determination.

Lister (2014) found four main components that need to be considered when designing online courses. These four main components are (1) course structure, (2) content presentation, (3) collaboration and interaction, and (4) timely feedback. The interaction between students and other students or the faculty assists with effective online teaching. Therefore, online discussion forums can be used as a pedagogical method to encourage student interaction and collaboration (Muilenburg and Berge, 2006). Margaryan, Bianco and Littlejohn (2015) suggests ten principals: (1) problem-centred, (2) activation, (3) demonstration, (4) application, (5) integration, (6) collective knowledge, (7) collaboration, (8) differentiation, (9) authentic resources, and (10) feedback as important criteria of instructional design.

Some of the evaluation instruments that were reviewed and some of its concepts used towards the development of the current framework were the:

- Quality Matters (QM) Rubric;
- Illinois Online Network: Quality Online Course Initiative;
- Palomar Online Course Best Practices Checklist;
- Utah State Online Course Quality Rubric;
- Blackboard Exemplary Course Program Rubric;
- Kansas State E-Learning Quality Checklist;
- University of New Mexico Online Course Standards Rubric; and
- California State University Quality Online Learning and Teaching.

After the review of the literature and evaluation tools, the current study focused on the following five dimensions: (1) course information, course structure, and course organisation, (2) interaction and communication, (3) multimedia design, (4) assessment and feedback, and (5) effective use of technology. These dimensions were deemed most appropriate as they reoccurred as successful indicators of quality design for online courses within previously developed research and evaluation tools. They are briefly expanded in the next section.

2.3.1. Course Information, Structure and Organisation

Course information entails a clear description and overview of the online course. Online courses should encompass clear instruction, clear course objectives and outcomes, a list of requirements and policies, a course schedule, important dates, list of assignments and

deadlines, required hours – this allows students to have a feel of what to expect and what they need to do (Hew, 2016).

Often when students start a new course they are filled with anxiety. Therefore, it is important for course instructors to provide students with thorough information to ease this anxiety (Simpson, 2012). Anxiety also increases cognitive load (Ishida, Saitoh, Wada and Nagai, 2010). Some of the introductory and overview information provided to students include clear and detailed instruction on how to access key components of the course, a course schedule and syllabus, detailed information of the institution and instructor, the objectives of the overall course and the modules existent within the course, modules and activities. Orientation videos are favourable as they are seen by students as informative and helpful (Taylor, Dunn, Winn, 2015). Despite the popularity of technology and an increase in the use on computers for online learning, there is still a lack of knowledge regarding technical skill, hardware, and software (Johnson, Palma-Rivas, Suriya and Downey, 1999).

Course structure refers to the development and design of all course resources, strategies and the general planning of the course throughout the running of the course (Gray and DiLoreto, 2016). One key notion that is different between the face-to-face environment and the online environment is the environment itself (Smith, 2014). Within an online environment, students need to take on more responsibility for their own learning as there is no face-to-face interaction with someone guiding them the entire time. For this reason, it is imperative that there are structure, organisation and a learning pathway for the progress of the course that is all made clear to the students (Smith, 2014).

Course designers need to carefully consider the structure in designing online courses (Swan *et al.*, 2014*)* as the goal of learning is to develop schemas or some sort of framework – a structure (Rumelhart and Norman, 1988). Smith (2014) describes four ways that course content should be organised: (1) chunk-able – it can be separated into relatable and short learning segments. Chunking assists students in increasing their understanding and retention rate, allowing students to explore and learn more content, and comprehend the course material better. Chickering and Gamson (1987) mention that time on a task and interaction with the content are important in the facilitation of learning. Therefore, to accommodate memory processing the use of chunking should be considered, (2) repeatable – students must have the ability to repeat and review content, (3) pause-able – the content must have the ability to allow students to stop and resume without having to start over, and (4) understandable – students should easily

comprehend the course content (Smith, 2014). Course content is developed by the course developer and includes course materials, assignments, and exams (Davis *et al.*, 2011).

Course announcements, course information (the syllabus, outlines, timetables, schedules, marking system), reminders from the instructor and assignment information are other components of the structure of online courses that students see as important (Ausburn, 2004; Gray and DiLoreto, 2016). These are some of the features that contribute to the structure of an online course and reduce the anxiety that students may experience (Smith, 2014). A course calendar is one of the more important components of an online course system (Farin, Rahman, Manoor and Hossain, 2016).

A content map can assist students in focusing on their learning goals and to accommodate and promote their learning. A content map can be described as a visual representation of the various topics which exist within a course. It can be used to show the organisation of the content and its placement of a current topic within the context of the entire course. This provides structure for students which helps students make sense of concepts and aids them in their understanding of the structure of a body of knowledge. Additionally, it ensures that content created across the various topics will reflect scaffolding of the entire courses content (Smith, 2014).

When students go through the various topics or sections of a course, they might not do so in a systematic linear order. The creation of a learning pathway is important as it enables students to engage with the content in manageable chunks. The learning pathway also acts as a roadmap that helps guide students' progress and ensures that students reach their end goal. Students need to be able to navigate to content that they have already viewed as it will allow them to revise their work and process the information from short term to long term memory. They should also be able to continue with their lesson where they left it rather than having to start all over again. The challenge is to structure lessons in a way that is compatible with the students learning processes (Clark and Mayer, 2016). Therefore, it is imperative that explicit instruction is provided to ensure students can use the materials of the course effectively (Callahan, Saye, Brush, 2013). Clear course structure with supporting and guiding instructions must be designed to assist students in participating with the course, resulting in overall success in achieving their learning goals (Kim, Kim, Khera, Getman, 2014; Gray and DiLoreto, 2016).

Another element that contributes towards the concept of structure is to have a file and folder structure with a naming scheme and to develop a learning guide (Smith, 2014). Smith (2014) suggests designing and developing each lesson to contain (1) dates – this will help to reinforce

information provided in the course schedule, assist students in working offline and keeping to themselves on track, provide an indication of when to start and end a topic, (2) identification – this includes information that will assist students in identifying the different lessons and include content maps, course titles and lesson topics, (3) outcomes – objectives is a fundamental element of instruction and when an objective is stated it should also include and be aligned with content, learning activities and a form of assessment for the objective, (4) resources – this includes resources required to be accessed by students for a lesson such as links to journals, websites, videos, audio etc. It is useful to separate these between required and recommended as it allows students who would like to explore the topic further to investigate both the required and recommended but for those students who want to move swiftly through the course to only view the required, (5) activities – assignments should be listed here containing information about what students should do, how they should do it, the mark allocation and weightings, the submission methods, due date and what type of references should be used. Activities should also be informative and allow students to spend more time on tasks, give students an opportunity to interact with the content and reinforce information in the short-term memory, (6) self-assessment – this allows for students to verify their learning and improve on their developmental areas, (7) lesson assessments – this entails an assignment or quiz of the lesson provided, and (8) points earned – mark allocations for assessments should be disclosed to students.

Young and Norgard (2006) found that students found it helpful to have a consistent structure across the various online courses. A comment made by a student was "Organization of the classes should be consistent and not made up by the individual instructors" (Young and Norgard, 2006).

It can be concluded through the review of previously developed literature and various evaluation instruments the following influences the quality design of online courses for the dimension *course information, structure and organisation*: (1) the provision of course administrative information, (2) the provision of course events information, (3) the presentation of information on course materials, (4) the provision of hardware specifications, (5) the provision of software specifications, (6) information on prerequisite technology skills, (7) contact information of the school, (8) adequate instructor information, (9) instructor contact methods, (10) learning objectives of the course, (11) information on accessing the key components of the course, (12) chunking of course content into manageable segments, (13) logical sequencing of course content that allows for the best learning pathways, (14) existence

of unit overviews containing relevant information, (15) easy navigation through the use of navigation indicators, (16) existence of a clear content map that visually represents the different sections of the course, (17) visual and functional consistency of web pages, (18) information detailing the requirements for successful completion of the course, (19) information for academic support and resources, (20) comprehensive policies, and (21) netiquette guidelines.

2.3.2. Interaction and Communication

Palloff and Pratt (2010) describe a clear distinction between interaction and interactivity. Interaction is described as significant student-to-student and student-to-instructor contact that is important for online learning whilst interactivity is described as the interaction with the tool that entails the inclusion of different objects that enable an active learning environment for students. Moore (1989) describes three types of interactions: learner-instructor interaction, learner-content interaction and learner-learner interaction.

There are seven types of learner-instructor interactions identified by Shackelford and Maxwell (2012); (1) providing information on expectations, (2) participating in discussions, (3) providing support and encouragement, (4) providing timely feedback, (5) using multiple modes of communication, (6) instructor modelling, and (7) required participation. When instructors design content for online environments, they need to find the balance between the amount of content provided to learners and the avoidance of overloading the learners with too much content (Garrison and Anderson, 2003). It is imperative that the design of online courses contain quality interactions as quality learner-learner interactions are more important than the quantity of learner-learner interactions (Journell, 2008).

Interaction with the tool and its content involves looking at whether the tool is user-friendly, the design of the tool and its content, whether the tool is easy to navigate, is there structure in the content, how does the interface of the tool look etc. Aesthetic aspects are important in Human Computer Interaction (HCI) and interface design. HCI is a field of study which examines the design of computers in ways that are best suited for the user (human). In other words, HCI looks at how people interact with computers and the extent to which computers are developed for successful interactions with humans. HCI was initially geared towards functionality and usability of computers, however, it has arisen aspects of aesthetics as well. Designers and developers of online courses need to shift the HCI focus from user-centred to learner-centred (Soloway, Guzdial, Hay, 1994). Soloway *et al*. (1994) suggest three questions to be considered when designing the interface of online courses: (1) “Why support learners and

learning?" (2) "How might the interface support learners and learning?" and (3) "What are the issues involved in providing such support?"

Shneiderman (2010) offers five guidelines for displaying information; (1) consistency – the formats, colours, terminology, language, etc. need to be standardised during the design phase, (2) efficient information assimilation by the user – formats should be consistent to the students such as text is left aligned, numbers are right aligned, proper spacing exists, there is correct use of measurements and the number of decimals, (3) minimal memory load on the user – users should not need to remember information across screens (Clark and Mayer have also mentioned this) and tasks should be organised so that students can complete them in a few actions, (4) compatibility – information needs to be linked to the format of the data entered, and (5) flexibility – students should be able to get information in a form most convenient to them.

Famous theorists such as Bruner and Vygotsky found that learning does not happen in isolation but rather through interaction. Bruner (1996) said that the development of a student is essentially associated with interaction and Vygotsky (1978) believed that social interaction helps students to learn. The interaction between student-to-student or the faculty assists with effective online teaching and learning. This interaction should be timely (Young and Norgard, 2006). Students found two-way communication with their colleagues and instructor to be important and essential (Ausburn, 2004; Young and Norgard, 2006). They also benefited from the announcements and reminders from their instructor. Ausburn (2004) suggests instructors should thus be readily available for their students, instructors should encourage communication and interaction, instructors should use email reminders for students to check the course site for new information and instructions.

Furthermore, wikis, breakrooms, chat, discussion boards, media pages, email (Clark and Mayer, 2016) and online discussion forums can be used as a pedagogical method to encourage student interaction and collaboration (Muilenburg and Berge, 2006). Collaboration can be described as the development of a learning community in an online environment whereby students and instructors, through communication, liaise to construct knowledge. Engaging with students in an online course stimulates students to actively participate and consequently gain more knowledge from being a part of the learning community (Conrad and Donaldson, 2010). Collaboration allows instructors and students to move away from the traditional way of teaching and learning with paper to developing more creative ways of learning. Collaboration gives more responsibility to the students allowing them to empower themselves and deepen

their learning experience while working with their peers in a community (Palloff and Pratt, 2010). Some elements of a community that were found by Palloff and Pratt (2010) include people, a shared purpose, guidelines, technology, collaborative learning, and reflection.

From a constructivist view, collaborative interaction is key in an online learning environment as it helps students to create a learning community that connects students and allows them to collaborate (Kim *et al*., 2014). It allows for the instructor and/or students to play the role of a more knowledgeable other and assist other students in learning and promoting the construction of knowledge. Most of the student engagement in an online course entails collaboration – from participation in discussions with peers to working on group projects with peers (Palloff and Pratt, 2010). Other types of collaboration that exists are group assignments, research assignments whereby peers act as a resource, case studies required to be completed in groups, shared facilitations, activity forums, real-time discussions of course content and discussion questions, work posted by students that require feedback from peers and any other activity that requires a social presence and a sense of shared responsibility to allow learning to take place resulting in the overall success of a student.

Collaboration promotes the development of a community and in turn, this community supports collaboration between student-to-student and student-to-instructor (Palloff and Pratt, 2010). When students learn together in their learning community, they can deepen their learning by developing ideas and sharing these within their learning group and receiving both constructive and critical feedback which helps them further develop their own knowledge. Conrad and Donaldson (2004) as cited in Palloff and Pratt (2010) state, "[The] collaborative acquisition of knowledge is one key to the success of creating an online learning environment. Activities that require student interaction and encourage a sharing of ideas to promote a deeper level of thought." Teras and Herrington (2014) found that the use of discussion forums for informal communication and interaction improves collaboration. Palloff and Pratt (2010) state that collaborative activity is important in an online environment as it promotes learners to reflect, develop their critical thinking skills, co-create knowledge and encourage transformative learning.

Interaction and communication in an online environment can be done both synchronously and asynchronously. Synchronous online learning is done through real-time chat and video conferencing (Hrastinski, 2008). This allows students to ask instructors questions immediately and interact with their peers instantly. Asynchronous online learning, on the other hand,

involves the course being delivered through the web, via a learning management system, email, and messages posted on online forums allowing for flexibility and self-paced learning for students (Hrastinski, 2008).

It can be concluded through the review of previously developed literature and various evaluation instruments the following influences the quality design of online courses for the dimension *interaction and communication*: (1) student-to-student opportunities, (2) instructor-to-student communication, (3) instructor-to-student participation, (4) existence of various collaboration tools that allows for a social presence and a sense of shared responsibility, (5) the development of a learning community, (6) strategies that encourage active learning, allow students to actively engage, and participate in the learning process, (7) well incorporated use of aesthetic design that presents the content clearly, (8) overall cohesive content, (9) alignment of the content with the learning objectives, (10) provision of examples of appropriate answers, (11) a variety of synchronous interactions, and (12) a variety of asynchronous interactions.

2.3.3. Multimedia Design

When students build mental representations from words and pictures presented to them then multimedia learning has occurred (Mayer, 2003). Online courses with well-designed multimedia messages that consist of both pictures and words in comparison to words alone allow for deeper student learning (Mayer, 2003). The use of words and pictures that foster learning is known as multimedia instruction (Mayer and Moreno, 2003).

Words can be printed (in-text) or spoken (narrated) and pictures can be static (photos, graphs, charts, maps, illustrations) or dynamic (video, animation, interactive illustrations) (Mayer and Moreno, 2003). Information can be presented in many ways to students viz. visual words, audio words, graphs, pictures, video, animation etc. Students learn better from the combination of words and useful pictures instead of pictures or printed text or audio text alone also known as the multimedia principal (Clark and Mayer, 2016).

It is important for instructional designers to investigate how words and pictures complement each other rather than find a picture as an afterthought to the words. Using a combination of pictures and text allows for students to partake in active learning by mentally making the connections between the pictures and text that helps them to support their understanding and reduce their cognitive load (Clark and Mayer, 2016). Cognitive overload occurs when a student's intended cognitive processes exceed their available cognitive capacity (Mayer and

Moreno, 2003). Mayer and Moreno (2003) suggests ways to reduce cognitive load include the redistribution of essential processing (cognitive processing required for making sense of the presented information), reduction of incidental processing (cognitive processing that isn't required for making sense of information but exist for the design of the learning task) or reducing representational holding (cognitive processing intended for holding a mental representation in working memory).

Clark and Mayer (2016) discuss 12 practical principles relating to the reduction of cognitive load; (1) coherence principle – students learn better when extraneous material is excluded as adding interesting information can impair learning. The use of extraneous material causes a distraction as it guides student's attention away from the relevant information, disruption as it prevents students from building links between relevant information and seduction as it can introduce inappropriate prior knowledge. To avoid these designers should introduce visual coherence (the removal of unnecessary words and pictures), sound coherence (removal of unnecessary sounds from a presentation) and word coherence (removal of unnecessary words), (2) signaling principle – the use of devices such as colour or arrows to draw the attention of students in complex graphics/animations as students learn better when attention is drawn to critical parts of the instruction, (3) redundancy principle – students engage in deeper learning when graphics are explained by audio narration on its own rather than audio narration and on-screen text, (4) spatial contiguity principle – placing corresponding words and graphics near each other. This helps the student as the student does not have to search for the relevant words and can, therefore, focus on understanding, (5) temporal contiguity principle – words and pictures should be presented simultaneously, and the sequencing of words and pictures are also important. This helps the student as the simultaneous presentation of the two stimuli helps to form an association in the mind of the student, (6) segmenting principle – students learn better when the content of a lesson is presented in smaller chunks and in user-paced segments rather than as a continuous unit, (7) pre-training principle – students learn better when they receive pretraining in the concepts and facts of key components prior to procedures or processes, (8) modality principle – words should be presented as audio narration rather than onscreen text as pictures or video with audio narration is better for learning than pictures or video with text. This helps students to split the information across two cognitive channels (auditory and visual) rather than all through a single channel (visual), (9) multimedia principle – students learn better with the use of words and graphics rather than words alone, (10) personalisation principle – the use of conversational style and virtual coaches as it helps students to engage with the learning

as a social conversation, (11) voice principle – students learn better from a multimedia message when using a friendly human voice rather than a machine voice, and (12) image principle – students do not learn better when the speakers image is added to the screen. These 12 principles are grouped together in a framework based on the three types of cognitive load; (1) reducing extraneous processing – coherence principle, signaling principle, redundancy principle, spatial contiguity principle, temporal contiguity principle, (2) managing essential processing – segmenting principle, pretraining principle, modality principle, and (3) fostering generative processing – multimedia principle, personalisation principle, voice principle and image principle (Clark and Mayer, 2016).

Graphics differ in their instructional use and can be used to support learning. Clark and Mayer (2016) describes six types of graphics (1) decorative graphics – acts as a decorative and does not enhance the message of the lesson, (2) representational graphics – depicts a particular element, (3) relational graphics – represents a quantitative relationship amongst two or more elements, (4) organisational graphics – describes the relationship amongst elements, (5) transformational graphics – depicts changes in objects over time, and (6) interpretive graphics – illustrates invisible relationships. When graphics are used there should be coordinated words with the graphics – known as the contiguity principle. The contiguity principle requires that the printed words be near the graphics and not on a separate page and that the feedback from a question be on the same page as the question and not on another page. If the contiguity principle is in violation, then it forces students to use their cognitive resources to match the words and pictures up causing extraneous processing i.e. cognitive processing that is not related to the instructional goal. Clark and Mayer (2016) further state that instructors should avoid the use of decorative and representational graphics and make use of the rest as they enable the student to better understand the material.

It can be concluded through the review of previously developed literature and various evaluation instruments the following influences the quality design of online courses for the dimension *multimedia design*: (1) the correct use of the different types of graphics, (2) the correct use of animations, (3) appropriate use of clear audio aids, (4) comprehensive use of clear and quality video aids, (5) the correct application of the coherence principle so as to not provide students with unnecessary extraneous material, (6) correct application of the signalling principle making accurate use of devices that draw attention to critical parts of instruction, (7) correct application of the contiguity principles relating to the correct structured placement of graphics and text, (8) correct application of the contiguity principles regarding the correct

display of feedback, (9) correct application of the contiguity principles regarding the correct display of instruction, (10) correct application of the contiguity principles relating to the provision of clear and comprehensive instruction, (11) correct application of the contiguity principles allowing for timing to be accurate and efficient in the narration of the various related elements such as slides, videos etc., and (12) correct application of the modality principle relating to synchronisation that exists between audio and graphics.

2.3.4. Assessment and Feedback

"Assessment is universally recognised as one of the most important – and powerful – of an educational experience" (Oldfield, Broadfoot, Sutherland, and Timmis, 2012, p.1). Assessment forms an integral part of the online course as it provides some observable indication that learning has taken place. It also shows learner progress and their understanding of the various concepts and content of the course.

Chickering and Gameson's (1987) mentions one of their principles is to "give rich and rapid feedback." This indicates that both formative assessment (designed to assist in determining learning needs) and summative assessment (used to evaluate the students learning) needs to be provided to students. Formative assessment as it allows for ongoing evaluation of student learning throughout the course. It allows for learner development during a learner process and therefore promotes learning. It also facilitates the evaluation of the various areas of the course in terms of content, skill, and progress of learning (Perera-Diltz and Moe, 2014). Summative assessments assist in measuring the end product (Perera-Diltz and Moe, 2014). It depicts a one-time, holistic view of students learning and whether the learning objectives of the course has been met.

Assessment is activities that both instructors and students complete to determine that teaching and learning have taken place and adjust these accordingly depending on what was determined (Black and Wiliam, 1998). It also facilitates the evaluation of the various areas of the course in terms of content, skill, and progress of learning (Perera-Diltz and Moe, 2014). Thus, allowing the instructor to revisit concepts, change the manner of instruction, or offer additional activities for students to practice. Assessment policies that include assessment criteria and the breakdown of marks need to be provided to students so that all assessment and evaluation goals are clearly communicated.

Assessment is an important component in learning and quality online courses need to offer numerous opportunities and multiple methods of assessments to allow students to demonstrate their knowledge e.g. quizzes, tests, discussions, essays, projects etc. Self-assessments are also important as students can verify their own learning, correct themselves and improve themselves prior to the main assessment (Chickering and Gamson, 1987). Assessments need to be continuous and an integral part of each module and the course activities, thereby allowing students to track their progress. Students need clear and understandable instruction that guides them to prepare and participate in the learning experience of the online course. Students require unambiguous descriptions and instruction of the assessment and assessment criteria (Ascough, 2011). Assessments should also have clear instructions and grading policies aligned with them (Palloff and Pratt, 2009).

The application of cognitive learning theories to assessment design helps to create assessments that are aligned with subject content and the assessment of cognitive processes (Anderson, 2008). Student assessment should be aligned with the course content and its learning outcomes (Palloff and Pratt, 2009; Ascough, 2011). This is known as constructive alignment. The constructive aspect focuses on the student and emphasises the notion of students constructing their own knowledge through relevant learning activities. The alignment aspect focuses on the instructor and set up of the learning environment in support of learning activities that are appropriate for achieving the learning outcomes of a course (Biggs, 2003). Four major steps exist in setting up the alignments system (1) defining the intended learning outcomes, (2) choosing teaching/learning activities that is likely to lead to the intended learning outcomes, (3) Assessing students' actual learning outcomes to see how well they match what was intended, and (4) arriving at a final grade. The implementation of using learning outcomes assists instructors to design the course in a structured manner that integrates student's needs, instructor expertise and disciplinary requirements (Ascough, 2011).

An important component of online learning is timeous, accurate and clear feedback (Jacobs, 2014). Students are more successful when provided with meaningful feedback while participating in online courses (Eom and Ashill, 2016). This feedback needs to be timely as students perceive timeous feedback more useful than delayed feedback. Moreno (2004) as cited in Smith (2014) found that explanatory feedback reduces cognitive load and promotes higher grades in comparison to corrective feedback.

An effective way to support the presence is for the instructor to provide prompt feedback to students (Zydney, 2014). Ice, Curtis, Phillips, and Wells (2007) found that feedback given via audio is better than text-based feedback and it also allows for more feedback to be provided. Feedback helps to improve the instructor's presence and aids in students' learning by assisting learners in gaining an understanding of the course concepts. Instructors that provide students with feedback after each assessment allows for the students who are not doing well to improve on their performance (Jacobs, 2014).

It can be concluded through the review of previously developed literature and various evaluation instruments the following influences the quality design of online courses for the dimension *assessment and feedback*: (1) assessments are aligned with the learning objectives of the course, (2) clear and detailed instruction exists for assessments, (3) examples of descriptive criteria such as rubrics are provided for longer type assessment questions, (4) a variety of formative assessments exist, (5) consistent formative assessments exist at regular intervals, (6) summative assessments exist that measure students learning, (7) quality feedback on all assessments is provided to students, (8) feedback is frequently and timeously provided to students, (9) assessments contains parts that mimic the real world, (10) the design of assessments include a variety of both higher order and lower order type questions, (11) learner progress information is available to students, and (12) students should be provided with multiple opportunities to provide feedback on the course and faculty.

2.3.5. Effective Use of Technology

Designers of online courses make use of technologies to ensure that their courses are engaging resulting in an increase in student learning. New technologies bring different and sometimes more opportunities that contribute towards efficiency in the way in which teaching is done, the engagement of students and student learning.

Technologies in this context refer to the technologies used for the actual platform on which the course is run and technology tools used within the course itself. The effective use of technology looks at the selection and level of integration of technology in online courses. It ensures that the technologies used in an online course assist in achieving the learning objectives and pedagogical aims, support student engagement, guide students to active learning, allows students to access the technologies that are required in the course, and the technologies used in the course are up to date for present time (Matters, 2011). The real advantage with educational technologies is that they enable students to engage with the course content outside of class and

therefore they can expand the time and quality of the discussion within the class or the synchronous session (Bowen, 2014). Students should be able to do this on the go, therefore, making course access available from various devices as a student could begin a course module within the workplace on his/her desktop and complete the module at home on his/her mobile. Ishikawa, Akahane-Yamada, Smith, Kondo, Tsubota, and Dantsuji (2015) state that students access the course using their mobile devices before class in order to prepare. Initially it was expected that students would make use of desktops and laptops to access online course content, however, the use of mobile devices such as tablets and mobile phones has become a preferred means for student-to-student communication (Helm, Bradley, Guarda and Thouësny, 2015).

Cross and Adam (2007) describe four rationales for introducing ICTs into education: (1) social – the role that technology plays in society and the need for students to familiarise themselves with it, (2) vocational – student preparation of jobs that require technological skills, (3) catalytic – the use of technology to improve teaching, management and other social tasks, and (4) pedagogical – the use of technology to enhance learning, flexibility and provide efficiency in the delivery of the curriculum. Online learning promotes learner centred learning by promoting learner communication and interaction, thus, allowing students to experience education better (Du, Fu, Zhao, Liu and Liu, 2013).

Depending on the task demands of activities the appropriate Web 1.0 (basic applications, World Wide Web, tutorials, simulations, chat, email), Web 2.0 (blogs, wikis, online journals, podcasts and videocasts, mobile learning such as the use of instant messaging and social networking sites such as Facebook, Twitter, YouTube etc.) and Web 3.0 (creation of virtual participation, use of cloud-based applications such as Google Drive, OneDrive) should be used. Text for use in online learning can be prepared using word processors such as Microsoft Word. This tool can be used to generate and construct new knowledge (Mishra, 2018).

Security within the e-learning environment exists to provide a secure session between students and the educational institute’s online learning environment. This helps to protect both the students and the institute's privacy and intellectual property. There exists a social aspect that students need to feel secure in an online environment. As assignments are submitted electronically, basic security such as integrity (information has not been modified or deleted but rather correct and in its complete original form), confidentiality (information kept private and not disclosed to unauthorised persons) and availability (information is timeous, readily

accessible and reliable by authorized persons) needs to be assured (Raitman, Ngo, Augar, Zhou, 2005).

It can be concluded through the review of previously developed literature and various evaluation instruments the following influences the quality design of online courses for the dimension *effective use of technology*: (1) the technologies used in the online courses are current with emerging technologies, (2) correct and adequate use of third-party applications are made, (3) the comprehensive use of Web 1.0, Web 2.0 and Web 3.0 applications, (4) the orientation of technology, (5) technology support that is provided to students, (6) technical support that is provided to students, (7) technical support turnaround time, (8) mobility of the course, (9) whether course tools are used appropriately and effectively that enable students to actively learn, and (10) systems that are in place to ensure students data privacy and security.

2.4. Concluding the Selection of Dimensions

The current study provides a contribution towards literature by advancing the development of best practices in terms of quality design and evaluation of online courses. Among the various quality design elements for online courses discussed in the literature, as depicted in figure 1, the literature review leans towards (1) course information, course structure and course organisation, (2) interaction and communication, (3) multimedia design, (4) assessment and feedback, and (5) effective use of technology of online courses. The researcher selected well-established criterion after a review of the literature and existing evaluation tools. These dimensions were selected as they possess the most critical success factors and pedagogical approaches to the quality design of online courses within the literature and the evaluation tools.

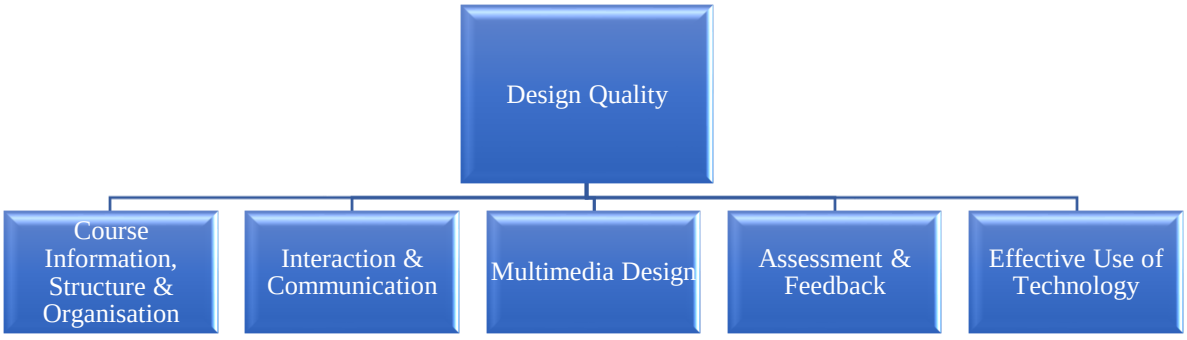


Figure 1: Selected Dimensions

2.5. Conclusion

The literature on the design of online courses was focused on in this section. The literature review began with an outline of the strategic approach taken to the development of the literature

review and the development of the rubric. It provided a discussion on the context of the study and explained the definition and background of the design of online. A framework was developed based on the use of previously developed theories, models, tools and studies on the design of online courses. These theories, models, tools, and studies were selected as they possess aspects that provide a basis of a framework for the researcher to use as direction for a quality design rubric. Chickering and Gamson (1987) seven principles for undergraduate teaching, Quality Matters (QM) model and the Sloan-C Five Pillars of Quality in Distance Learning model were used as a basis and was expanded with other existing models, frameworks and prevailing literature. Particular attention to the dimensions (1) course information, course structure and course organisation, (2) interaction and communication, (3) multimedia design, (4) assessment and feedback, and (5) effective use of technology of online courses were focused on to contribute towards the development of a valid and reliable rubric.

3. Research Design and Methodology

3.1. Introduction

The current section discusses the methodological aspects of the research. It describes the design selected for data collection and how the selection was influenced by the researcher. In addition to the research design, the research instrument will further be explained on, validity and reliability will be discussed, pre-testing and pilot testing will be elaborated on, and a few limitations will be discussed. Lastly, a discussion on ethical considerations will conclude this section.

3.2. Research Design

The objective of the current study is to develop a conceptual framework and establish best practice criteria for the evaluation of the design of online courses. This led to the development of a valid and reliable evaluation instrument that enables the actual evaluation of the design quality for online courses. Therefore, the current study uses a quantitative instrument design methodology.

The researcher began extensively reviewing the current literature on the quality of design of online courses and developed a list of best practices in online education. The steps included determining the different definitions of the various concepts and constructs of the different dimensions and implementing these into the development of an evaluation rubric. A rubric is a template that is used as an evaluation instrument that assists in improving teaching, contributing towards a sound assessment and is seen as a source to improvement (Wolf and Stevens, 2007). Subsequently, a rubric was created to assess and evaluate the effectiveness of the design quality of online courses. It was then used to evaluate three entrepreneurial online short courses at the University of the Witwatersrand.

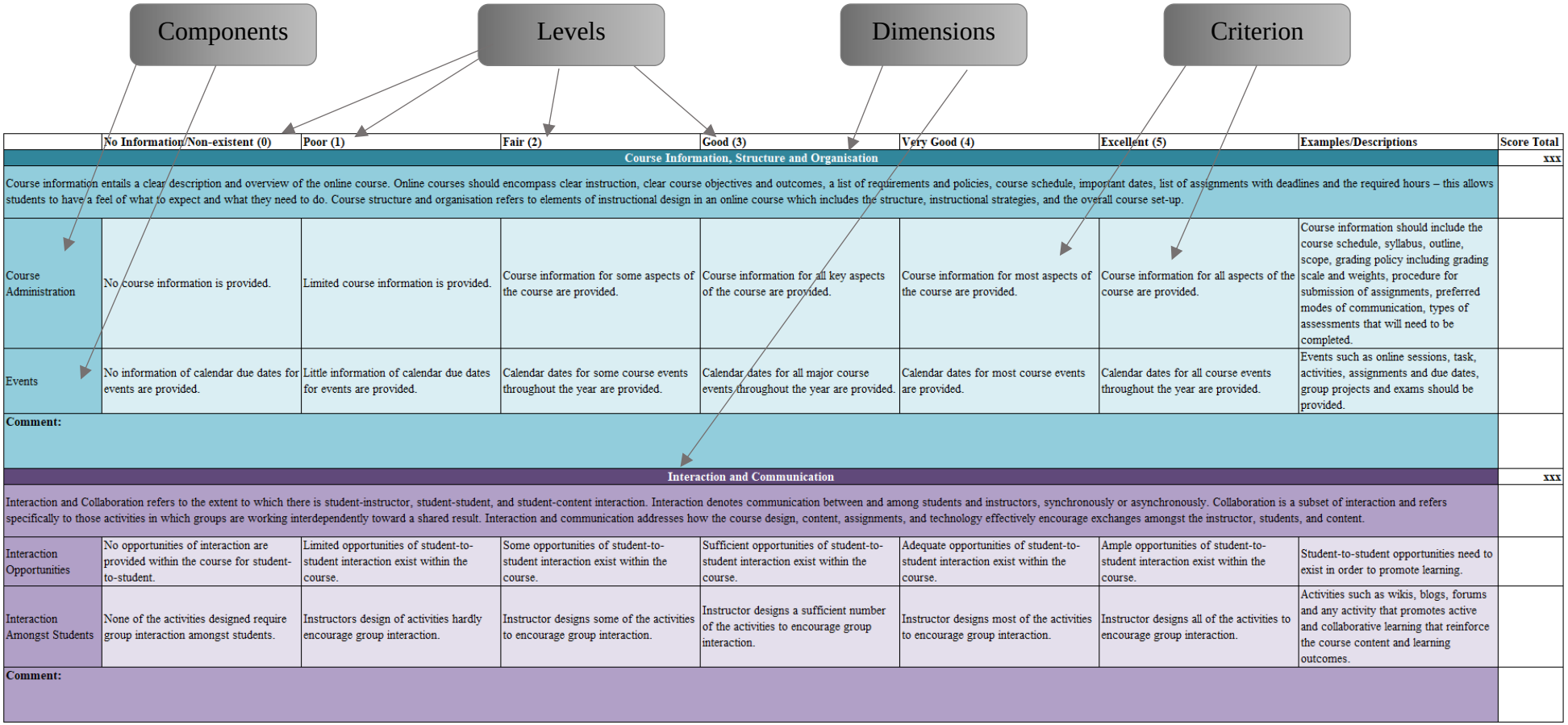
A quantitative approach was used in the current study as it involved measuring by scoring various criterion on the rubric developed by the researcher. These scores were measured and then analysed using simple descriptive statistics. Qualitative descriptive evaluations of the online short courses were also done. Both the quantitative and qualitative aspects of the online course analysis were integrated to ascertain a summative conclusion of the three online courses and whether the rubric, as a design framework, needed further improvement or not.

3.3. The Research Instrument – The Rubric

The initial emphasis of the current study was to gain insights on the various factors that influence the design quality of online courses. A thorough literature review was conducted to aid this. Components were identified across a variety of studies and then grouped within a dimension. Each component has a list of criteria across each of the five levels on the Likert scale. Therefore, in the current study, a dimension can be described as a concept that was identified in the literature as an important contributor to the quality of online course design. Components are constructs that identify the trait or features which need to be measured and exist within each dimension. Criteria are explicit descriptions of the performance of the online course and depict how the score is derived and what quality is expected of online course. Descriptors are the criterion that describes each level of performance for each component and describe the performance at a point on the Likert scale. It allows for the measurement of components. For example, a dimension is *Course Information, Structure and Organisation* and examples of components that exist within this dimension are *Course Administration*, *Events*, *Contact and Instructor Information*, *Course Overview Information*, *Key Components* etc. Within the component *Course Administration*, criteria on a scoring of five on the Likert scale may read "Course information for all aspects of the course are provided." and criteria on a scoring of one on the Likert scale may read "Limited course information is provided." This example is illustrated in figure 2.

The rubric consists of criterion and components that are not division or subject specific, therefore the rubric is generic to all online courses. The rubric is divided into five sections by dimension: (1) course information, course structure, and course organisation, (2) interaction and communication, (3) multimedia design, (4) assessment and feedback, and (5) effective use of technology. Each dimension has a list of non-double-barrelled and unambiguous components and a summary comment section. Each component within a dimension is alongside a Likert scale to determine the degree to which the online course exhausts those components and dimensions. In addition to this, each component has a list of five criteria alongside that links with each score on the Likert-scale. The criteria were developed based on three aspects (1) what is being evaluated ["what"], (2) the level indicator by using adjectives and adverbs ["How"], and (3) the manifestation of the outcome ["we will know this when…"]. The rubric can be seen in Appendix A3.

Albaum (1997) describes a Likert scale as a tool to measure something. The standard format contains a list of statements to which a respondent needs to answer showing a degree of disagreement or agreement. Therefore, the scale on the current rubric measures three extents: (1) the direction (positive to negative), (2) the intensity (strength of the positive or negative answer) and (3) in some cases the existence of the component within the online course. A Likert scale measurement is selected by the researcher as it requires a decision to be made based on the level of agreement with the criterion that the researcher developed from the literature. The analysis of the responses to the rubric will be calculated through the Likert scale. The researcher chose a Likert scale approach instead of a yes/no approach because this allows individuals to measure the degree of each component rather than its mere existence, and to avoid potential bias or passing any online course as a quality online course. Every dimension has a list of components, and each of these components uses a level of quality five-point Likert scale with 1 as *Poor*, 2 as *Fair*, 3 as *Good*, 4 as *Very Good* and 5 as *Excellent*. Additionally, each component has a point of zero to cater to the non-existence of that component within the online course. This was introduced after the pre-test as the researcher realised that there were several components that did not exist on the pre-test online course. Hence, the researcher needed to introduce a zero-scoring level. Each component and point on the Likert scale has a description of what criteria should be met for the component to score in the point of the Likert scale. Each component is an attempt to establish the degree of involvement each dimension contributes towards the quality of online courses. A snippet of the rubric is illustrated in figure 2 and the rubric, as a whole, can be seen in Appendix A3.



	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total
Course Information, Structure and Organisation								xxx
Course information entails a clear description and overview of the online course. Online courses should encompass clear instruction, clear course objectives and outcomes, a list of requirements and policies, course schedule, important dates, list of assignments with deadlines and the required hours – this allows students to have a feel of what to expect and what they need to do. Course structure and organisation refers to elements of instructional design in an online course which includes the structure, instructional strategies, and the overall course set-up.								
Course Administration	No course information is provided.	Limited course information is provided.	Course information for some aspects of the course are provided.	Course information for all key aspects of the course are provided.	Course information for most aspects of the course are provided.	Course information for all aspects of the course are provided.	Course information should include the course schedule, syllabus, outline, scope, grading policy including grading scale and weights, procedure for submission of assignments, preferred modes of communication, types of assessments that will need to be completed.	
Events	No information of calendar due dates for events are provided.	Little information of calendar due dates for events are provided.	Calendar dates for some course events throughout the year are provided.	Calendar dates for all major course events throughout the year are provided.	Calendar dates for most course events are provided.	Calendar dates for all course events throughout the year are provided.	Events such as online sessions, task, activities, assignments and due dates, group projects and exams should be provided.	
Comment:								
Interaction and Communication								xxx
Interaction and Collaboration refers to the extent to which there is student-instructor, student-student, and student-content interaction. Interaction denotes communication between and among students and instructors, synchronously or asynchronously. Collaboration is a subset of interaction and refers specifically to those activities in which groups are working interdependently toward a shared result. Interaction and communication addresses how the course design, content, assignments, and technology effectively encourage exchanges amongst the instructor, students, and content.								
Interaction Opportunities	No opportunities of interaction are provided within the course for student-to-student.	Limited opportunities of student-to-student interaction exist within the course.	Some opportunities of student-to-student interaction exist within the course.	Sufficient opportunities of student-to-student interaction exist within the course.	Adequate opportunities of student-to-student interaction exist within the course.	Ample opportunities of student-to-student interaction exist within the course.	Student-to-student opportunities need to exist in order to promote learning.	
Interaction Amongst Students	None of the activities designed require group interaction amongst students.	Instructors design of activities hardly encourage group interaction.	Instructor designs some of the activities to encourage group interaction.	Instructor designs a sufficient number of the activities to encourage group interaction.	Instructor designs most of the activities to encourage group interaction.	Instructor designs all of the activities to encourage group interaction.	Activities such as wikis, blogs, forums and any activity that promotes active and collaborative learning that reinforce the course content and learning outcomes.	
Comment:								

Figure 2: Sample Extract of the Proposed Rubric

3.4. Validity and Reliability

The concept of validity and reliability are the two most used criteria to determine if an instrument is usable (Kember and Leung, 2008). The current study will make use of a rubric to evaluate the design quality of online courses. The question that arises is, does the rubric have the capability to achieve its intended purpose of providing useful and consistent information in relation to its intended purpose? In other words, is it standardised – if an individual uses the rubric to evaluate a course, will the result be consistent with another individual's evaluation of the same course? These questions are important and lead to considering the validity and reliability of the rubric within the current study.

3.4.1 Validity

Validity is used to measure whether the instrument measures what it is intended to measure.

The rubric makes use of scale development through a five-point Likert scale. One of the main objectives of scale development is creating a valid measure of a construct (Clark and Watson, 1995). Cronbach and Meehl (1955), as cited in (Clark and Watson, 1995) argues that there are three steps when looking at construct validity. These are looking at theoretical concepts and their relationship with each other, identifying methods to measure proposed constructs, and empirically test these proposed constructs and their perceptions.

With regards to the rubric, the main construct is to measure the design quality of the online course. To ensure that the rubric satisfies construct validity (the degree to which a test measures what it intends to) and content validity (how well a test measures what it intends to), the scale measurements within the rubric has been derived, modified, and adapted from prior research. Previously developed instruments that were used in the current research needed to possess adequate reliability and construct validity. Well established and credible models such as the Quality Matters (QM) model and the Sloan-C Five Pillars of Quality in Distance Learning model (Moore, 2005), criteria for quality that was of an empirical research base, and nothing as part of a blog has been used as a contributor towards the current study.

Once the first draft of the rubric was developed it was validated by being reviewed by a subject expert at the University of the Witwatersrand. Subsequently, the rubric was subjected to a pre-test on an open source online course and a pilot test on one of the University of the Witwatersrand offered online short courses. This contributed to adequate content validity. The results of the pre-test and the pilot tests influenced changes and a final version of the rubric

was created. The steps of conducting a pre-test and pilot test for the development of a final version of the rubric increases the validity of the instrument. Additionally, this test helped improve the face validity (wording of the items refers to what is being measured) of the rubric.

3.4.2 Reliability

Reliability is used as a measure of quality and is used as a measure to determine if, on two separate occasions, a measure will yield the same results under the assumption that the measure is unchanged (Scott and Morrison, 2005). The researcher asked a colleague to complete the rubric while evaluating the same course as the researcher. The scores were then compared to determine the similarity between the two scores. This assisted in satisfying the reliability and construct validity of the criteria within the rubric to determine if it is measuring what it is supposed to.

A concern that arises is that the scoring on the rubric may change from individual to individual – interrater reliability (Moskal and Leydens, 2000). Moskal and Leydens (2000) posit that when a rubric is used to guide an evaluation then the rubric should contain criteria that address the process and the product. The rubric contains a five-point Likert scale and along each component of a dimension, there is a description of what constitutes the selection of a score – criteria per score and per component. The rubric can be seen in appendix A3. These descriptions are used to guide the individual using the rubric to evaluate the online course. This method of creating a well-designed rubric with a detailed description of criteria for each score, per component of the dimension, may assist in reducing the occurrences of scoring variations between different individuals. However, one must note that it will not eliminate the variation in scores from individual to individual but may only reduce the scoring variations. The existence of both scores and a description of criteria for each score will allow the individual, using the rubric to evaluate online courses, to recognise features existing within the course as described in the criteria rather than using his/her own interpretation (Delandshere and Petrosky, 1998).

In addition to scores changing from individual to individual, it may change for one individual over a period. The current study will make use of the test-retest reliability as this method will offer information on the degree of confidence that criteria are descriptions are generalisable in other instances (Netemeyer, Bearden, Sharma, 2003).

3.5. Pre-testing and Pilot Testing

Prior to the researcher conducting the actual evaluation of the quality of the three online short courses at the University of the Witwatersrand using the developed rubric, the researcher first conducted a pre-test and pilot test. The aim for the pre-test and pilot test was to assist the researcher in determining (1) if the rubric provides valuable information and is a valid and reliable instrument, (2) whether the dimensions selected are correct, (3) whether the components selected are correct, (4) the wording of the criterion is understandable, and (5) to remove redundant components and dimensions.

Prior to conducting the pre-test, the rubric was distributed to one subject expert to review and provide feedback on the design of the rubric. The subject expert was required to criticise, evaluate, and provide feedback on the rubric so the necessary adjustments could be made to the rubric. The pre-test was then conducted on an open source online course. This was done to determine if any adjustments were needed for the rubric prior to its use for the pilot test. The main adjustments that were made to the rubric were (1) the introduction of a zero score as the researcher found during the pre-test that some of the components were non-existent in the pre-test course, and (2) the introduction of a standalone example/description column instead of having it as part of the criteria in order to assist in reducing the misinterpretation of the component's measurements.

Subsequently, a pilot test was conducted using one of the University of the Witwatersrand online short courses to do a final evaluation of the rubric's design and content. The pilot test was also a practical method to assist in detecting major defects in the rubric and to overall improve the quality and efficiency of the current study. Changes to the rubric were then made accordingly prior to conducting the evaluation of the three online short courses. The changes made to the rubric after the pilot test included removing duplicating components and criteria that were apparent to be measuring the same concepts and rewording some criterion to avoid ambiguity.

3.6. Procedure for Data Collection

The current study made use of collecting data through conceptual research to develop a valid and reliable rubric that contains criteria to evaluate the quality of online courses. The rubric was then used to complete an in-depth evaluation of the design of three online short courses. Data was collected from the results of the rubric that reflected and assisted in determining the

degree of quality of the University of the Witwatersrand short courses. Additionally, possible gaps that exist in the design of the online short courses can be seen.

3.7. Limitations of the Study

Because of the limitation of time and cost, the current study only evaluated a sample of three entrepreneurial online short courses at the University of the Witwatersrand whereby the evaluation criteria have been applied. A comparative study was not completed due to time constraints. Validity may be difficult to demonstrate with regards to the Likert scale used on the rubric (Page-Bucci, 2003).

Another limitation that exists is that the rubric has not been validated statistically. Although the rubric itself uses a quantitative method to evaluate courses, the validation of the rubric itself was primarily qualitative.

While conducting the literature review there were some mentioned points regarding limitations on the base models i.e. QM and Sloan-C. A limitation that exists with the QM model is that simple designed courses can pass as a quality course. The researcher eliminated this shortfall in her current study by introducing the Likert-scale and actual descriptions per score. Another limitation exists whereby the QM model does not consider the new dynamics of online learning technologies and learner interactions. To resolve this shortfall, the current study developed components and criteria for these factors. In addition to these limitations, one more that exists is that the QM easily reviews the design of courses but not the effectiveness of the delivery of the course. This is not an issue for the current study as the focus is on the actual design of online courses and not the delivery.

The online short courses offered at the University of the Witwatersrand have a one on one relationship with the instructor, therefore, it is easy for anyone to associate an online short course with an instructor. The researcher had considered the use of pseudo names for both the institution and courses to attempt to maintain confidentiality and anonymity. Additionally, the researcher planned that when screenshots are used in the current study, any association with the institution, courses or instructors will be removed/blurred out. However, upon discussion with the director of short courses and consulting at WITS Commercial Enterprise, the conclusion that was reached is that there is no need to maintain confidentiality and anonymity. All course names and full screens can be displayed as part of the current study.

3.8. Ethical Considerations

Any research completed at the University of the Witwatersrand must first meet any ethical requirements placed by the universities ethics committee, the Human Research Ethics Committee (HREC). This is needed to be done to protect the rights of the participants. To obtain ethical clearance, a copy of the research proposal, information sheet and consent forms of the current study were submitted to the ethics committee. Once the ethics clearance was submitted and reviewed, approval was granted unconditionally by the Wits University HREC, protocol number: 2018ECE033M. A copy of the ethical clearance form can be viewed in the appendix A2. This was done to ensure that the study was completed in an ethical manner.

A meeting was set up with the director of short courses and consulting at WITS Commercial Enterprise who deemed the current study to be feasible. A course access information sheet and consent form were sent to the director for informed consent (Flick, 2014). This granted the researcher access and permission to evaluate the online short courses for the purposes of the current study. The course access information sheet and consent form contain the purpose of the current study, the risks, and benefits of the current study, cost compensation, confidentiality, and anonymity sections. This gives an overview and information about the current study and responsibilities of all the stakeholders. This can be viewed in Appendix A1.

Access to the courses for the researcher to evaluate have done so voluntarily and if the director did not wish to volunteer, there were no consequences. If access to the courses were granted, the director had the opportunity to withdraw from the current study at any point.

3.9. Conclusion

This chapter began by describing the methodological aspects of the current research. It described the design selected for data collection and the design of the research instrument. Validity and reliability were discussed, with specific attention to the validity and reliability of the rubric. The results of the pre-test and pilot test and the resulting changes to the rubric were discussed accordingly. Several limitations were discussed, and some were addressed. Lastly, a discussion on ethical considerations concluded this section.

4. Analysis and Research Findings

4.1. Introduction

The current chapter describes the methods, analysis, presentation, and interpretation of data collected using the rubric in the evaluation of the three online short courses. The three courses are (1) Finance for Non-Financial Managers, (2) Principals of Management, and (3) Business Communication Skills. The chapter begins by describing the methods of the data analysis and the presentation of data followed by the analysis of data. The analysis of data is then followed by a discussion of the data by providing screenshots, descriptions, and implications of the research findings. The findings relate to the research questions that guide the current study.

4.2. Methods of Data Analysis and Presentation of Data

Data was collected from the rubric and analysed in a meaningful manner using simple descriptive statistics. Loeb, Dynarski, McFarland, Morris, Reardon, Reber, (2017, p 39) posits that "Descriptive analysis characterizes the world or a phenomenon – identifying patterns in the data to answer questions about who, what, where, when, and to what extent."

To describe and explain the degree of presence of the various dimensions and components of quality design in online courses, simple descriptive analysis was used. Quantitative data was obtained from the completion of the rubric evaluating the design quality of three online short courses. Each dimension and component has been allocated a score using a Likert scale. The researcher used these scores to calculate the totals and aggregates per dimension and a summative score (the overall average of all the dimensions) for the courses. The statistical data was analysed to identify different instances and provide qualitative descriptive evaluations drawn from the evaluation process to make summative conclusions and assist in providing feedback on the actual design of the three online short courses and to determine whether the rubric, as a design framework, needed further improvement or not. Descriptive statistical analysis and graphical representations of the data were developed using Microsoft Excel.

The use of descriptive analysis assisted the researcher in using the data to describe reality (Loeb *et al*., 2017), identifying the dimensions that hold the most value, which components need to be further investigated by the University of the Witwatersrand short courses team, which dimension scores the most, identifying the rationale behind why certain dimensions were invested in more and others were not, why other dimensions were excluded as a whole etc. Once these inferences and rationale were drawn, the researcher had a feedback session with the major stakeholders; the director of short courses and consulting at WITS Commercial

Enterprise and the team at Digital Campus. Interim research findings were presented to the stakeholders and points were discussed during the meeting which were considered, and the research report updated accordingly.

Data visualisation is one of the tools used to display the information and communicate the findings of the current research in a simple, familiar and functional manner (Loeb *et al*., 2017) to the relevant stakeholders. Some points that were discussed during the feedback session and contained as part of the research are patterns, trends, and variations that were identified in the data. This led to the discussion of what is done well in the design of online short courses at WITS and which areas require work. Possible recommendations for practice were also provided, particularly for the lower scoring dimensions and non-existent components.

4.3. Analysis of Data

This section encompasses a brief overview of the three online short courses that were evaluated, the analysis of the scores of the rubric, the graphical representation of these scores and a brief interpretation of the results.

4.3.1. Overview of Evaluated Courses

The three short courses evaluated are *Finance for Non-Financial Managers*, *Principles of Management* and *Business Communication Skills*.

The *Finance for Non-Financial Managers* course aims to assist students in mastering their financial management skills, build their ability to manage funds with an appropriate strategy, learn about financial statements, complete financial activities such as a budget or break-even analysis and overall to allow the participants of the course to become more financially confident.

The *Principles of Management* course aims to empower its participants to be good leaders, to learn about the different leadership styles, to upskill themselves with capabilities to lead others effectively, improve their project management and overall to allow participants to learn to adapt to their environment in order to guide their team to greater productivity and profitability.

The *Business Communication Skills* course aims to equip its participants with the proper tools to communicate effectively across the various business channels such as meetings, interpersonal communication and using digital channels. Participants of this course are also exposed to compiling business plans, proposals, tenders, and executive summaries.

4.3.2. Summary per Dimension

Table 3 contains summarised information of the total score, the score percentage per dimension and the average total score for each of the three courses.

	Finance for Non-Financial Managers		Principles of Management		Business Communication Skills	
	Score Total	Score %	Score Total	Score %	Score Total	Score %
Course Information, Structure and Organisation	93	89%	93	89%	93	89%
Interaction and Communication	38	63%	38	63%	39	65%
Multimedia Design	45	75%	45	75%	45	75%
Assessment and Feedback	47	78%	44	73%	45	75%
Effective Use of Technology	39	78%	40	80%	43	86%
Course Average		***77%***		***76%***		***78%***

Table 3: Summary of Scores per Dimension for Each Course

Figure 3 displays a graphical representation of these scores.

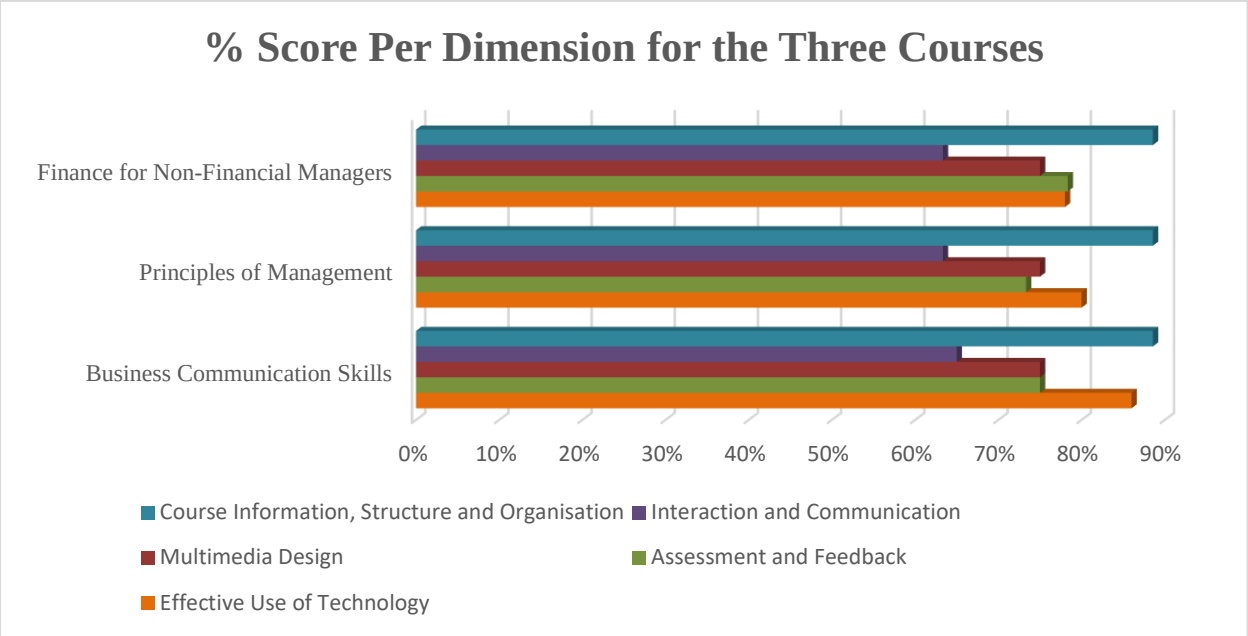


Figure 3: Graphical Representation of Dimensions Scoring for the Three Courses

The *Finance for Non-Financial Managers* course scored an average score of 77%. The dimension "Course Information, Structure and Organisation" scored the highest. The dimension that scored the lowest was "Interaction and Communication".

The *Principles of Management* course scored an average score of 76%. The dimensions "Course Information, Structure and Organisation" and "Effective Use of Technology" scored the highest. The dimension with the lowest score is "Interaction and Communication".

The *Business Communication Skills* course scored an average score of 78%. The dimensions "Course Information, Structure and Organisation" and "Effective Use of Technology" scored the highest. The dimension with the lowest score is "Interaction and Communication".

These overall averages indicate that the strength of the design for the three online courses lies in the general course information, structure and organisation. The interaction and communication area of the three online courses need to be developed further.

The components scores influence the dimensions scores. These are discussed briefly in the next section.

4.3.2.1. Course Information, Structure, and Organisation

	Finance for Non-Financial Managers		Principles of Management		Business Communication Skills	
	Score Total	**Score Percentage**	**Score Total**	**Score Percentage**	**Score Total**	**Score Percentage**
Course Information, Structure and Organisation	**93**	**89%**	**93**	**89%**	**93**	**89%**
Course Administration	5	100%	5	100%	5	100%
Events	5	100%	5	100%	5	100%
Course Materials	5	100%	5	100%	5	100%
Hardware Specifications	4	80%	4	80%	4	80%
Software Specifications	4	80%	4	80%	4	80%
Prerequisite Technology Skills	3	60%	3	60%	3	60%
School Information	5	100%	5	100%	5	100%
Instructor Information	5	100%	5	100%	5	100%
Instructor Contact Methods	5	100%	5	100%	5	100%
Objectives	4	80%	4	80%	4	80%
Key Components Access	5	100%	5	100%	5	100%
Chunking	5	100%	5	100%	5	100%
Sequencing	5	100%	5	100%	5	100%
Unit Overviews	5	100%	5	100%	5	100%
Navigation Through the Course	5	100%	5	100%	5	100%
Content Map	3	60%	3	60%	3	60%
Consistency	5	100%	5	100%	5	100%
Requirements for Successful Completion	5	100%	5	100%	5	100%
Academic Support and Resources	5	100%	5	100%	5	100%
Legal and Acceptable Use Policies	3	60%	3	60%	3	60%
Netiquette	2	40%	2	40%	2	40%

Table 4: Course Information, Structure and Organisation Components Scores

The "Course Information, Structure and Organisation" dimension scored the highest in all three of the online courses. Across all three courses, most of the components of this dimension scored 100%. This is depicted in table 4. The components that need to be addressed in this dimension are the introduction of explicit netiquette guidelines and legal and acceptable use policies.

4.3.2.2. Interaction and Communication

	Finance for Non-Financial Managers		Principles of Management		Business Communication Skills	
	Score Total	Score Percentage	Score Total	Score Percentage	Score Total	Score Percentage
Interaction and Communication	**38**	**63%**	**38**	**63%**	**39**	**65%**
Student-to-Student Opportunities	2	40%	2	40%	2	40%
Instructor-to-Student Communication	5	100%	5	100%	5	100%
Instructor-to-Student Participation	5	100%	5	100%	5	100%
Collaboration Tools	2	40%	2	40%	2	40%
Development of Learning Community	3	60%	3	60%	3	60%
Active learning and Participation	3	60%	3	60%	3	60%
Aesthetic Design	5	100%	5	100%	5	100%
Overall Content	5	100%	5	100%	5	100%
Content Alignment	5	100%	5	100%	5	100%
Appropriate Answers	0	0%	0	0%	1	20%
Synchronous Interaction	0	0%	0	0%	0	0%
Asynchronous Interaction	3	60%	3	60%	3	60%

Table 5: Interaction and Communication Components Scores

The "Interaction and Communication" dimension scored the lowest across all three online courses. Less than 50% of the components of this dimension scored 100%. This can be seen in table 5. The components that need to be addressed in this dimension are the introduction of more student-to-student interactions, other collaborative activities, synchronous interactions and providing examples of what an appropriate answer is for the activities.

The introduction of more collaborative tools, student-to-student opportunities, and synchronous interaction will impact the development of a learning community and the active learning and participation of students.

4.3.2.3. Multimedia Design

	Finance for Non-Financial Managers		Principles of Management		Business Communication Skills	
	Score Total	Score Percentage	Score Total	Score Percentage	Score Total	Score Percentage
Multimedia Design	**45**	**75%**	**45**	**75%**	**45**	**75%**
Graphics	4	80%	4	80%	3	60%
Animations	5	100%	5	100%	5	100%
Audio Aids	0	0%	0	0%	0	0%
Video Aids	5	100%	5	100%	5	100%
Coherence Principle - Extraneous Material	5	100%	5	100%	5	100%
Signalling Principle - Complexity	5	100%	4	80%	5	100%
Contiguity Principle - Graphics & Text	4	80%	4	80%	4	80%
Contiguity Principle - Feedback Display	4	80%	4	80%	4	80%
Contiguity Principle - Instruction Display	3	60%	4	80%	4	80%
Contiguity Principle - Instruction	5	100%	5	100%	5	100%
Contiguity Principle - Timing	5	100%	5	100%	5	100%
Modality Principle - Audio Narration	0	0%	0	0%	0	0%

Table 6: Multimedia Design Components Scores

The "Multimedia Design" dimension scores in the middle of all the other dimensions for the three courses. Approximately 50% of the components of this dimension scored 100% across the three courses. This is depicted in table 6. The components that need to be addressed in this dimension are the introduction of audio aids and audio narration to the course.

4.3.2.4. Assessment and Feedback

	Finance for Non-Financial Managers		Principles of Management		Business Communication Skills	
	Score Total	**Score Percentage**	**Score Total**	**Score Percentage**	**Score Total**	**Score Percentage**
Assessment and Feedback	**47**	**78%**	**44**	**73%**	**45**	**75%**
Alignment of Learning Objectives and Assessment	4	80%	4	80%	4	80%
Assessment Instruction	5	100%	2	40%	2	40%
Descriptive Criteria	0	0%	0	0%	1	20%
Formative Assessments Types	2	40%	2	40%	2	40%
Formative Assessments Frequency	5	100%	5	100%	5	100%
Summative Assessment	5	100%	5	100%	5	100%
Student Feedback Quality	5	100%	5	100%	5	100%
Student Feedback Frequency	5	100%	5	100%	5	100%
Assessment Authenticity	4	80%	4	80%	4	80%
Assessment Design	4	80%	4	80%	4	80%
Learner Progress	5	100%	5	100%	5	100%
Faculty and Course Feedback	3	60%	3	60%	3	60%

Table 7: Assessment and Feedback Components Scores

The "Assessment and Feedback" dimension is on average the third highest dimension that the three courses have scored. Approximately 50% of the components of this dimension scored 100% across all the three courses. This can be seen in table 7. The components that need to be addressed in this dimension are the introduction of descriptive criteria for assignments where there are essay type questions, an increase in the variety of types for formative assessments and the overall faculty feedback.

4.3.2.5. Effective Use of Technology

	Finance for Non-Financial Managers		Principles of Management		Business Communication Skills	
	Score Total	**Score Percentage**	**Score Total**	**Score Percentage**	**Score Total**	**Score Percentage**
Effective Use of Technology	**39**	**78%**	**40**	**80%**	**43**	**86%**
Current Technology	4	80%	4	80%	4	80%
Application Use	1	20%	1	20%	4	80%
Web Tools	2	40%	2	40%	2	40%
Technology Orientation	4	80%	4	80%	4	80%
Technology Support	5	100%	5	100%	5	100%
Technical Support	5	100%	5	100%	5	100%
Technical Support Turn Around Time	5	100%	5	100%	5	100%
Mobility	5	100%	5	100%	5	100%
Course Tools	3	60%	4	80%	4	80%
Data Privacy and Security	5	100%	5	100%	5	100%

Table 8: Effective Use of Technology Components Scores

The “Effective Use of Technology” dimension scored the second highest across the three courses. 50% of the components of this dimension scored 100% across all three courses. This is depicted in table 8. The components that need to be addressed in this dimension are the use of more third-party applications, introduction to a variety of web 2.0 and web 3.0 tools, and an overall variety of course tools to promote active and collaborative learning for the students.

4.4. Discussion of Research Findings

This section involves a discussion of the data gathered across the *Finance for Non-Financial Managers*, *Principals of Management*, and *Business Communication Skills* short courses by providing screenshots, descriptions, justifications of scoring and implications of the research findings.

The dashboard and the general structure of all pages across all the three short courses follow the same structure, look and feel. This is good as a student who is enrolled for multiple courses in the same period will be comfortable with the structure and navigation of the courses. Young and Norgard (2006) found that students found it helpful to have a consistent structure across the various online courses.

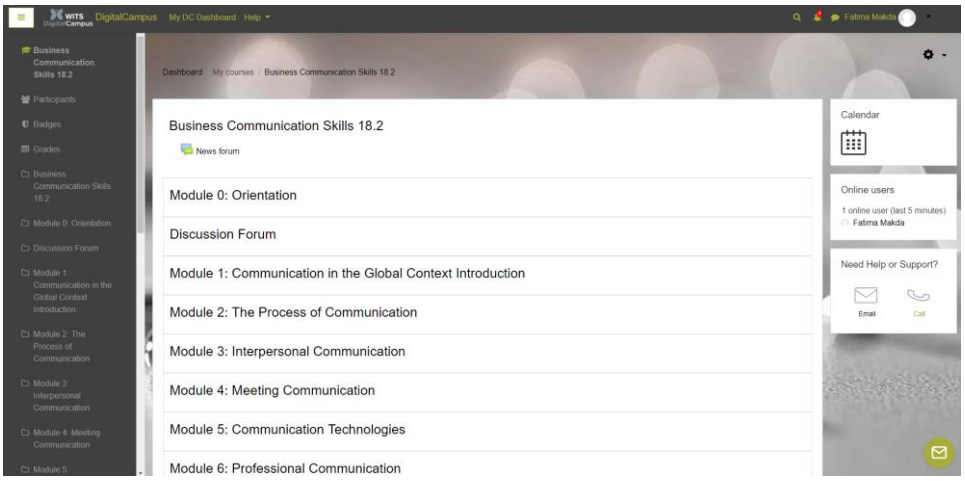


Figure 4: Course Dashboard

As depicted in figure 4, the dashboards contain a navigation draw (nav draw) on the left side of the screen which allows for quick access between the various modules, participants of the course, badges and the gradebook. The right side of the screen contains blocks for quick access and views to components such as the calendar, latest announcements, the current users that are online and quick access to support. The centre of the screen is where the actual content is displayed. On the dashboard, it shows a summary of the key modules and high-level content. On the other pages, it contains the content of the topic within the module.

4.4.1. Course Information, Structure and Organisation

Well thought out course information, structure, and organisation in an online course can strengthen the quality of the course. Thus, allowing the students online learning experience to be useful, efficient and desirable.

4.4.1.1. Course Administration

Course information should include the course schedule, syllabus, outline, scope, grading policy including grading scale and weights, the procedure for submission of assignments, preferred modes of communication, and types of assessments that will need to be completed (Ausburn, 2004; Gray and DiLoreto, 2016).

All three online short courses were allocated a score of 5 for the component *course administration* as course information for all aspects of the course are provided. The three online courses contain an entire orientation module (module 0), that comprises of course administrative information such as the outline, scope, grading policy, assignment submissions etc. There are videos which exists that provide a walkthrough of the introduction, help and support that students can receive. Orientation videos are favourable as they are seen by students as informative and helpful (Taylor *et al*., 2015).

A PDF document containing all the course information discussed in module 0 can also be accessed through the site as depicted in figure 5. This PDF document concept is applied throughout all the modules. It allows students to download a PDF document that contains all the content, main concepts, and activities of that module.



Figure 5: PDF Link and PDF Summary of Module 0 Front Page

This concept allows for a better online learning experience as students can focus more on the actual content of the course rather than being concerned with the general information and organisation on the course.

4.4.1.2. Events

A course calendar is one of the more important components of an online course system (Farin *et al*., 2016).

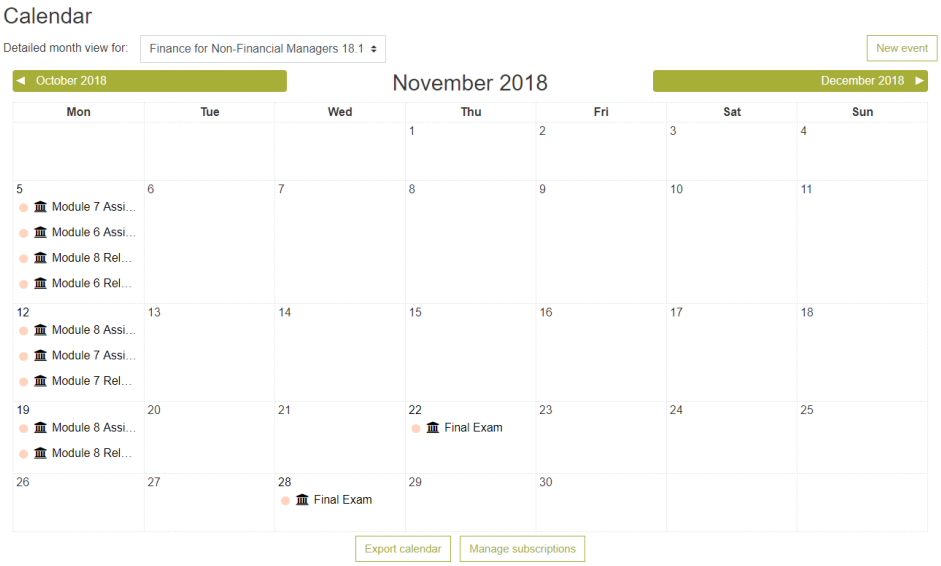


Figure 6: Calendar Containing Course Events

All three online short courses were allocated a score of 5 for the component course *events* as calendar dates for all course events throughout the year are provided. Each of the three courses contains a course calendar that contains all the events of the course. The calendar can be viewed holistically as depicted in figure 6 or on the right-hand side while viewing other pages as depicted in figure 7. Events on the calendar contain dates for module release, deadlines for discussion activities, deadlines for assignments and exams. These are all the events of the course.

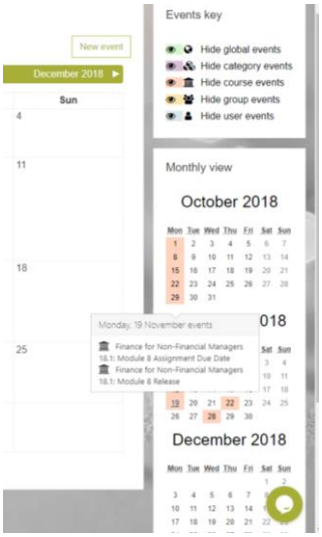


Figure 7: Side Calendar Displaying Important Dates

Completion reminders and notifications of release dates are also sent by the course coordinator. This allows the students to schedule their study time accordingly so that they can complete all learning tasks on time. Gray and DiLoreto (2016) found reminders from the instructors are deemed to be important by students.

4.4.1.3. Course Materials

All three online short courses were allocated a score of 5 for the component *course materials*. All course materials are provided through the online environment by the weekly module release. This occurs across all three online short courses. This is explicitly stated in the documentation of the introductory module (module 0). Students are also provided with the opportunity to explore additional links and resources for further reading and to deepen their understanding of each of the modules content.

4.4.1.4. Hardware Specifications

There is no hardware specifications list in any of the three courses within the online learning environment. However, there is a statement made within the examination section of the course overview stating that a webcam is required for examination purposes. Upon discussion with the learning journey manager, this is the only hardware requirement needed by the students. Hardware specifications should be part of the online course as well as emailed to the students prior to their first-time access to the online course. All three online short courses were allocated a score of 4 for the component *hardware specifications* as the hardware requirements of the course is specified.

Generally, a hardware specifications list might not necessarily be seen in the online environment but can be received via email by students prior to logging on the online environment.

4.4.1.5. Software Specifications

There is no explicit software specifications list within the online learning environment. Upon discussion with the learning journey manager, it was confirmed that the software specifications are sent via email. Information such as the use of a recommended web browser is provided e.g. The use of Google Chrome instead of Internet Explorer.

Additionally, within the “Terms and Conditions” section of the website, there is a statement requesting students to have Adobe Flash Player installed in order to interact with the online videos.

Software specifications do exist for all three courses, however, the information is accessed through different sources. It would be helpful to have this information within one area e.g. all software specifications are sent via email and are contained within module 0. All three online short courses were allocated a score of 4 for the component *software specifications* as the software requirements of the course is specified.

4.4.1.6. Prerequisite Technology Skills

There is no explicit prerequisite technology list. This was confirmed upon discussion with the learning journey manager. However, the learning journey manager had mentioned that where students might be required to make use of a technology skill that is not taught within any of the courses e.g. Microsoft Excel, the students are told in advance allowing them time to become acquainted with the skill. All three online short courses were allocated a score of 3 for *prerequisite technology skills* as a list of key prerequisite skills in the use of technology are specified when needed. It would be better if they were explicitly stated at the beginning of the course.

4.4.1.7. School Information

There is a contact us page that allows students to log a query and they receive feedback. It contains all the school's contact information such as contact numbers and an email address. Additionally, there is an option for a live chat. This can be seen in figure 8.

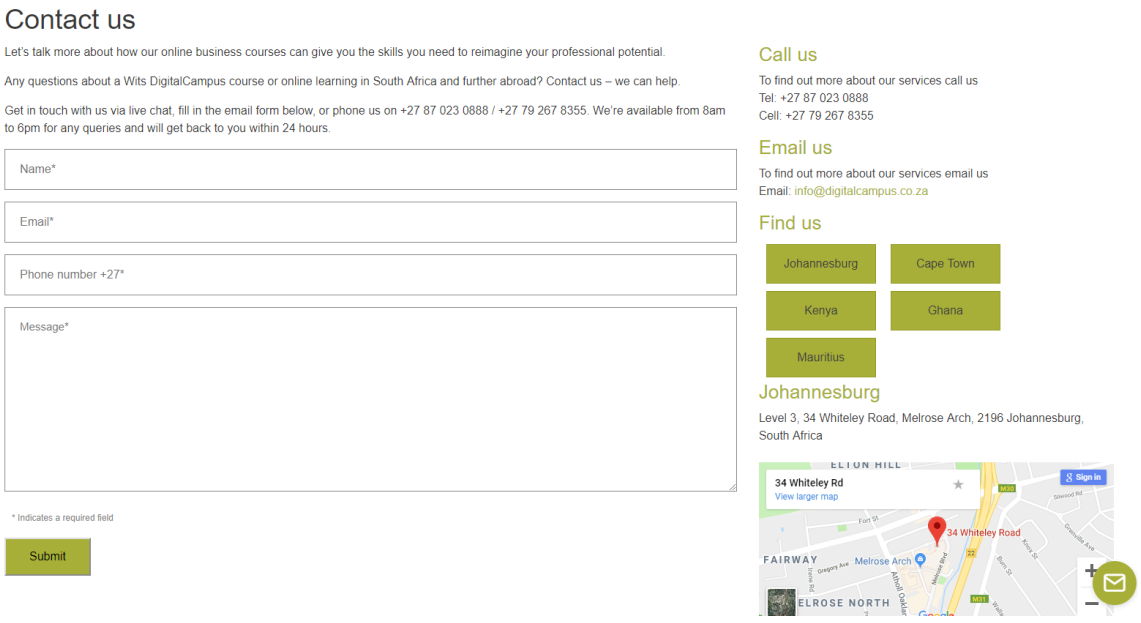


Figure 8: Contact Us Page

Students having access to the contact information and the option to log queries allows them to contact the faculty at any point. One of Chickering and Gamson (1987) seven principles for undergraduate teaching is to encourage faculty-to-learner interaction. All three online short courses were allocated a score of 5 for the component *school information* as all contact information for the school is provided.

4.4.1.8. Instructor Information

Within each of the three online courses, each instructor provides an introductory video about themselves and the course orientation module (module 0). A snippet is shown in figure 9.

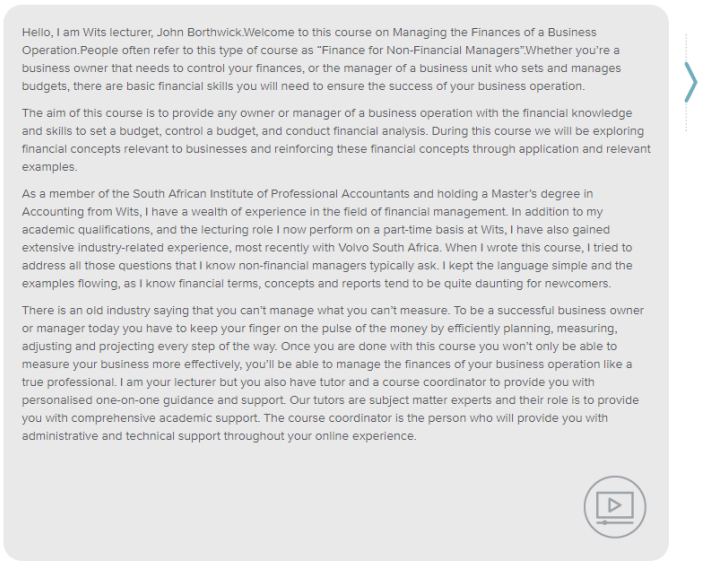


Figure 9: Screen Displaying Instructor Background Information

Additionally, instructor information can be accessed through the digital campus about us website page. This can be seen in figure 10. However, it would be nice if all the information is accessible on the site itself.



Figure 10: About Us Page Displaying the Learning Journey Manager Background

There are chat options for direct contact to the instructor. Should students wish to contact their instructor outside of the course online platform, they can access the instructor's information such as the active email address and active telephone number from the instructor's profile on the site. Other information that can be included on the instructor's profile is the availability information and expected response times of the instructor.

Providing students with some of their instructor's personal information pertaining to their background, interests, experience, skills etc. allows students to get to know their instructors better and build some confidence in their instructor's brand. This information is all contained within the introductory videos. All three online short courses were allocated a score of 5 for the component *instructor information* as all the necessary instructor information is provided.

4.4.1.9. Instructor Contact Methods

All three online short courses were allocated a score of 5 for the component *instructor contact methods* as there is detailed information on contact methods. As depicted in figure 11, students can contact the course co-ordinator via chat, email, phone and by posting a discussion board query. This is an option within all three of the online courses. Student-to-instructor contact is important for online learning (Palloff and Pratt, 2010).



Figure 11: Screen Displaying Course Co-ordinator Contact Methods

The variety of contact methods allow students to use different platforms to contact their instructor depending on the type of query and the expected response time. Should students require urgent assistance they can call or use the chat function, and should they not require urgent assistance they can send an email and give the instructor an opportunity to provide a well thought out response.

4.4.1.10. Objectives

There is no page or section contained in any of the three courses that state the course objectives explicitly. It would be better for the online courses to include the overall objectives of the course too as clear course objectives allow students to have a feel of what to expect and what they need to do (Hew, 2016).

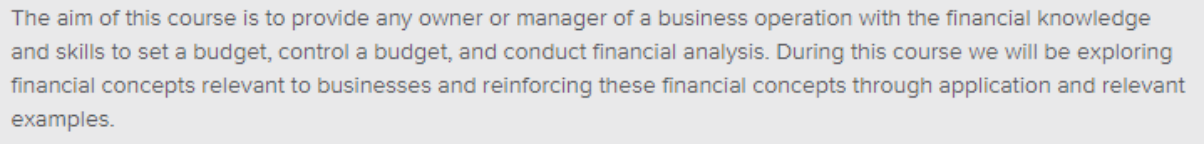


Figure 12: Aim of the Course

There is a section as depicted in figure 12 that speaks of the aim of the course. Aims are general statements concerning the course goals whereas objectives are steps or stages that students need to achieve to reach these goals.

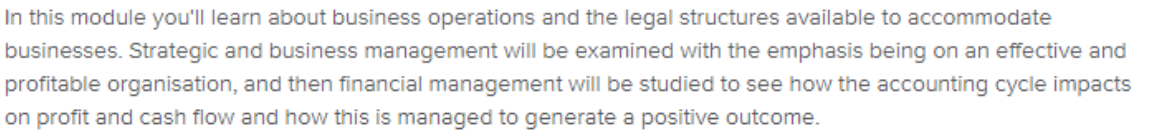


Figure 13: What You Will Learn

Within each module, there is a section stating what students will learn within that module. This is depicted in figure 13. Additionally, within each topic, the expectations of that topic and the key questions are provided to students as depicted in figure 14. This is termed the outcomes and completion criteria and this assists in guiding students in what they need to learn and instructors on what they need to assess. It is written from the perspective of the learners, so students know exactly what they need to achieve (Quality Matters, 2014).

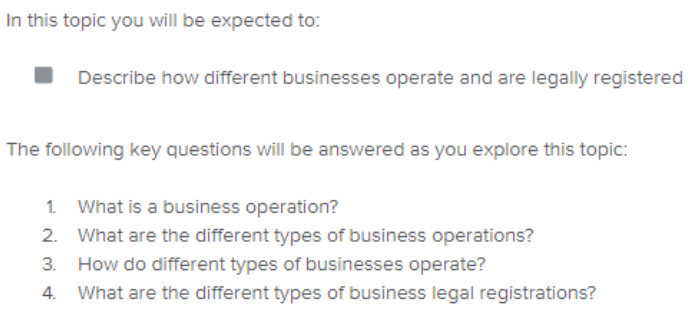


Figure 14: Expectations and Key Questions

All three online short courses were allocated a score of 4 for the component *objectives* as the learning objectives are clearly stated. However, there are only on a module basis and there are no overall course objectives.

Providing students with aims, objectives, expectations and key questions gives students the opportunity to understand what is expected of them resulting in them monitoring their progress and taking more control of their learning.

4.4.1.11. Key Components Access

All three online short courses were allocated a score of 5 for the component *key components access* as there is comprehensive instruction provided on accessing all key components of the course. The navigation help screen is contained within all three online courses and shows access to key components of the different parts for the course. Further information of the various elements of a typical web page such as the nav draw, the blocks like the calendar etc on the sides of the pages is shown and explained within the introductory documentation in module 0. This is depicted in figure 15.

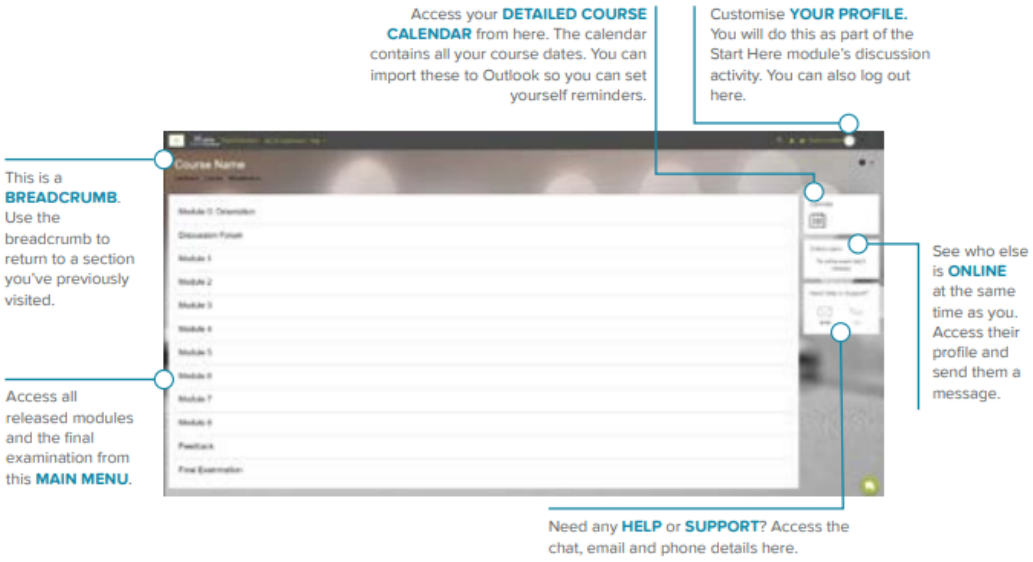


Figure 15: Main Features of the Dashboard

Providing learners with navigation documentation allows them to explore the different components of the online course and become comfortable with where they can locate the different parts of the online course. This can assist in increasing their productivity as they can focus on learning the content of the course rather than spending time looking for sections or information in the course. Taylor *et al*. (2015) found that students need to adapt and become

familiar with the online environment to reach success as the more familiar the students are with the course tools and navigation the easier it is for the students to complete the course.

4.4.1.12. Chunking

There are eight modules within each of the three courses. Within each module there are topics. Each module divides the content into manageable segments within these various topics. The topics are not too long, and they contain the appropriate amount of content. This can be seen in figure 16.

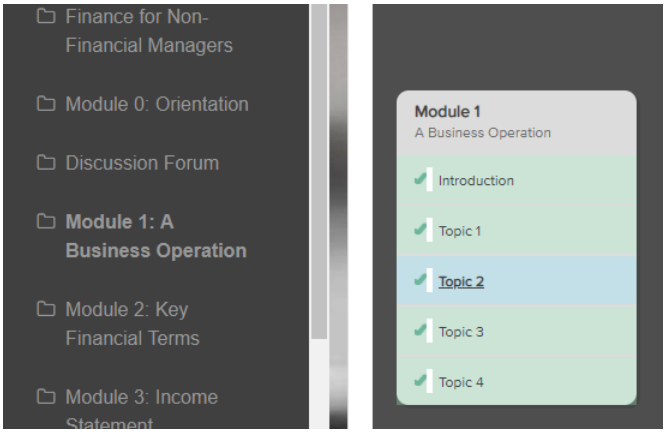


Figure 16: Chunking of Topics within Modules

All three online short courses were allocated a score of 5 for the component *chunking* as all the course content is chunked appropriately into manageable segments. Chunking assists students in increasing their understanding and retention rate, allow students may explore and learn more content, comprehend the course material better (Smith, 2014).

4.4.1.13. Sequencing

All three online short courses were allocated a score of 5 for the component *sequencing*. Across all three online short courses there exists logical sequencing of all the course content that allows for the best learning pathways.

The modules across all three courses follow the same structure format. This includes (1) a module overview video, (2) the modules learning objectives, (3) course content outline, (4) video lectures containing main learning points, (5) progress checks after each learning topic, (6) Q&A forum at the end of each topic, (7) other links and resources for further reading, (8) a discussion activity, and (9) a module assignment to test competency.

Each topic within each module contains a video, a description of the content, a summary; as depicted in figure 17; towards the end of each topic, an optional progress check; as depicted in

figure 18; and a reminder of the discussion board that exists should students be unclear and would like to further discuss the topic with the instructor and/or peers. The sequence of content, summary and concept check is good as the summary cannot be done before the students understand the content.



Figure 17: Example of a Topic Summary Page

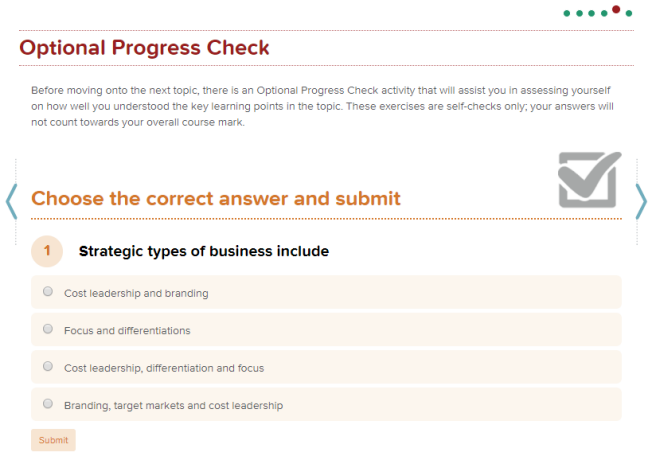


Figure 18: Example of a Progress Check

In the *Finance for Non-Financial Managers* course, the content itself is also sequenced well as it builds from the basic concepts to the more complicated concepts. As the subject of finance and accounting is cumulative in nature, the content is developed in a foundational building block structural manner that allows for learners to see the various connections that exist between the various concepts and topics/modules.

In the *Principles of Management* course, the content is also well sequenced with a flow of topics and concepts appropriately preceding each other. There is also a case study contained

within the videos across the modules developing the scenarios and reiterating concepts as students' progress through the course.

In the *Business Communication Skills* course, the topics are sequenced suitably. This allows for gradual learning so that participants can store, process and retrieve information when needed as some concepts shape others.

4.4.1.14. Unit Overviews

Each topic within each module of all three courses contains a topic overview page. All three online short courses were allocated a score of 5 for the component *unit overviews* as they contained clear unit overviews that describe all the relevant information. This page comprises of the expectation of the completion of the topic, the key questions students should be able to answer and a quick quiz at the end of the topic to allow students to complete quick self-assessments. An example of this can be seen in figure 19.



Figure 19: Topic Overview Page

This type of information assists students in putting together the different puzzle pieces (skills, competencies, expectations etc.) to create a holistic picture of what is expected.

4.4.1.15. Navigation Through the Course

All three online short courses were allocated a score of 5 for the component *navigation through the course* as the entire course is easy to navigate. All three courses include a navigation help screen. The navigation help screen has numbers associated with the main components and allows students to click on these number and pop-up with a brief explanation is given as seen in figure 20 by the number 3 bubble.

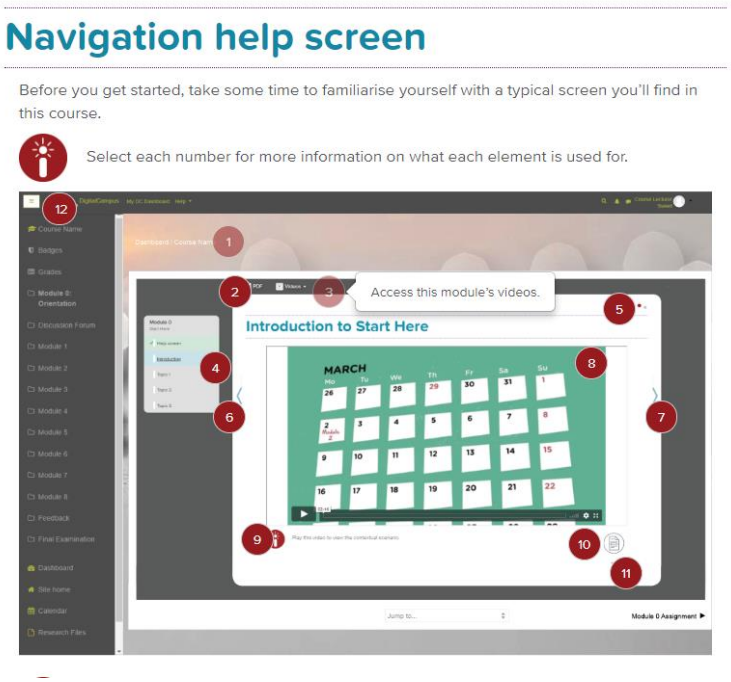


Figure 20: Navigation Help Screen

This method provides learners with the learner support and resources required for finding their way around the online course. Other ways that can be used to provide learner support include course manuals and overviews of the course also on a module level.

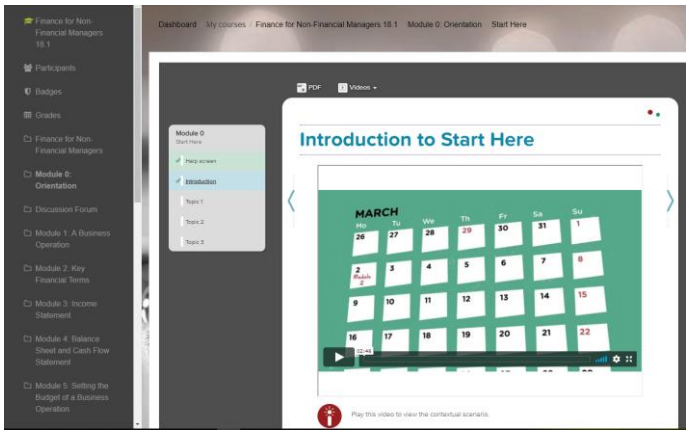


Figure 21: Screen to Display the Various Navigation Components

As depicted in figure 21, within all three courses, there are existence of navigation arrows, navigation indicators are present, there is a breadcrumb link with each screen location, the nav draw shows the course modules entirely and highlights the current module that the student is working within, on the top right-hand corner of the white screen there are two dots which show the current page within the topic. The documentation of the course provides a brief view of the navigation of the dashboard as discussed in the *Key Component Access* section earlier.

4.4.1.16. Content Map

The instructors welcome the students through the forum in all three online courses. Upon welcoming the students to the course, the instructor provides a brief overview of the content of the various modules of the course. This is seen in figure 22. This is an amiable act as it helps to build a kind of rapport within an online environment and make students aware of what to expect with a personal touch.

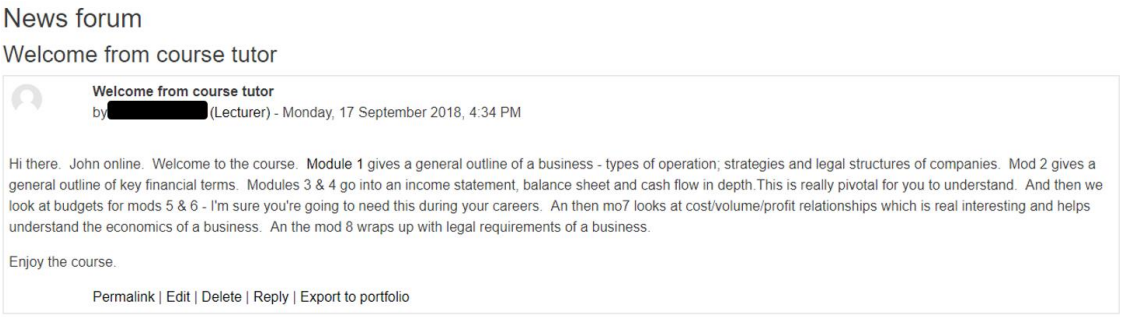


Figure 22: Summary of the Various Modules Content

The course modules are summarised in the nav draw and the topics for that module is shown within the workspace area in the centre as depicted in figure 23. This is the same for all three courses.

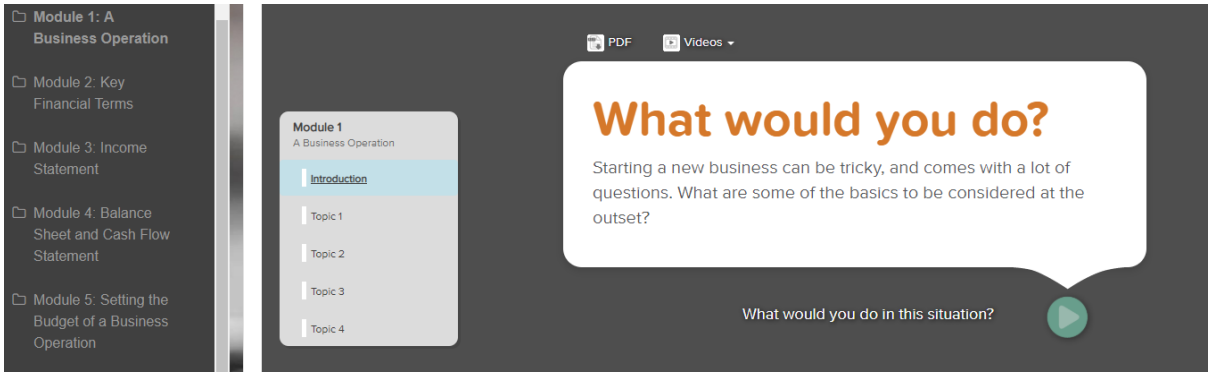


Figure 23: Modules and Topics of the Course

All three online short courses were allocated a score of 3 for the component *content map* as a clear content map exist that contains key relevant content of the modules. The descriptions in the topic area can be better developed. For example, instead of only providing the description of "Topic 1" a breakdown can be provided of the content within "Topic 1". There is an introduction to the module that describes what each topic is about, however, a description within the topics section will be better. It is also possible that the inclusion of the description makes the entire description too busy and this is the reason that it has been excluded. However,

the inclusion of a content map can be done on the side as a block, like an event calendar on the side of the webpage.

This will allow students to know and quickly access a topic when they need to revise a concept and focus on their learning goals to accommodate and promote their learning (Smith, 2014). The Content Map is a visual representation of the various modules and topics within the course. It shows the organisation of the content and the position of the current module/topic within the context of the entire course.

4.4.1.17. Consistency

All three online short courses were allocated a score of 5 for the component *consistency* as all web pages are both visually and functionally consistent. The visual presentation of the online environment impresses upon first sight. All web pages across all three online courses are visually and functionally consistent. Consistency exists with the layout of the pages, the grammar, usage of words and language, fonts and formats, headings, alignment, colours of backgrounds and text, icons and buttons.

4.4.1.18. Requirements for Successful Completion

All three online short courses were allocated a score of 5 for the component *requirements for successful completion* as there is detailed information provided relating to the successful completion of the course. Assessments should also have clear grading policies aligned with them (Palloff and Pratt, 2009). There is brief yet explicit information relating to the successful completion of the three online courses. The information provided states the sub-minimum for the exam and the minimum final grade. It also provides a breakdown of the different percentages weighting that the various tasks (discussion contribution, assignment, and exam) have. This can be seen in figure 24.

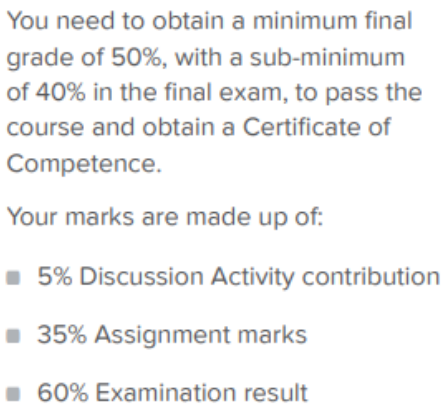


Figure 24: Requirements to Complete the Course

4.4.1.19. Academic Support and Resources

The Quality Matters model encourages learner support. All three online short courses were allocated a score of 5 for the component *academic support and resources* as extensive information for academic support exists within the online courses.

All three online courses contain an explore further links and resources section for further reading and deeper understating section within each module. A PDF version of the online content of the different topics within each module. One of the academic supports that exist in the current course consists of contacting the instructor and/or tutor. There are also external links provided as depicted in figure 25. Some topics contain appendices at the end as depicted in figure 26 and some topics contain a glossary at the end of the PDF document.

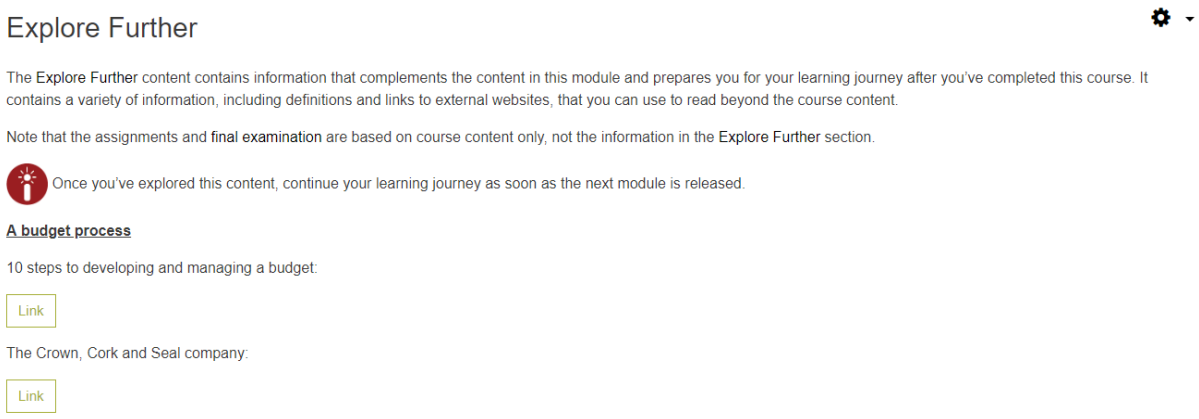


Figure 25: Explore Further - External Resources for Students

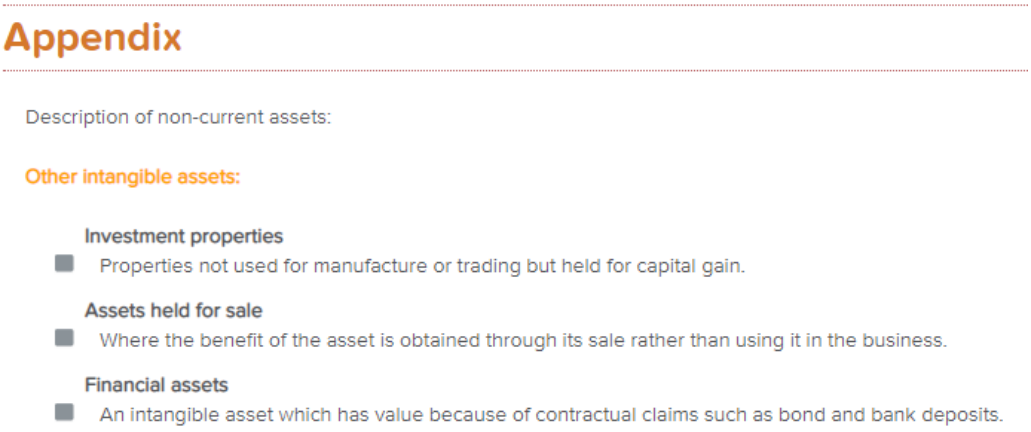


Figure 26: Appendix for Accounting Concepts

Other methods that can be introduced are academic resources, links to the educational institution's library, tutoring centre and glossary within the course.

4.4.1.20. Legal and Acceptable Use Policies

There are some policies stated for the three courses. All three online short courses were allocated a score of 3 for the component *legal and acceptable use policies*. There are sufficient policy statements that exist, however key policies such as a plagiarism policy are lacking.

Statements regarding privacy, personal information, intellectual property, usage etc. are discussed in the "Terms and Conditions" section of the website. Within the online course environment itself, there is mention around the policy of the qualification of supplementary exams.

These policies assist learners in understanding their responsibilities and the consequences of their actions should they not abide by the rules. It also provides the University of the Witwatersrand the necessary protection regarding possible legal action.

An important policy that needs to be included is the one of plagiarism. The plagiarism statement gives the institute the opportunity to set standards of academic conduct. It explains that the conditions of the use of the work and overall promotes academic integrity.

4.4.1.21. Netiquette

All three online short courses were allocated a score of 2 for the component *netiquette* as the netiquette expectations are inconclusive. There are hints of netiquette guidelines in the "Terms and Conditions" section of the website. The target participant of the course is professional adults. However, netiquette guidelines should be explicitly stated in module 0 within the online environment, especially with the existence of issues such as cyberbullying.

Netiquette guidelines should include rules of conduct during discussions, rules of conduct for emails, speaking styles, the appropriate use of language and tone, respect and consideration for other students, issues of privacy and information sharing outside of the online course.

4.4.2. Interaction and Communication

Moore (1989) describes three types of interactions: learner-instructor interaction; learner-content interaction and learner-learner interaction. Online learning environments need to include strategies that afford meaningful interactions amongst students, instructors, and the content. This promotes engaged learning in the online environment.

4.4.2.1. Student-to-Student Opportunities

There are opportunities for students to collaborate online with each other in order to develop an in-depth understanding of their feel of study. Student collaboration is important (Creasman, 2012; Quality Matters, 2014; Lister, 2014; Conole, 2014) as it fosters learning.

All three online short courses were allocated a score of 2 for the component *student-to-student opportunities* as there are limited opportunities for student-to-student interaction within the course. The interaction for students designed in the three online courses is limited to a discussion forum and chat. The discussion forum allows the students to discuss with their instructor and fellow peers the various concepts learnt within the module and answer questions posted by the instructor. Although through this discussion forum each module's concepts are discussed. It would be better to see more frequent use of other methods for students to interact. The other opportunity is the chat function that allows students to chat about anything.

More interaction opportunities should be introduced to promote active student learning. Other interactive opportunities that can be included are wikis, blogs, forums, activities with peer review and any other activities that promote active and collaborative learning that reinforce the course content and learning outcomes.

4.4.2.2. Instructor-to-Student Communication

There are different modes of communication between the students and the instructor. Students found two-way communication with their colleagues and instructor to be important and essential (Ausburn, 2004; Young and Norgard, 2006). All three online short courses were allocated a score of 5 for the component *instructor-to-student* communication as thorough communication exists between instructor and students.

The instructor communicates to the students when providing reminders for course events, providing or updating announcements and providing frequent feedback on course content within the discussion boards. These assists learners in being able to schedule and plan their time for interacting with the course. The feedback helps learners to track their progress while still maintaining the end goal.

4.4.2.3. Instructor-to-Student Participation

All three online short courses were allocated a score of 5 for the component *instructor-to-student participation* as the instructor always guides the students in their activities. There is a discussion board that exists in the three online courses. Here the instructor participates with the students by facilitating and asking the students questions by which they respond, and all

participants and the instructor can have a discussion. This can be seen in figure 27 and figure 28.

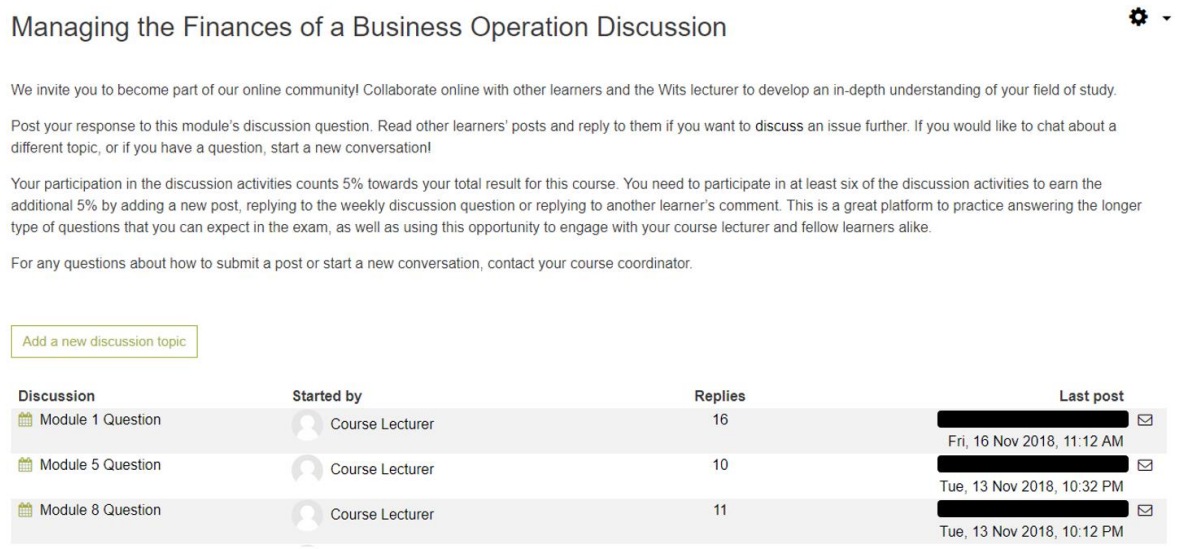


Figure 27: Discussion Board Home Page

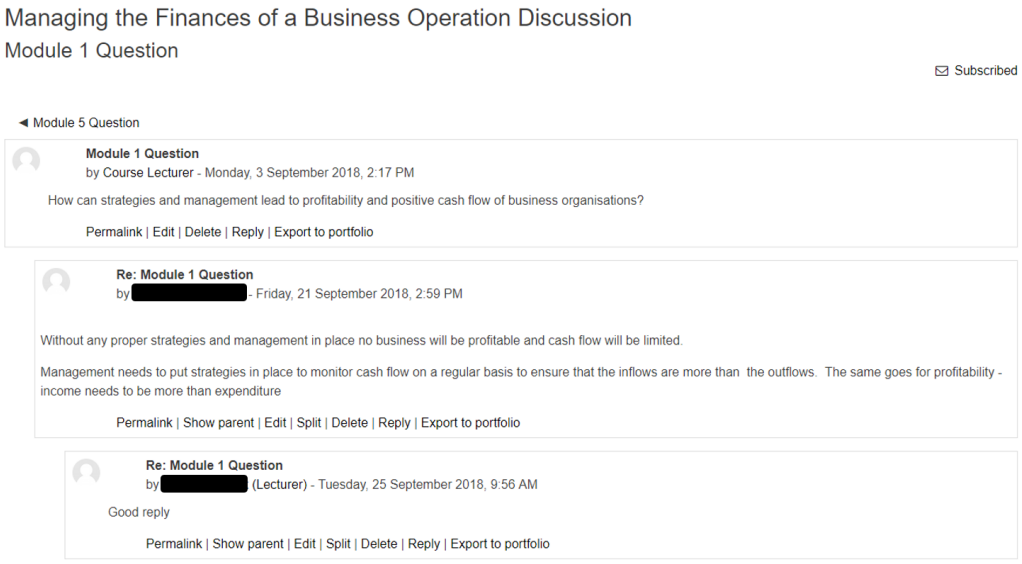


Figure 28: Example of Instructor Participating and Guiding Students

Instructors interacting with students creates motivation for their learners. The interaction allows instructors to reach out to struggling students, allows instructors to provide simultaneous feedback, gives instructors the opportunity to facilitate in-depth learning through online discussion and allows instructors to guide the students in their path to learning the content.

4.4.2.4. Collaboration Tools

All three online short courses were allocated a score of 2 for the component *collaboration tools*. These courses are limited in its types of interactions amongst students as it is limited to a discussion forum and chat function only. The discussion board is used for course content discussion as well as a communication tool for the course coordinators. Teras and Herrington (2014) found that the use of discussion forums for informal communication and interaction improves collaboration.

The courses can include, *inter alia*, group assignments, research assignments whereby peers act as a resource, case studies required to be completed in groups, shared facilitations, activity forums, real-time discussions of course content and discussion questions and work posted by students that require feedback from peers. Collaborative tools do require a social presence and participants may find it difficult to manage time however the use of collaborative tools creates a sense of shared responsibility in meeting an end goal.

4.4.2.5. Development of Learning Community

All three online short courses were allocated a score of 3 for the component *development of a learning community*. The collaboration and group interaction in all three courses are limited to a discussion forum whereby students discuss the different concepts of each module. They use this platform exhaustively and encouragement is given to students to interact and build relationships of trust, demonstrate effective facilitation skills, support and encourage independence and creativity. Collaborative interaction is key in an online learning environment as it helps students to create a learning community that connects students and allows them to work together towards something (Kim *et al*., 2014).

4.4.2.6. Active learning and Participation

All three online short courses were allocated a score of 3 for the component *active learning and participation* as there are sufficient strategies that allow students to actively engage in the learning process. The courses do not only consist of passive lectures but also includes a discussion board that students use to participate and discuss the module with each other and assignments that students can do at the end of each module. The assignments themselves are quite comprehensive and allow students to actively interact with the content and concepts of the module. The videos of the modules are quite enticing and interesting which can lead to learning and remembering just by watching them.

Other strategies that can allow students to actively engage can include in-lesson writing, team problem solving, analysis, evaluations, debates, brainstorming activities etc.

4.4.2.7. Aesthetic Design

The use of aesthetic design presents and communicates all course content clearly across all three online courses. All three online short courses were allocated a score of 5 for the component *aesthetic design*.

The aesthetic design in all three online courses is spectacular. There is a great use of structure for the various components of the course. Each section is separated by a consistent style of headings. The colours used for the background, text, links, borders etc all complement each other. Underlining is used to identify links.

There is a balanced amount of colour and text and they do not overpower the user or create distractions. The text on the different pages are consistent in font, size, colour and are most definitely readable.

The different components of the three courses are well aligned. Numbers are right aligned, and text left aligned. Images are used as support to content and spelling and grammar are accurate.

The content of the three courses is well organised and the finest navigation systems are in place that allows the students to easily navigate through the course and access the different components and content.

Overall the aesthetic design is a pleasure to view as it is meaningful and aids students in their learning.

4.4.2.8. Overall Content

The content of the three courses is well structured with the use of well thought out learning pathways. It is free from spelling and grammar error. The content is cohesive and appropriate to the topic at hand. The different modules and topics are detailed yet simple enough to ensure learning is taking place while avoiding boredom and/or confusion for the participants of the three courses. All three online short courses were allocated a score of 5 for the component *overall content*.

4.4.2.9. Content Alignment

The comparison was done with the overall aim of the course and between the topic key questions and the module assignments. The reason for this is there are no explicitly stated course objectives for any of the three courses.

By engaging with the three courses, in particular, the topics within the modules, it was noticed that the key questions stated and the expectations of the topic that are mentioned at the beginning of a topic were covered in the topics within a module. At the end of the module, the assignment tested the students understanding of the key questions. Quality Matters encourages the development of alignment between the course design and learning objectives. All three online short courses were allocated a score of 5 for the component *content alignment* as the course content is thoroughly aligned with the learning objectives of the module.

4.4.2.10. Appropriate Answers

The *Finance for Non-Financial Managers* and *Principles of Management* online short courses were allocated a score of 0 and the *Business Communication Skills* course was allocated a score of 1 for the component *appropriate answer*.

An *appropriate answer* is an example of an answer that is provided to students prior to the students completing the activity. This assists the students in understanding what is expected of them.

There is no information provided relating to what constitutes an “appropriate” answer as there are no question types that may require information on an “appropriate” answer for the *Finance for Non-Financial Managers* and *Principles of Management* courses.

The *Business Communication Skills* course includes essay type questions so an example of an appropriate answer should be provided. Additionally, a rubric or descriptive criterion can be provided for the assignments.

4.4.2.11. Synchronous Interaction

The real advantage with educational technologies is that they enable students to engage with the course content outside of class and therefore they can expand the time and quality of the discussion within the class or the synchronous sessions (Bowen, 2014).

All three online short courses were allocated a score of 0 for the component *synchronous interaction*. There are no synchronous interactive activities evident in any of the three courses. Upon discussion with the learning journey manager, the course is not only South African based,

so the issue of multiple time zones arises as it is difficult to find a time that suits all participants perfectly.

The learning journey manager also mentioned that in the design of future courses and on a request basis there are synchronous activities that are designed into the courses. Some examples of synchronous interactions that can be introduced are chat and video conferencing. Students can gain practice discussing course content extemporaneously without looking up basic and declarative information.

4.4.2.12. Asynchronous Interaction

All three online short courses were allocated a score of 3 for the component a*synchronous interaction* as there is one type of asynchronous interaction that exists across the three courses – the discussion board that exists for students to ask questions or the instructor to ask. Upon discussion with the learning journey manager, it was mentioned that the limited type of activity was because these are short courses and the average turnaround time per module is one week.

Within this discussion space, the students' and instructor engage with one other and the instructor also prompts and provides feedback on answers to students. The level of questions posed requires students to reflect and engage with some higher order thinking.

Other ways to use asynchronous interaction is through email, forums, and blogs. The asynchronous interactions require more lower levels of thinking for students such as summarising, describing and interpreting, and higher order thinking such as connecting concepts, questioning, encouragement of problem-solving strategies, creative thinking etc.

Higher order questions may lead to the development of critical thinking and problem-solving skills too. This promotes students to be able to identify a problem, investigate and gather information, analyse and evaluate the information, reflect and make a decision, and communicate the results.

4.4.3. Multimedia Design

Well-designed and well-structured multimedia consists of a variety and combination of pictures, audio, video, and text to allow for deeper student learning.

4.4.3.1. Graphics

The *Finance for Non-Financial Managers* and *Principles of Management* online short courses were allocated a score of 4 and the *Business Communication Skills* course was allocated a score of 3 for the component *graphics*.

Most graphics are used within the videos that are used to teach the course content. The three courses do not make use of all six types of graphics; decorative graphics, representational graphics, relational graphics, organisational graphics, transformational graphics and interpretive graphics (Clark and Mayer, 2016). However, with the type of graphics that the courses make use of, do so sufficiently in a manner that aids the students learning.

Some graphics used outside of the videos are representational graphics, organisational graphics, and relational graphics. In the *Finance for Non-Financial Managers* course, representational graphics are used when showing images of the different financial statements. Organisational graphics are used by the progress check, icon for instruction and the summary page. Relational graphics are used when explaining concepts that relate to each other. Here it is not used particularly on pie charts or bar graphs but in other ways as depicted in figure 29.

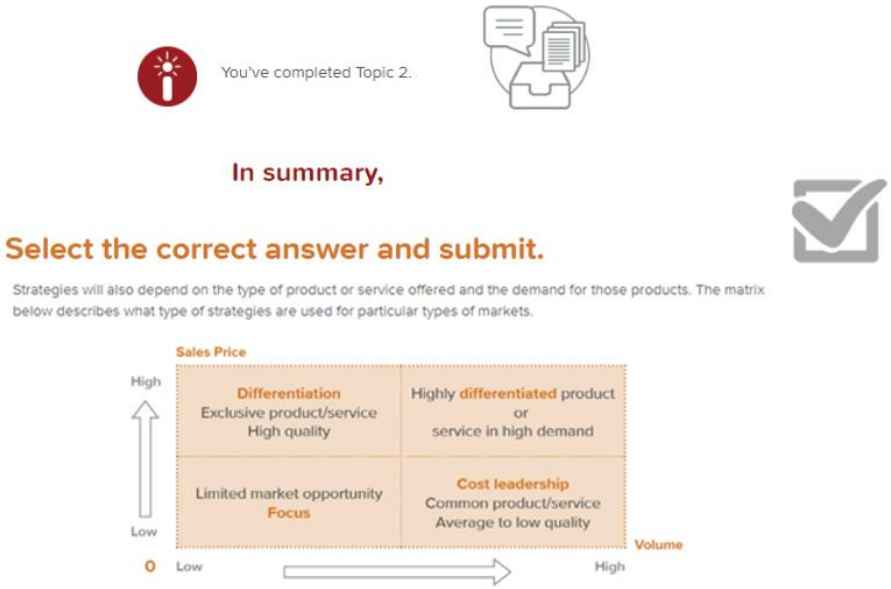


Figure 29: Some Use of Graphics within the Course

The *Business Communication Skills* course graphics are not always clear. This can be distracting and strenuous on the eyes. Images need to be clear as they bring the content to life and promote the engagement of students.

The use of graphics is powerful as human beings are visual creatures and visual representation of information is a direct way of assisting students in acquiring knowledge (He, Watanabe, Ono, 2018). Graphics create engagement, impacts and leaves impressions, helps in telling a story, makes things simple by closing the gap between the text students read and their interpretation of it, and the brain processes pictures better than words. More representational graphics, relational graphics, organisational graphics, transformational graphics, and interpretive graphics can be used within the courses, outside of the videos, to illustrate concepts being explained within the text of the content.

4.4.3.2. Animations

All three online short courses were allocated a score of 5 for the component *animations*. The videos contain animation across the different modules of the three courses as seen in figure 30. These animations act as a video supporting tool and as a narrative to students while the instructor is explaining concepts. The animations are not too busy as to cause a distraction but rather engage students with an entertaining and useful experience.



Figure 30: Use of Animations within Videos

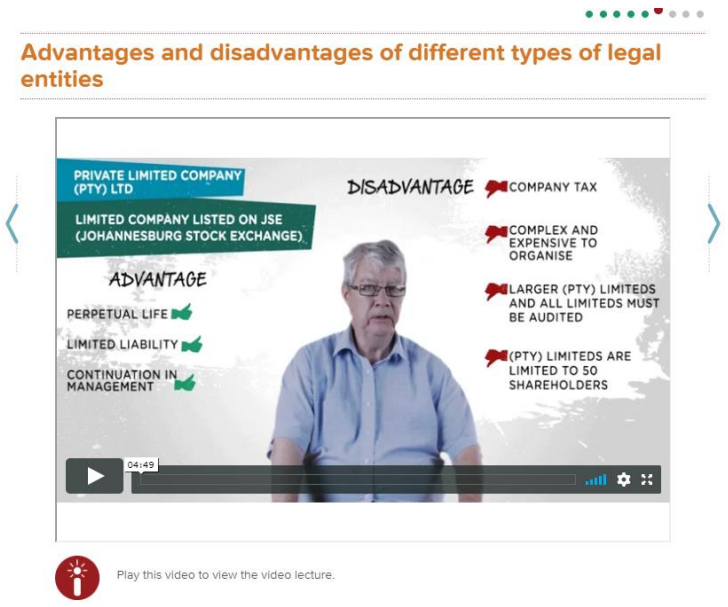


Figure 31: Use of Animations for Videos

Animations are also used in videos for reinforcements. An example can be depicted in figure 31 whereby green thumbs-up icons are used for advantages and red thumbs down are used for disadvantages. The use of icons in the design of interfaces are great as research done on visual representation shows that icons provide more efficient and effective communication (Shen, Prior, Chen, You, 2007). Additionally, the icon at the left bottom of figure 34 acts as an animation before a text instruction is provided. This helps to draw student's attention to the instruction describing briefly what they need to do.

4.4.3.3. Audio Aids

All three online short courses were allocated a score of 0 for the component *audio aids*. The course does not make use of audio aids; however, adequate use of video is used within the course. Upon discussion with the learning journey manager, it was said that the use of audio is being introduced to future developed courses and training will also be provided.

4.4.3.4. Video Aids

All three online short courses were allocated a score of 5 for the component *video aids* as there was comprehensive use of video across all three courses. The videos in all three courses are appropriate and are generally used for introductions, the explanation of concepts and examples. The video quality is clear, and the length is adequate; an average of between three to four minutes to meet the goals of the task without additional and unnecessary information that increases the mental load of the learners. The video allows students to pause and replay the video should they require more time to assimilate the course content. This allows students to

modify the delivery of the lecture to their learning pace. There are audio and appropriate video visuals that complement each other within the video – great use of audio-visual tools. Additionally, there are also transcripts of the videos that students can access.

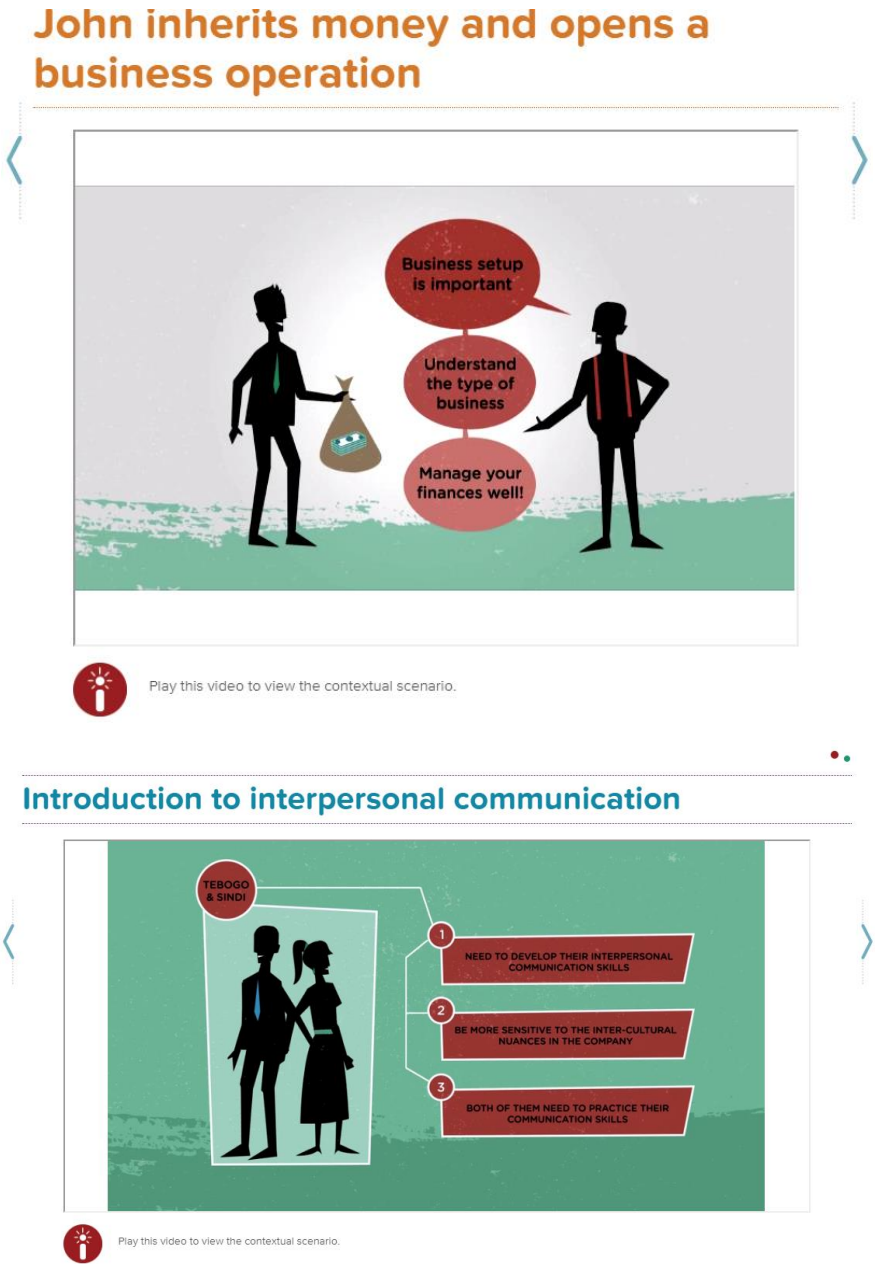


Figure 32: Example of Scenarios Provided by Videos

The videos contained within the courses make use of the multimedia principal well. The videos do not only consist of passive lectures but rather with graphics and animations allowing students to learn better with the use of words and graphics rather than words alone. A snippet of two videos can be seen in figure 32.

4.4.3.5. Coherence Principle - Extraneous Material

All three online short courses were allocated a score of 5 for the component *coherence principle - extraneous material*. The content is well organised within all three courses. The text and various multimedia complement each other. All pages contain detailed and comprehensive information that is not overbearing. There are no unnecessary words, pictures or sound.

This is good as there is no extraneous material that causes distractions for students which may result in a negative effect on their learning (Clark and Mayer, 2016). Instead, there is no unnecessary information on the different course pages allowing students to engage with the course material in an efficient manner.

4.4.3.6. Signalling Principle – Complexity

The *Finance for Non-Financial Managers* and *Business Communications Skills* online short courses were allocated a score of 5 and the *Principles of* Management course was allocated a score of 4 for the component *signalling principle – complexity*.

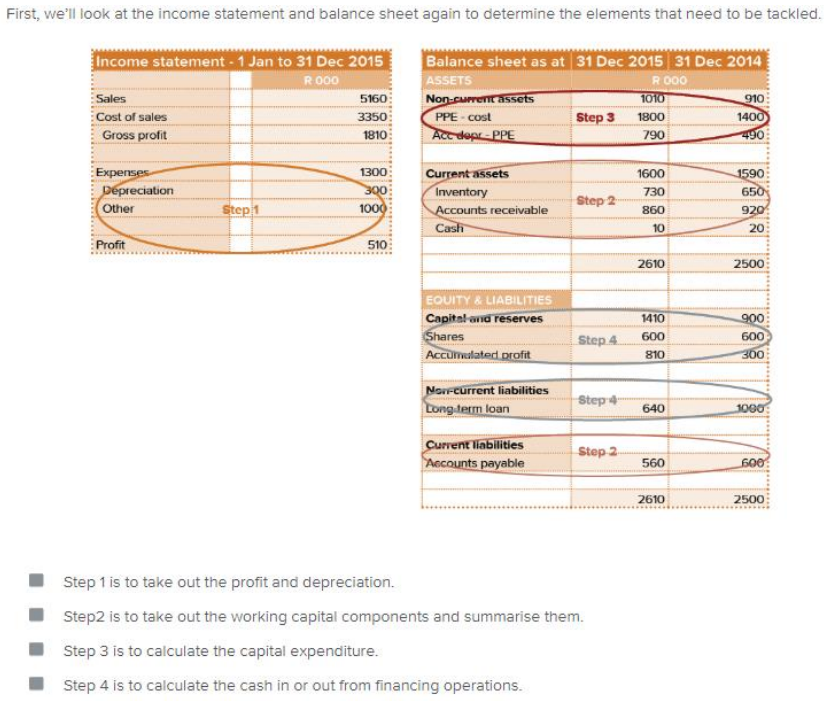


Figure 33: Highlighting of Steps

Within all three online courses, there is comprehensive use of devices such as colour or arrows to draw the attention of students in complex concepts allowing the students to engage with the content and learn better as attention is drawn to critical parts of the explanation (Clark and Mayer, 2016). This is depicted in figure 33, 34 and 35.

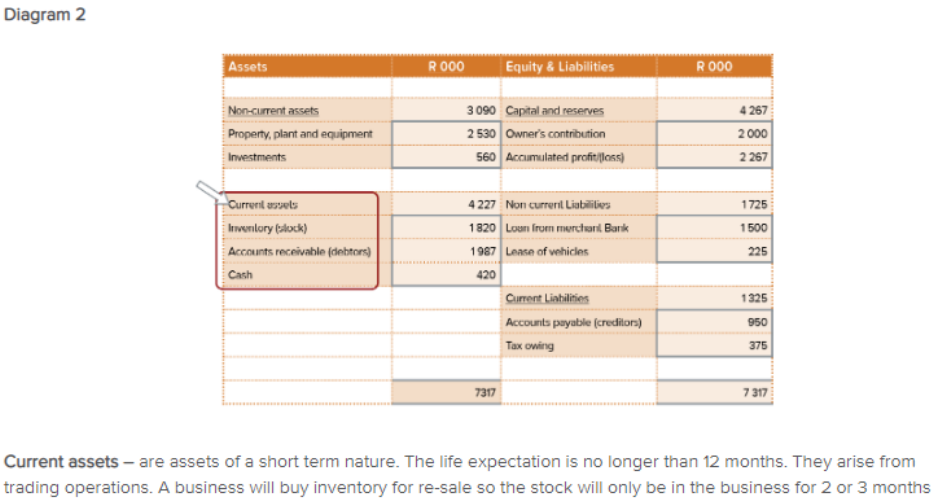


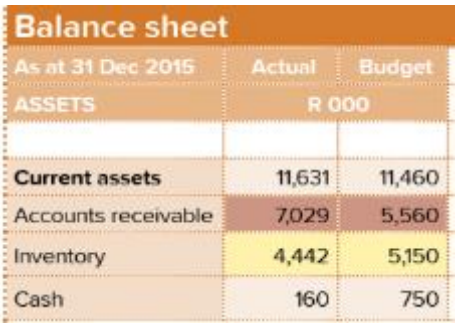
Diagram 2

Assets	R 000	Equity & Liabilities	R 000
Non-current assets	3 090	Capital and reserves	4 267
Property, plant and equipment	2 530	Owner's contribution	2 000
Investments	560	Accumulated profit/(loss)	2 267
Current assets	4 227	Non current Liabilities	1 725
Inventory (stock)	1 820	Loan from merchant Bank	1 500
Accounts receivable (debtors)	1 987	Lease of vehicles	225
Cash	420		
		Current Liabilities	1 325
		Accounts payable (creditors)	950
		Tax owing	375
	7317		7 317

Current assets – are assets of a short term nature. The life expectation is no longer than 12 months. They arise from trading operations. A business will buy inventory for re-sale so the stock will only be in the business for 2 or 3 months before it is sold. Accounts receivable are where a customer is given credit on his /her purchase, so it will be paid between 1 and 2 months after the debt has been raised.

Figure 34: Use of Arrows and Highlighting Blocks

In the *Finance for Non-Financial Managers* course the use of highlighting and arrows draw the attention of students to the main concepts allowing them to focus and understand better. This is especially helpful when the instructor is explaining the concepts and amounts as it allows them to zoom into that section of the financial statement.



Balance sheet

As at 31 Dec 2015	Actual	Budget
ASSETS	R 000	
Current assets	11,631	11,460
Accounts receivable	7,029	5,560
Inventory	4,442	5,150
Cash	160	750

Figure 35: Highlighting of Figures

In the *Business Communications Skills* course, the use of red ink in highlighting the qualities of a courteous email is used. This is depicted in figure 36.

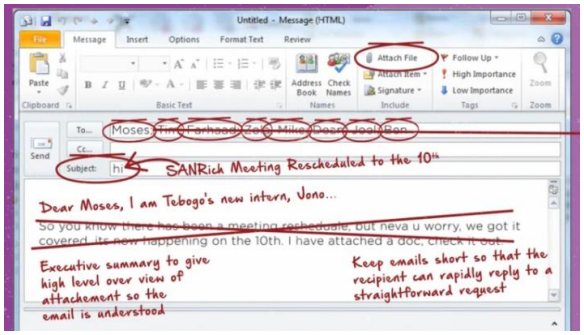


Figure 36: Highlight Using Red Ink

4.4.3.7. Contiguity Principle - Graphics & Text

All three online short courses were allocated a score of 4 for the component *contiguity principle - graphics & text*. Most screens are structured; text is placed next to or within graphics rather than below or beside the portion of the graphic it describes. The text explanations are placed next to or within the graphics rather than below or beside the portion of the graphic it describes. This is especially helpful for students as they can read the explanation and see the graphic at the same time without having to scroll between screens. Thus, not overloading their cognitive load but rather assisting them in learning efficiently (Clark and Mayer, 2016).

There are some screens that require students to scroll up and down on a page. However, this cannot really be avoided when explaining the relationship between all the financial statements.

4.4.3.8. Contiguity Principle - Feedback Display

All three online short courses were allocated a score of 4 for the component *contiguity principle - feedback display*. All three courses contain an assignment at the end of each topic. Students complete assignments that are structured as a quiz at the end of each topic that allows them to test their knowledge. Once learners have attempted the quiz, they submit their work and provided with instant text feedback.



Figure 37: Feedback Display

All this insightful text feedback is provided on the same screen as the question and response as depicted in figure 37. The question is stated, the student can see the response they provided and if they answered incorrectly what the correct answer should be. This allows them to see the question and the correct answer for that question together as supported by Clark and Mayer (2016). Thus, students can identify their mistake and remember the question and answer better in the future. Also, if the feedback answer was on a different page the student would have to

move between pages which may be a distraction and when they move between pages forget what the question or the answer is.

An option that may enhance the provision of feedback is audio feedback.

4.4.3.9. Contiguity Principle - Instruction Display

The *Finance for Non-Financial Managers* online short course was allocated a score of 3 and the *Business Communication Skills* and *Principles of Management* courses were allocated a score of 4 for the component *contiguity principle - instruction display*.

The text instructions on how to answer the quiz questions appear on the same screen that the questions need to be answered as supported by Clark and Mayer (2016). This is depicted in figure 38. Short questions are displayed on one page without moving between pages or scrolling. There is no need to move between pages but rather scroll up and down. However, due to the nature of the concepts in the *Finance for Non-Financial Managers* course, there is a need to ask longer type questions. For example, an income statement may be provided to learners and the questions that follow ask for ratios to be completed. Here students will need to scroll up and down to view the information before answering the question. A floating screen may be introduced that moves along on the side with the questions relating to that information. The same applies to the *Business Communication Skills* and *Principles of Management* courses where case studies are provided to the students.

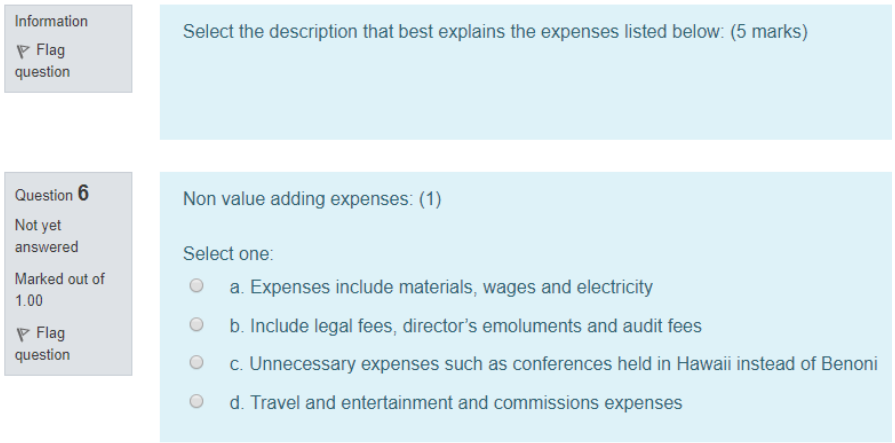


Figure 38: Instruction Display

4.4.3.10. Contiguity Principle – Instruction

All three online short courses were allocated a score of 5 for the component *contiguity principle – instruction* as all instruction provided is extremely clear.

Instructions are provided throughout all three courses assisting learners in guiding them on what to do next. The quality of online instruction is important as it affects the way students learn in an online environment. The instructions that are provided across the three online courses, for the various quizzes are clear and comprehensive, thus, allowing students to understand exactly what is required of them. Clear guiding instructions must be designed to assist students in participating with the online courses resulting in overall success in achieving their learning goals (Kim *et al*., 2014; Gray and DiLoreto, 2016).

4.4.3.11. Contiguity Principle – Timing

All three online short courses were allocated a score of 5 for the component *contiguity principle – timing*. Considering that the videos are recorded by the instructor himself it is well aligned. The animations used in the videos align with the audio speech of the instructor explaining the concept. There is no lag time between animations and audio words or between text words and audio words. This pertains to all three online courses.

4.4.3.12. Modality Principle - Audio Narration

All three online short courses were allocated a score of 0 for the component *modality principle - audio narration*. There is no use of audio narration with graphics across all three online courses.

4.4.4. Assessment and Feedback

Oldfield *et al*. (2012) posit that "Assessment is universally recognised as one of the most important – and powerful – of an educational experience." Assessment forms an integral part of the online course as it provides some observable indication that learning has taken place. It also shows learner progress and their understanding of the various concepts and content of the course.

4.4.4.1. Alignment of Learning Objectives and Assessment

All three courses do not have overall course objectives. However, there are key questions per topic and an assessment to be completed at the end of each topic. Therefore, the comparison was done with the topic's key questions and the assessment. All three online short courses were allocated a score of 4 for the component *alignment of learning objectives and assessment*.

Most of the questions on the assessment aligned with the key questions. It allowed for students to be assessed on the concepts described in the topics key question area. This is in line with the concept of Biggs and Tang (2007) concept of *constructive alignment*.

4.4.4.2. Assessment Instruction

The *Finance for Non-Financial Managers* course was allocated a score of 5 whilst the *Principles of Management* and *Business Communications Skills* courses were allocated a score of 2 for the component *assessment instruction*.

Each assignment in the *Finance for Non-Financial Managers* course has a general assignment instruction as depicted in figure 39. However, the *Principles of Management* and *Business Communications Skills* course does not have a general assignment instruction page.

Within each assignment of the three courses, there are instructions provided for each question type. Some questions do not have instruction, but the activity is quite self-explanatory. Although activities are self-explanatory, instructions always need to be provided. Students need clear and understandable instruction that guides them to prepare and participate in the learning experience of the online course. Students require unambiguous descriptions and instruction of the assessment and assessment criteria (Ascough, 2011). Where instructions are provided for these quizzes, they are clear and cohesive guiding learners to exactly what needs to be done.

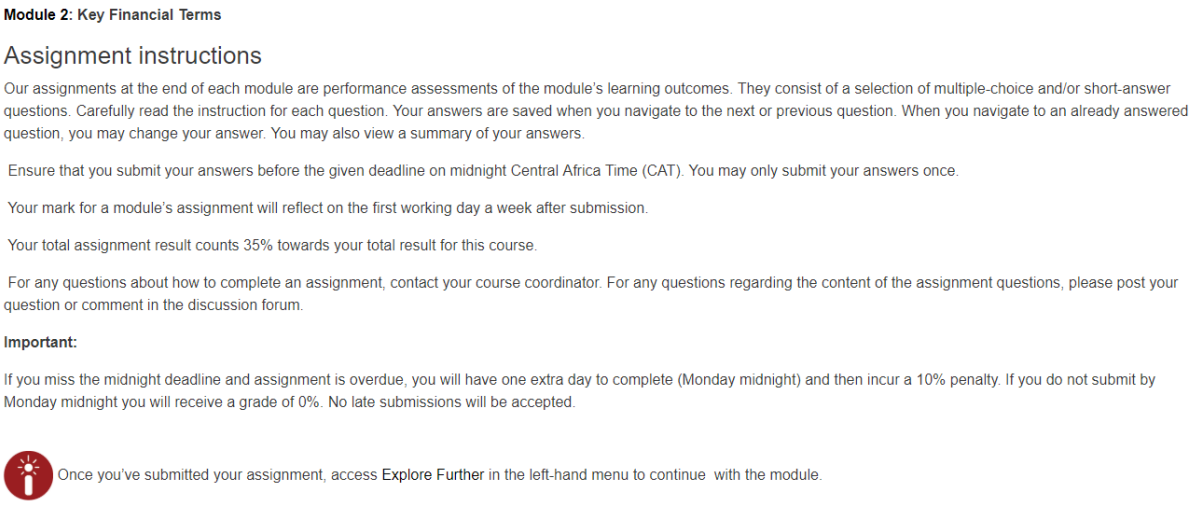


Figure 39: General Assessment Instruction Home Page

The multiple-choice question type chosen for most quizzes across the three courses is a good choice as they are used to do continuous checks on concepts. This maximises the number of concepts that students can be tested. As they are time efficient, fair and contain quality assurance.

4.4.4.3. Descriptive Criteria

The *Finance for Non-Financial Managers* and the *Principles of* Management courses were allocated a score of 0 whilst the *Business Communication Skills* course was allocated a score of 1 for the component *descriptive criteria*.

In the *Finance for Non-Financial Managers* and the *Principles of Management* courses there are no long type questions such as an essay that is required, hence, there are no descriptive criteria provided. The *Business Communication Skills* course does contain essay type questions with limited descriptive criteria. There is a short paragraph stating what students should consider when answering the question. However, this in conjunction with an allocation of marks, similar to a rubric, will allow students to conclude a better picture of what exactly is expected of them. This is applied in the final exam for the course.

Students need clear and understandable instruction that guides them to prepare and participate in the learning experience of the online course. Students require unambiguous descriptions and instruction of the assessment and assessment criteria (Ascough, 2011). Assessments should also have clear instructions and grading policies aligned with them (Palloff and Pratt, 2009).

Should a course include essay type questions a rubric or descriptive criterion should be provided to students. This assists the students in understanding what is expected of them as the descriptive criteria contain the desired outcome of the assessment.

4.4.4.4. Formative Assessments Types

All three online short courses were allocated a score of 2 for the component *formative assessment types* as there is only some variety of formative assessments used throughout the courses.

Despite the formative assessments being limited to only three types of assessments in all three courses, these three types are quite well accomplished and aid towards the learning goals of the students.

The first is a concept check at the end of each topic. This is helpful as it assists students in completing a quick knowledge check to determine if they are good with the main concepts of the topic.

The second is an assignment at the end of each module. The *Finance for Non-Financial Managers* course assignments consists of quizzes containing both short question types like multiple choice and short answer questions. The *Principles of Management* course quizzes are

limited to multiple choice type questions only. The *Business Communications Skills* contains multiple choice type questions and essay type questions as students are required to write reports.

The assignment at the end of each module is a great concept of a formative assessment as it allows students to continuously evaluate themselves throughout the course. It allows for student development during a learning process and therefore promotes learning. It also facilitates the evaluation of the various areas of the course in terms of content, skill, and progress of learning (Perera-Diltz and Moe, 2014).

The third formative assessment is the discussion activity completed through the discussion board. This is an activity that empowers learners as it allows them to collaborate in the forum where their peers can add comments to what they have shared. Therefore, this allows participants to collaborate, establish and maintain a learning community.

Other formative assessment types that can be introduced are research projects, group projects, objective tests, discussions, concept tests, quizzes, essays etc.

4.4.4.5. Formative Assessments Frequency

All three online short courses were allocated a score of 5 for the component *formative assessments frequency* as there are continuous and constant formative assessments that occur at regular intervals throughout the course. At the end of each module, students complete an assignment type quiz. An example can be seen in figure 40. This allows students to verify their own learning and correct and improve themselves prior to the final exam at the end of the course. Self-assessments are important as students can verify their own learning and correct and improve themselves prior to the main assessment (Chickering and Gamson, 1987).

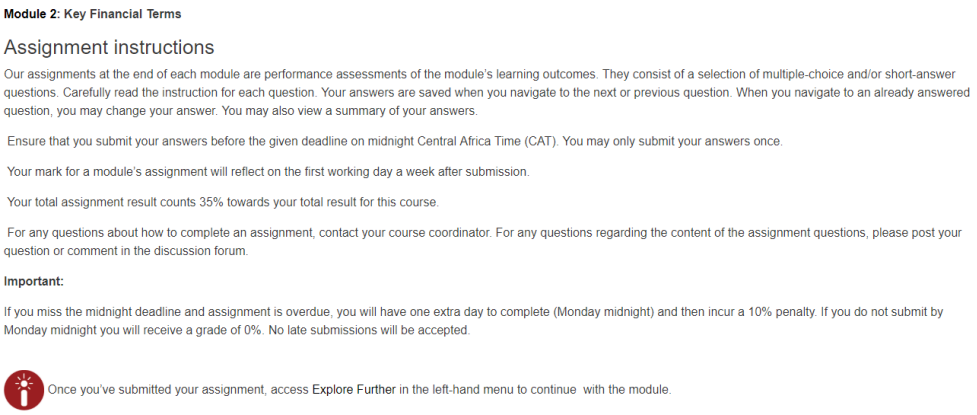


Figure 40: Formative Assignment Instruction Screen

Having an assessment at the end of each module is a good idea as it allows students to test their understanding of the concepts for that topic and will get the students to engage with the content and revise the topic after their attempt should they need. These assessments assist the instructor to determine the knowledge and skill gained by the students. It also allows the instructor to determine which areas and concepts need to be revisited and revised. This can then be addressed in the forum space or with additional activities.

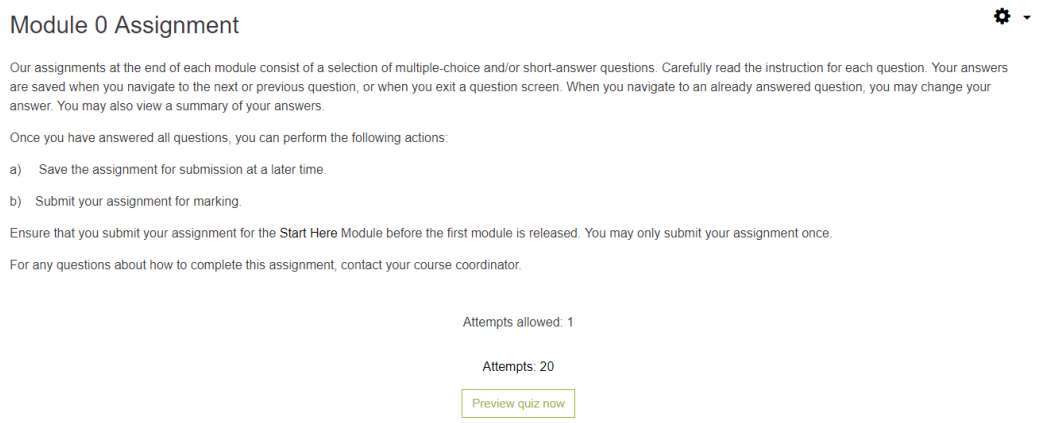


Figure 41: Self-assessment

There is one optional self-assessment check for students to complete as shown in figure 41. This is after the introductory module (module 0) which contains information on the course overview. The self-assessment consists of questions that cover the main points of the course information.

This is a good place to place a self-assessment as it allows students to check their understanding of the course information i.e. do students know how and by when to submits assessments, do they know who to contact for certain queries etc.

4.4.4.6. Summative Assessment

All three online short courses were allocated a score of 5 for the component *summative assessment* as all the sections of the summative assessment measures student learning. Summative assessments will assist in measuring the end product (Perera-Diltz and Moe, 2014). A summative assessment exists within all three courses.

The summative assessments test all the main concepts from the course content as well as requires students to apply what they have learnt to answer some questions. The summative assessments are accurate, cohesive and aligned with the course learning outcomes to evaluate student learning, knowledge, proficiency and skill.

4.4.4.7. Student Feedback Quality

All three online short courses were allocated a score of 5 for the component *student feedback quality as c*omprehensive feedback on all assessments for student performance is provided. All three courses have overall feedback and feedback provided for each question.

Started on	Friday, 16 November 2018, 2:17 PM
State	Finished
Completed on	Friday, 16 November 2018, 2:26 PM
Time taken	8 mins 34 secs
Marks	10/24
Grade	**4** out of 10 (**42**%)

Figure 42: Summary of Assignment Submission

Once students submit an assignment or quiz, they are provided with a summary for their submission which includes the date and time that the student began the assessment, the duration that the student took to complete the assessment, the date and time that the student completed the assessment, the total marks, and their grade. This is depicted in figure 42.



Figure 43: Feedback on Incorrect Answer

An important component of online learning is timeous, accurate and clear feedback (Jacobs, 2014). Students are more successful when provided with meaningful feedback while participating in online courses (Eom and Ashill, 2016). Students are provided with immediate feedback on their assessments. When a student answers the question incorrectly, the feedback provided confirms to the student that the answer is incorrect and then provides the students with the correct answer. This is shown in figure 43.

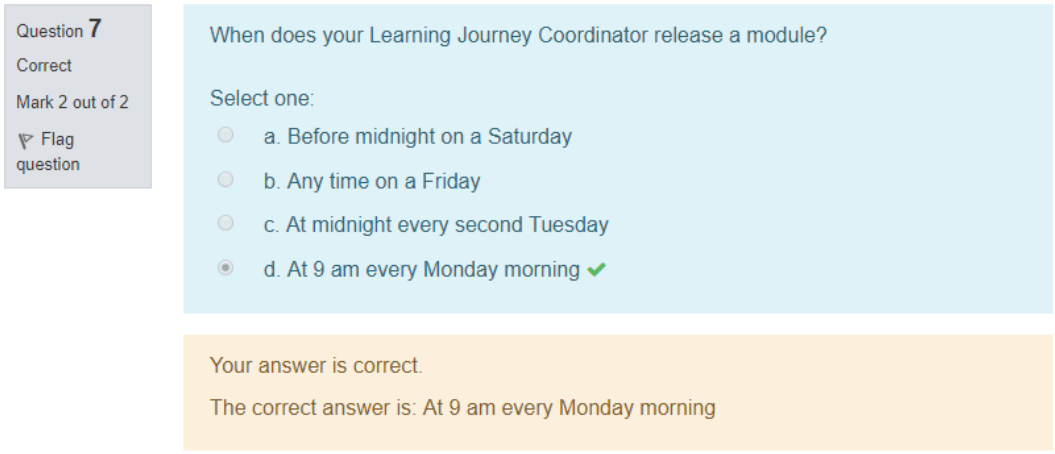


Figure 44: Feedback on a Correct Answer

When students get the answer correct then the feedback provided confirms that the student got the answer correct and reiterates the correct answer. This is shown in figure 44.

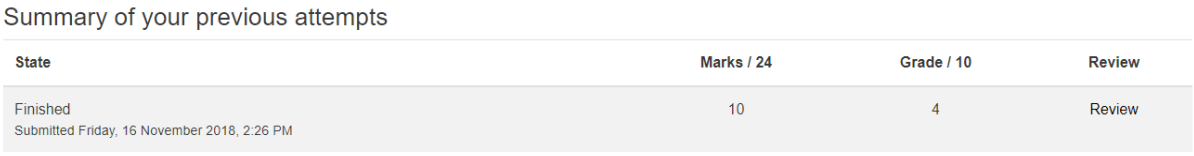


Figure 45: Summary of Previous Attempts

The course module assignments are set up whereby they allow for students to have multiple attempts to the assignment. As depicted in figure 45, a summary is shown to learners to see a history of their previous attempts. It also allows students to review their attempt, thus, allowing them to see where they went wrong and what they can improve on.

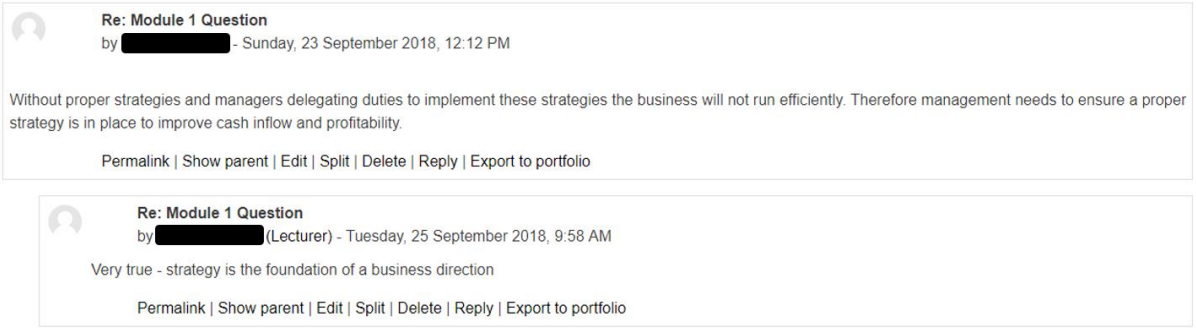


Figure 46: Snippet of a Discussion Board

The instructor also provides students with feedback on the discussion board in terms of the answer the student provides. Where a student answers well the instructor will respond with positive feedback and where the answer is not quite right the instructor will guide the students through discussion to the correct answer. This is depicted in figure 46.

4.4.4.8. Student Feedback Frequency

All three online short courses were allocated a score of 5 for the component *student feedback frequency* as feedback timeous and regular.

Within all three courses, the feedback for the three types of assessments i.e. progress checks at the end of each topic, assignments at the end module and the discussion board interactions all yield immediate feedback. The *Business Communication Skills* course does contain essay type questions within the module assignments. Feedback for the multiple-choice type questions in these module assignments are provided immediately, however, feedback on the essay type questions are provided within one week by the instructor. This is a good turnaround time as students can use this feedback to complete the next activity while not repeating the same mistakes.

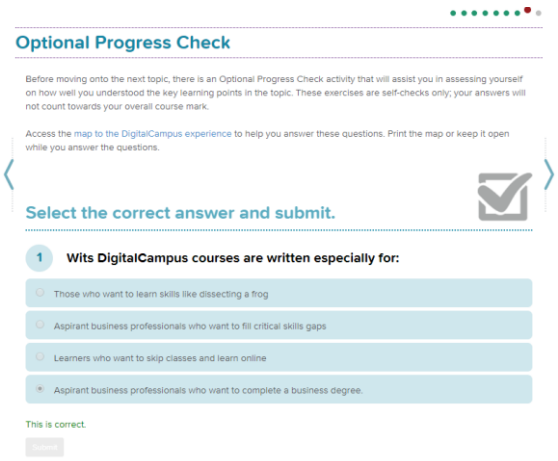
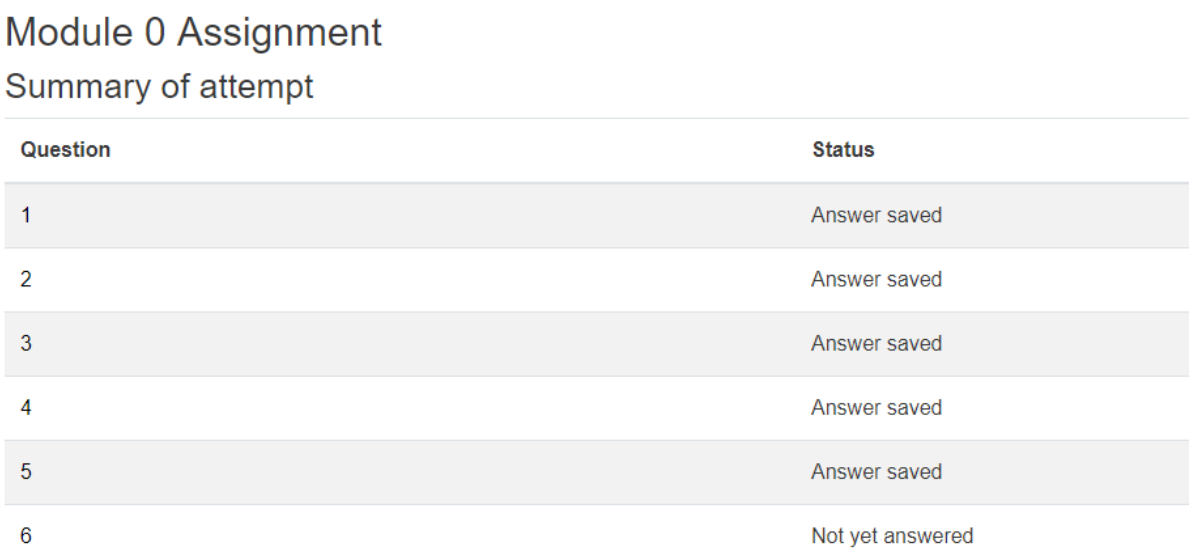


Figure 47: Screen Displaying and Optional Progress Check

An assignment quiz is provided at the end of all topics. It's a quick quiz that allows students to complete a quick knowledge check. Once students answer a question they click submit and immediate feedback is provided to them. If the answer is correct the student is provided with the comment "This is correct" and if the student gets the answer incorrect then they are provided with the comment "This is incorrect. Try again." This is shown in figure 47.



Module 0 Assignment

Summary of attempt

Question	Status
1	Answer saved
2	Answer saved
3	Answer saved
4	Answer saved
5	Answer saved
6	Not yet answered

Figure 48: Quiz Submission Page

Prior to students submitting their quiz or assignment, they receive a summary of their attempt. Immediately students can see which questions they have not answered and go and answer them immediately as depicted in figure 48.

4.4.4.9. Assessment Authenticity

All three online short courses were allocated a score of 4 for the component *assessment authenticity*. Due to the nature of the three courses subjects, most assessments contain a segment that is designed to mimic the real world and workplace environments. The assessments consist of both theoretical and practical type questions. For example, questions relating to the financial statements test students on the theoretical concepts such as what depreciation and a more practical note the calculation of depreciation and accumulated depreciation. These concepts, like others, are required in the real world.

Perhaps the fact that this is a course aimed to teach business professionals the results would be different should be we evaluating a lower grade in schools' course.

4.4.4.10. Assessment Design

All three online short courses were allocated a score of 4 for the component *assessment design*. The assignments across the three courses contain a variety of both lower order and higher order thinking questions.

In the *Finance for Non-Financial Managers* course, the lower order questions determine the conceptual understanding of the students. For example, "An income statement only generates a profit or a loss and has no impact on cash flow." Higher order questions require students to

apply more than recall from memory. For example, an income statement is provided, and the question reads “Variance actual to budget for gross profit.”

It is important for assessments to contain both lower order and higher order questions as it allows students to develop their skills in knowledge, comprehension, simple application type questions, higher order thinking questions, analysis and problem-solving.

4.4.4.11. Learner Progress

All three online short courses were allocated a score of 5 for the component *learner progress* as there is a well-structured and up to date gradebook allowing the student to track their own progress.

The three courses provide students access to a gradebook. The gradebook contains the grades for all the assessments, the weighting it carries thus allowing students to know their current status. A snippet of a student’s marks is depicted in figure 49.

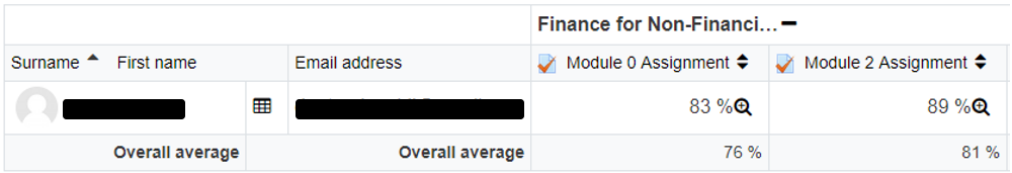


Figure 49: Gradebook Snippet

The gradebook is helpful as it allows students to have an overview of the modules they need to revisit and the modules that they excel in. It also allows for the instructor to identify the module and/or topics that he/she needs to revisit or perhaps discuss in the discussion board.

4.4.4.12. Faculty and Course Feedback

All three online short courses were allocated a score of 3 for the component *faculty and course feedback* as students are provided with sufficient opportunities to give feedback.

All three courses allow for students to provide feedback. As depicted in figure 50, the questions asked deals with whether students’ expectations were met, empowerment of the course, benefits of the course, overall satisfaction of the course, overall satisfaction with the service received.

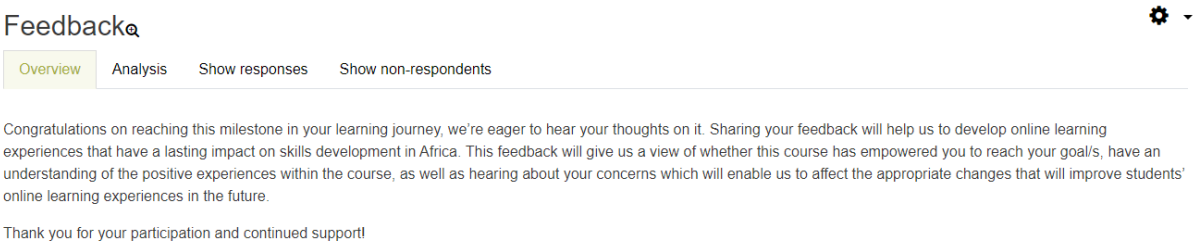


Figure 50: Feedback Home Screen

Once the faculty is provided with feedback as depicted in figure 51, they can use this to improve on their developmental areas.

User picture	First name / Surname	Date	How did this course satisfy your initial expectations/needs?	How has DigitalCampus empowered you in achieving your future goals?	List any additional benefits you derived from this course?	What is your overall level of satisfaction with the course	What is your overall level of satisfaction with the service you received from the DigitalCampus team?	How likely are you to recommend a DigitalCampus online course to others?
	[redacted]	Monday, 12 November 2018, 5:25 PM	I very much satisfied. I learnt concepts that I can use on my day to day	I feel empowered, although I am not a financial guy, I feel I can contribute immensely to by business operation	I can, with no risk set up my own business, assess business risk and be able to interpret a financial statement	7/	9/	10/Extremely satisfied
	[redacted]	Monday, 12 November 2018, 11:44 PM	informative, helpful in expanding business in areas that it lacks especially the financials.	SupportiveWits team The students responses to some questions on the forum	The Wits team a phone call away and prompt email responses.	7/	8/	8/

Figure 51: Some of the Feedback Responses by Students

Other types of feedback that can be requested include feedback on the course content, accessibility of the course, affordance of the online technology, instructor and the faculty.

4.4.5. Effective Use of Technology

Effective use of technology refers to the successful integration of technology into the online course and its use in a variety of forms that help students to achieve the course goals and objectives.

4.4.5.1. Current Technology

All three online short courses were allocated a score of 4 for the component *current technology* as the courses are up-to-date with emerging technologies. The documents used in the three courses such as the PDF document are recent versions of Adobe. Videos used in the course are also of the latest version of its type. The *Business Communication Skills* course uses images of the Microsoft Word ribbon which is also the latest version. The courses themselves are designed and developed on the latest version of the learning management system that the university uses.

4.4.5.2. Application Use

The *Finance for Non-Financial Managers* and *Principles of Management* courses were allocated a score of 1 whilst the *Business Communications Skills* course was allocated a score of 4 for the component *application use*.

There is limited use of external applications for the *Finance for Non-Financial Managers* and *Principles of Management* courses. However, the use of certain elements that are contained within the external applications is well incorporated into these two courses content itself. For example, when teaching budgeting there is no use of Microsoft Excel. Perhaps activities can be introduced that make use of Microsoft Excel, thus, reinforcing the use of the concepts and these external applications. The *Finance for Non-Financial Managers* final exam makes use of Microsoft Excel. It would be better if this is consistent throughout the online course and not just for the final exam.

The *Business Communications Skills* course makes adequate use of some external applications such as Microsoft Word, Microsoft PowerPoint, Microsoft Excel, and email. The use of Microsoft Word is encouraged when completing a report. For example, the course shows students how to use Microsoft Word to write a report and use Microsoft Word's built-in functionalities such as the generation of a table of contents or formatting. Another example is the use of email and the built-in functionality of email signatures.

4.4.5.3. Web Tools

All three online short courses were allocated a score of 2 for the component *web tools*. There is limited use of web tools across the three online courses. A variety of web 1.0 tools are used such as email for reminders or notifications. However, web 2.0 tools and web 3.0 tools are not used as much as they can be.

Some web 2.0 and web 3.0 tools that can be introduced into the three courses are blogs, wikis, online journals, podcasts and videocasts, mobile learning such as the use of instant messaging. Some web 3.0 tools that can be used are the creation of virtual participation, use of cloud-based applications such as Google Drive or OneDrive or any other applications that are appropriately used to ensure effective learning.

4.4.5.4. Technology Orientation

All three online short courses were allocated a score of 4 for the component *technology orientation*. The technologies that are used in the three courses create student centred instruction and are not limited to instructors only using technologies to replicate the traditional face-to-face instruction making students recipients of content only.

The courses consist of more than recorded videos of someone's writing on a board and explaining concepts. It consists of different multimedia with a variety of ways that it is used. For example, there are videos with the instructor recorded to teach concepts with a variety of graphics and animations to complement the content that the instructor is explaining.

Students are involved in an interactive method that promotes a more learner centred approach. Thus, enabling learners to be involved in active learning allowing them to be more hands-on and involved rather than just absorbing information.

4.4.5.5. Technology Support

All three online short courses were allocated a score of 5 for the component *technology support* as technology support is quite comprehensively provided. There are orientation videos and manuals provided in the introductory module (module 0) of the three courses. A snippet of the video can be seen in figure 52. The Quality Matter model encourages the providing of learner support (Quality Matters, 2014).



Figure 52: Administrative Support Orientation Video Snippet

Here it is explained to students that administrative support is provided by the course coordinator. The course co-ordinator assists students with all their queries. There are also learning management personnel, customer support and learning journey managers to assist students accordingly.

4.4.5.6. Technical Support

All three online short courses were allocated a score of 5 for the component *technical support* as in-depth technical support is provided.

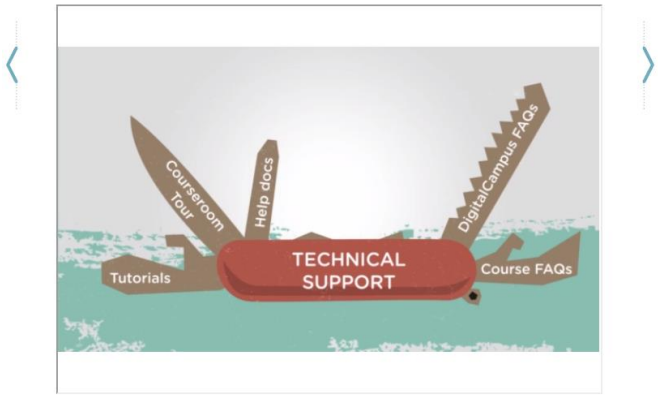


Figure 53: Technical Support Mechanisms

Students can access several technical support mechanisms within all three online courses. This is shown in figure 53. These include the digital campus course room tour, tutorials, help documentation, FAQs that are related to the course that the students have registered for and FAQs that cover general queries. Figure 54 depicts the FAQ page. Students can also receive support via chat, email or phone.

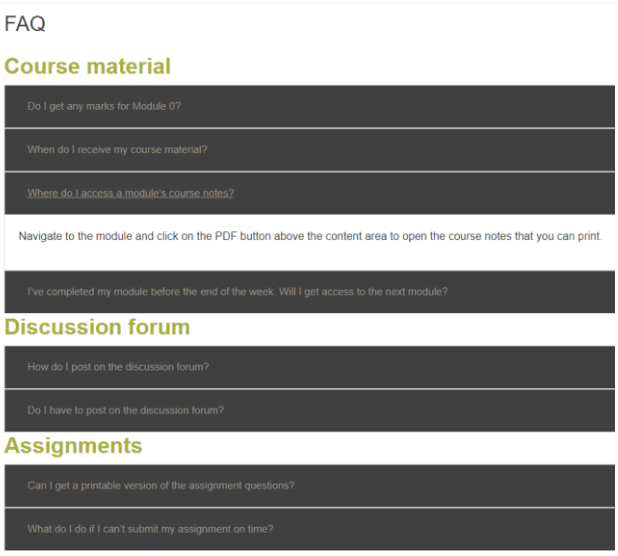


Figure 54: FAQs Page Extract

There are orientation videos and manuals provided in the introductory module (module 0) of the course. Here it is explained to students that academic support is provided by their instructors and tutors. These content experts also monitor the discussion boards and provide helpful feedback for content related questions, opinions, and reflections. Figure 55 depicts a snippet of the video for academic support.

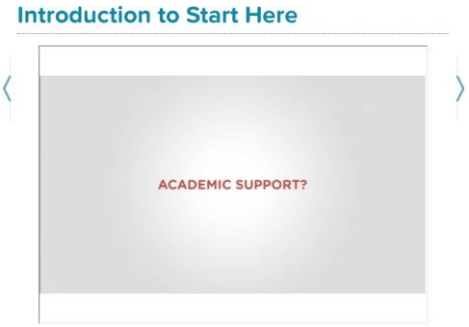


Figure 55: Academic Support Orientation Video Snippet

4.4.5.7. Technical Support Turn Around Time

All three online short courses were allocated a score of 5 for the component *technical support turn around time* as assistance with technical support is given to students immediately or within 12 hours of the query.

As soon as students log onto any of the three course sites, they receive a notification as depicted in figure 56. There is an immediate response to handle queries by students. Immediate help can be provided should students require assistance.

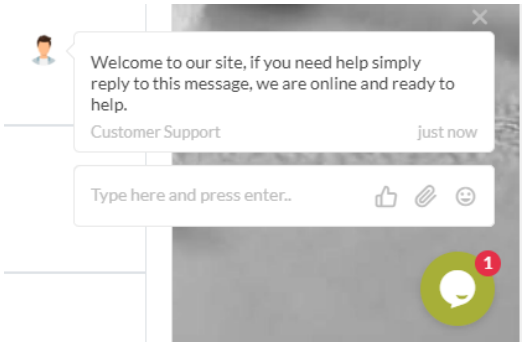


Figure 56: Customer Support Screen

Students even have the option to call during certain hours as depicted in figure 57. When it is off-peak hours i.e. after 17h00 then students can leave a message and are provided with assistance within the next working day.

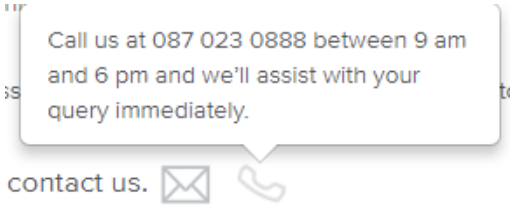


Figure 57: Contact Us Help Bubble Should Students Require Assistance

If students submit a query via email then response time won't be immediate, however, it will still be within one working day which is also excellent. This is illustrated in figure 58

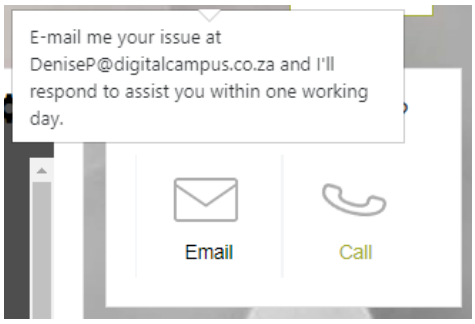


Figure 58: Queries Response Time Bubble

4.4.5.8. Mobility

All three online short courses were allocated a score of 5 for the component *mobility*. All the course content for all the courses is accessible through multiple devices. Multiple devices include a laptop, desktop, tablet, and smartphone. Ishikawa *et al*. (2015) states that student's access the course using their mobile devices in order to prepare.

The three courses are easily accessible to students. Should wish to read or revise or even if the urgently need to complete an assessment and have no access to a laptop or desktop they can complete it at the convenience of their mobile devices.

4.4.5.9. Course Tools

The *Finance for Non-Financial Managers* course was allocated a score of 3 whilst the *Principles of Management* and *Business Communications Skills* courses were allocated a score of 4 for the component *course tools*.

There is enough use of course tools that promote learner engagement. If course tools are used appropriately and effectively then students will be able to actively learn. These tools should provide guidance and ongoing help and support to students, monitor participation and progress, support independent learning and promote student engagement within the various areas of the course.

The platform that this course is designed and developed on allows for a variety of tools. Some of the tools included in this course are the use of a calendar, event lists, feedback functionality, forums, gradebook, participants, quiz and SCORM package.

Other course tools that can be included are the workshop tool, wikis, Turnitin for essay type questions, reports, live chat, assignment, glossary, and blogs.

4.4.5.10. Data Privacy and Security

All three online short courses were allocated a score of 5 for the component *data privacy* as there are thorough systems in place to ensure students data privacy and security. Raitman *et al*. (2005) state that basic security pertaining to integrity and confidentiality needs to be assured. Only students with credentials can access the online course they are registered and enrolled for. Student's data is not available between students but only the instructor. As students have their own credentials i.e. user name and password, they can only see their own profile. Anonymity and confidentiality for individual assignments and feedback are kept.

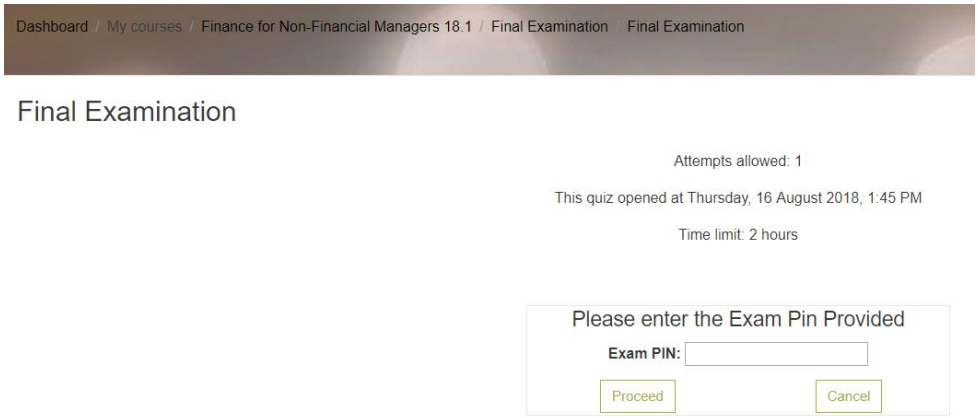


Figure 59: Final Examination Home Screen

The security measure in place prior to accessing the final examination before time is the need for an exam pin. This is shown in figure 59. This is one method of security to prevent students from accessing the examination prior to its scheduled time.

The online exam is monitored via the webcam. It watched students for the full duration of the exam and takes random pictures of the students during the duration of the exam. The online examination technology switches off other programs running on the student's computer, locking them into an online examination portal.

4.4.6. Concluding Remark of Research Findings

The qualitative analysis with the supporting literature and screenshots of the actual online course components explains and motivates the scores allocated to each component of the rubric by the researcher. The detailed analysis lead to two outcomes: (1) to provide feedback to the University of the Witwatersrand on the quality design of the three online short courses, and (2) to determine whether the design framework (the rubric and its features) was adequate or whether after the analysis, the design framework required further improvement.

The results of the first outcome were addressed within the qualitative analysis in chapter 4 and are summarised in chapter 5 within the *Recommendations for the University* section of the current research paper. The results for the second outcome are discussed in this section below.

The technique of double loop learning (Argyris, 2002) is used to confirm the suggested findings and to further determine the validity and reliability of the developed rubric. The results are convergent as the scores of the evaluation are generally high. Overall, there exists congruency between the literature on the quality design of online courses and the research findings for the

majority of the components that were developed into the design of the rubric. This reaffirms the validity and reliability of the rubric.

However, while conducting the evaluations and analysis of the three online short courses there were a minority of points that were found relating to the online environment that was not coordinated well into the design of the rubric. The following adjustments can be made to the rubric to improve the validity and reliability further:

1. Removal of components: *Hardware Specifications*, *Software Specifications*, *Prerequisite Technology Skills*, *Audio Aids*, *Modality Principle - Audio Narration*; and
2. Modification of components: *Synchronous Interaction*, *Descriptive Criteria*, *Appropriate Answers*, and *Content Alignment*.

The components *Hardware Specifications*, *Software Specifications*, and *Prerequisite Technology Skills* should be removed from the rubric as there is a high possibility that these lists are sent, as part of a document, to participants prior to their access of the online course. Therefore, these lists are not necessary within the online course environment itself.

The components *Audio Aids* and *Modality Principle - Audio Narration* should be removed from the rubric as there may not always be standalone audio aids within a course as the majority of recordings are done through video.

The inclusion of the component *Synchronous Interaction* in an evaluation process using the rubric is dependent on whether the course is offered across multiple time zones. There might be an absence of synchronous interactions in the design of online courses as it is difficult to find a common time that is convenient for all participants. If the course is offered in one-time zone, then the component should be included.

The evaluation of the *Descriptive Criteria* and *Appropriate Answers* components is dependent on whether there are long question types present within the assessments of the course being evaluated. If there are long question types present, then these two components should be included in the evaluation process.

The *Content Alignment* component is dependent on the course objectives, however, during the evaluation and analysis of the three online short courses, it was found that there were only module objectives and no course objectives. Therefore, depending on whether course objectives or module objectives are is present within an online course, will determine what the content and assessment of the course are aligned and compared to.

The analysing of the three online courses led to testing and improving the quality design framework, in other words, it improved the validity and reliability of the rubric.

4.5. Conclusion

The chapter began by describing the methods of data analysis and the presentation of data followed by the analysis of data for the three online short courses; (1) Finance for Non-Financial Managers, (2) Principals of Management, and (3) Business Communication Skills. The analysis of data is then followed by a discussion of the data justifying the scores that were provided. This involved the provision of screenshots, descriptions, and implications of the research findings. The findings relate to the research questions that guide the current study. The results of the finding were used to reaffirm and further improve the validity and reliability of the rubric.

5. Conclusion and Recommendations

5.1. Introduction

This chapter concludes the current research paper by providing an overview of the study, answering the research questions, discussing contributions for research and practice, providing recommendations for the University of the Witwatersrand and providing suggestions for future research.

5.2. Overview of the Study

Online learning has been identified as a growing area in the education sector and many educational institutions are expanding their offering of online courses. The objective of the current research study was to determine what constitutes quality design of online courses and the effectiveness of the design of online short courses.

In order to achieve this objective, research was conducted to determine what design quality considerations should be considered when developing online courses. (1) Course information, course structure, course organisation, (2) interaction and communication, (3) multimedia design, (4) assessment and feedback and, (5) effective use of technology were all found to be great contributors towards the design quality of online courses. This resulted in the development of a valid and reliable evaluation instrument that enabled the assessment of the design quality for online short courses. The evaluation instrument is the development of a rubric containing best practice evaluation criterion used to evaluate and measure the effectiveness of the design quality of online courses for teaching and learning.

The rubric was used to complete an in-depth evaluation of the design of three online short courses at the University of the Witwatersrand. The three courses evaluated were (1) Finance for Non-Financial Managers, (2) Principals of Management, and (3) Business Communication Skills. Quantitative data was collected from the scoring of the online short courses using the rubric during the evaluation process and simple descriptive analysis was conducted using these scores. Qualitative descriptive evaluations of the online short courses were also done. Both the quantitative and qualitative aspects of the online course analysis were integrated to ascertain a summative conclusion of the three online courses and also whether the rubric, as a design framework, needed further improvement or not.

The analysis and summative conclusion assisted in determining the degree of quality of the three online short courses. Additionally, possible gaps that existed in the design of the three

online short courses were identified and presented to the designers and developers of online short courses at the University of the Witwatersrand.

While evaluating and analysing the three online short courses, the researcher was simultaneously evaluating the dimensions, components, and criteria of her own designed rubric. The researcher found that overall there exists congruency between the literature on the quality design of online courses and the research findings for most of the components that were developed into the design of the rubric. This reaffirms the validity and reliability of the rubric. However, while conducting the evaluations and analysis of the three online short courses there were also a few points that were found relating to the online environment that was not coordinated well in the design of the rubric. These were discussed in chapter 4 and these components can be updated to the rubric to improve the validity and reliability of the rubric.

5.3. Overview of the Results

To meet the objective of the current study the following research questions were developed and addressed:

What constitutes quality design of online courses?

How can the data collected from the rubric during the evaluation process provide feedback on the actual design of the course?

Is the developed rubric a valid and reliable instrument?

Each of these three research questions is addressed in the next section.

5.3.1. Quality Design Considerations

What constitutes quality design of online courses?

In order to answer the research question, the researcher first determined the components that provide quality to the design of online courses by conducting a thorough literature review. A framework on what constitutes quality design of online courses were developed based on the use of previously developed theories, models, tools and studies on the design of online courses.

Chickering and Gamson (1987) seven principles for undergraduate teaching, Quality Matters (QM) model and the Sloan-C Five Pillars of Quality in Distance Learning model were used as a basis and was expanded with other existing models, frameworks and prevailing literature.

The researcher found that the dimensions (1) course information, course structure and course organisation, (2) interaction and communication, (3) multimedia design, (4) assessment and feedback, and (5) effective use of technology of online courses to be important contributors towards the quality design of online courses. The researcher used these dimensions to determine the various components that make up each of these dimensions that embodies quality design. These were used to develop a quality design framework. The developed rubric was used to evaluate and conduct an analysis on three online short courses to confirm what constitutes quality design of online courses. The detailed analysis assisted in testing and improving the validity and reliability of the quality design framework. The diagram, depicted in figure 60, summarises the dimensions and its revised components that constitute quality design of online courses.

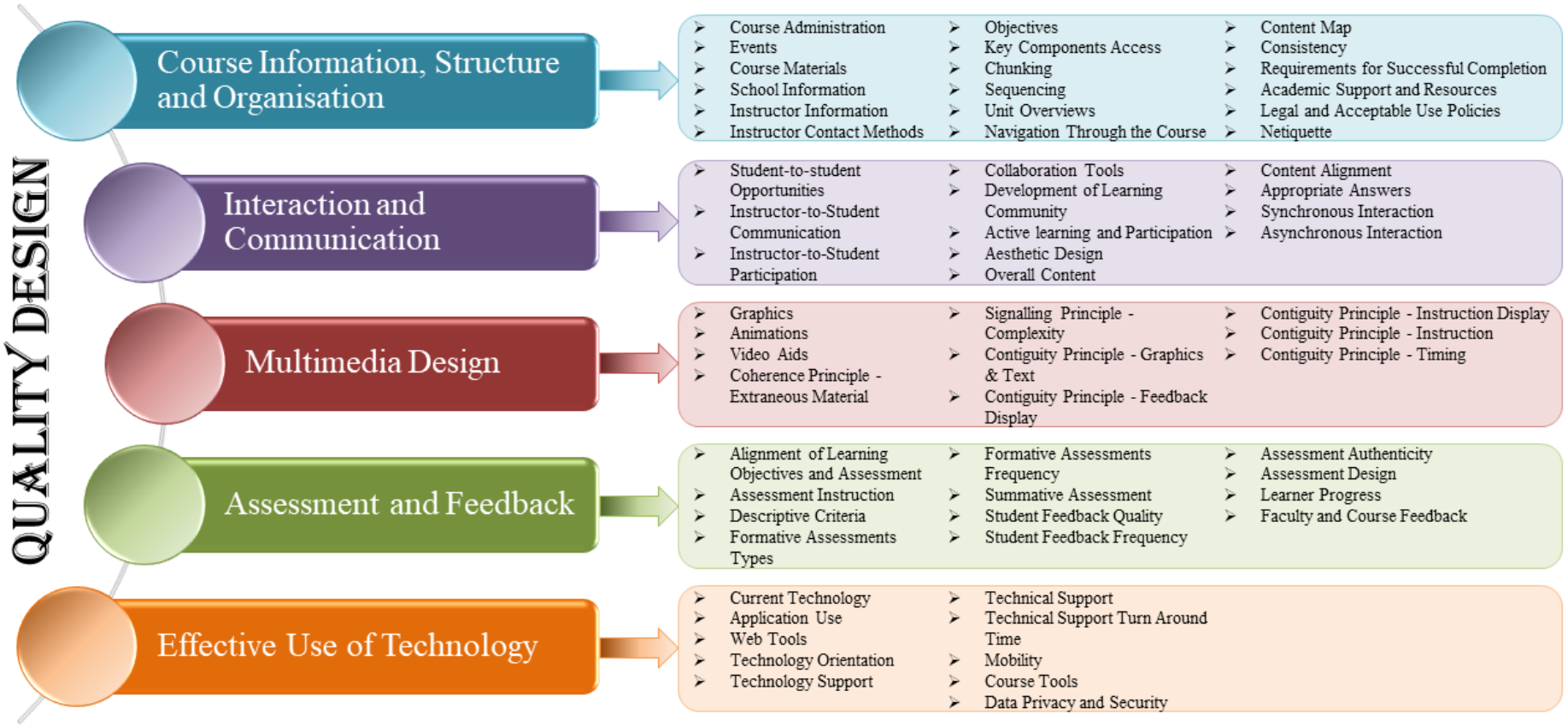


Figure 60: Summary of dimensions and revised components of what constitutes quality design of online courses

5.3.2. Feedback from the Evaluation Process

How can the data collected from the rubric during the evaluation process provide feedback on the actual design of the course?

Conclusions and feedback that can be drawn by the relevant stakeholders from the data of the rubric during the evaluation process on the actual design of the course include, *inter alia*:

- Identifying any gaps within the design of their online course;
- Enabling the correct use of instructional design theory into the design of the course practically;
- Identifying areas that may limit learning;
- Ensuring design decisions are not made instinctively, instead, based on modern learning theories and previously developed research;
- Confirming that the correct components exist within the design of the online course; and
- Recognising the areas of the online course that require further attention.

5.3.3. Valid and Reliable Instrument

Is the developed rubric a valid and reliable instrument?

Initially, the literature on the design of online courses was focused on. A framework was developed based on the use of previously developed theories, models, tools and studies on the design of online courses. These theories, models, tools, and studies were selected as they possess aspects that provide a basis of a framework for the researcher to use as direction for a quality design rubric. Chickering and Gamson (1987) seven principles for undergraduate teaching, Quality Matters (QM) model and the Sloan-C Five Pillars of Quality in Distance Learning model were used as a basis and was expanded with other existing models, frameworks and prevailing literature.

The initial framework was reviewed by a subject expert who provided feedback on the design of the rubric. The rubric was then tested in a pre-test and a pilot test. This informed the researcher if the rubric provides valuable information, if the dimensions and components selected were correct, if the criterion was understandable and whether to remove unnecessary dimensions or components. The main adjustments that were made to the design of the initial rubric after the pre-test and pilot test were (1) the introduction of a zero score as the researcher found during the pre-test that some of the components were non-existent in the pre-test course,

(2) the introduction of a standalone example/description column instead of having it as part of the criteria in order to assist in reducing the misinterpretation of the component's measurements, (3) removing duplicating components and criteria that were apparent to be measuring the same concepts, and (4) rewording some criterion to avoid ambiguity.

The adjusted rubric was used to evaluate the three online short courses. The technique of double loop learning (Argyris, 2002) was used to confirm the suggested findings and to determine the validity and reliability of the developed rubric. Overall, there exists congruency between the literature on the quality design of online courses and the research findings for the majority of the components that were developed into the design of the rubric. This reaffirms the validity and reliability of the rubric. However, while conducting the evaluations and analysis of the three online short courses there were a few adjustments that were needed to be made. This included the removal and modification of some components. This can improve validity and reliability further.

The use of well-established quality design theories and evaluation tools, the pre-test, the pilot test, and the analysis of the three online courses led to developing, testing and improving the quality design framework. In other words, it has improved the validity and reliability of the rubric. The validation of the rubric itself was primarily qualitative, however, the reliability of the rubric can be further validated using Cronbach's alpha (Cronbach, 1951).

5.4. Contributions for Research and Practice

The purpose of the current research study was to determine a best practice evaluation criterion and develop a framework to evaluate and measure the effectiveness of the design of online short courses for teaching and learning at the University of the Witwatersrand. In doing so, a new level of quality has been established in the online learning environment.

The current study has several implications for research and practice. The current study contributed to the development of instructional design literature by advancing the development of best practices in terms of quality design and evaluation of online courses. It attempted to close the gap between theoretical knowledge (theory) and practice (reality). Additionally, the current study contributed some comprehensive literature on the evaluation of good quality design to assist in adequately addressing and evaluating the design quality of online courses.

The aim of the current study was to develop an effective, valid and reliable instrument, using best practices of effective quality design that assists in evaluating and measuring the design

quality of online short courses. The rubric offers a framework to evaluate (1) course information, course structure and course organisation, (2) interaction and communication, (3) multimedia design, (4) assessment and feedback, and (5) effective use of technology within online courses. This framework contains a set of benchmarks that will assist instructors and course designers in one of two ways; (1) as a self-evaluation tool for an online course thus advising the appropriate stakeholder on how to revise their current online course, and (2) as a best practice guideline to design a new course within the online environment.

5.5. Recommendations for the University

Overall all three courses scored good averages of above 75%. The dimension that scored the lowest throughout the three online short courses was "Interaction and Communication" and the dimension "Course Information, Structure and Organisation" scored amongst the higher dimensions for the three courses.

The following gaps were identified and possible recommendations were made:

- Students should be provided with the aims, objectives, expectations and key questions of the course in its entirety. This gives students the opportunity to understand what is expected of them resulting in them monitoring their progress and taking more control of their learning;
- The introduction of a content map as it provides a visual representation of the various modules and topics within the course. It shows the organisation of the content and the position of the current module/topic within the context of the entire course;
- Introduce a plagiarism policy. This will assist learners in understanding their responsibilities and the consequences of their actions should they not abide by the rules;
- Introduce netiquette rules within the online courses. Netiquette guidelines should include but are not limited to rules of conduct during discussions, rules of conduct for emails, speaking styles, the appropriate use of language and tone, respect and consideration for other students, issues of privacy and information sharing outside of class;
- Introduce more student-to-student interaction opportunities to promote active student learning. Interactive opportunities that can be included are wikis, blogs, forums, activities with peer review and any other activities that promote active and collaborative learning that reinforce the course content and learning outcomes;

- Introduce more collaboration tools and activities. The courses can include, *inter alia*, group assignments, research assignments whereby peers act as a resource, case studies required to be completed in groups, shared facilitations, activity forums, real-time discussions of course content and discussion questions and work posted by students that require feedback from peers;
- Introduce more active learning and participation activities. Some strategies that can allow students to actively engage can include in-lesson writing, team problem solving, analysis, evaluations, debates, brainstorming activities etc.;
- Introduce examples of 'appropriate' answers and descriptive criteria where essay type questions are used e.g. a rubric or descriptive criterion can be provided;
- Introduce some synchronous activities as collaborative interaction helps students to create a learning community that connects students and allows them to work together towards something. Some examples of synchronous interactions that can be introduced are chat and video conferencing. Students can gain practice discussing course content extemporaneously without looking up basic and declarative information;
- Develop asynchronous interactions more. Some ways to use asynchronous interaction is through email, forums, and blogs;
- More representational graphics, relational graphics, organisational graphics, transformational graphics, and interpretive graphics can be used within the courses, outside of the videos, to illustrate concepts being explained within the text of the content;
- Introduce some audio feedback when providing feedback as it may enhance the provision of feedback;
- A floating screen may be introduced that moves along on the side with the questions relating to information pertaining to the question. This will allow students to avoid scrolling up and down on a page to view information of a question;
- Introduce more formative assessment types such as research projects, group projects, objective tests, discussions, concept tests, quizzes, essays etc;
- Introduce more use of external applications especially because the functionality exists; and
- Introduce more web 2.0 and web 3.0 tools. Some web 2.0 tools that can be introduced are blogs, wikis, online journals, podcasts and videocasts, mobile learning such as the use of instant messaging. Some web 3.0 tools that can be used are the creation of virtual

participation, use of cloud-based applications such as Google Drive or OneDrive or any other applications that are appropriately used to ensure effective learning.

5.6. Recommendations for Future Research

Some recommendations are discussed that could take some of the contents of the current research to the next level. One of the existing limitations in the current study is that the rubric has not been validated statistically. Although the rubric itself uses a quantitative method to evaluate courses, the validation of the rubric itself was primarily qualitative. There is a potential to validate the rubric statistically using Cronbach's alpha (Cronbach, 1951). This will further improve the reliability of the rubric.

Another recommendation would be to examine the framework developed in the current research within a new context. The new context can be an occupation-specific training online course or even a high school online course.

Another extension of this study would be to consider a comparative study between different subject areas or different online courses within the same subject or different contexts, in order to establish the effect of each online course design within each setting. This can contribute towards building a better picture of the online course quality design.

It would also be useful to implement the recommendations made to the University and then assess how the online course design has improved.

References

Albaum, G. (1997). The Likert scale revisited. *Market Research Society*. *Journal*., 39(2), 1-21.

Allen, E. and Seaman, J. (2008) *Staying the Course: Online Education in the United States*, The Sloan Consortium, Available at: http://www.sloan-c.org/publications/survey/pdf/staying_the_course.pdf. [Accessed 12 March 2018].

Anderson, T. (Ed.). (2008). *The theory and practice of online learning*. Athabasca University Press.

Argyris, C. (2002). Double-loop learning, teaching, and research. *Academy of Management Learning & Education*, 1(2), 206-218.

Ascough, R. S. (2011). Learning (about) outcomes: How the focus on assessment can help overall course design. *The Canadian Journal of Higher Education*, 41(2), 44.

Asunka, S. (2008). Online learning in higher education in Sub-Saharan Africa: Ghanaian University students' experiences and perceptions. *The International Review of Research in Open and Distributed Learning*, *9*(3).

Ausburn, L. J. (2004). Course design elements most valued by adult learners in blended online education environments: An American perspective. *Educational Media International*, 41(4), 327-337.

Bento, R. F., & White, L. F. (2010). Quality measures that matter. *Issues in Informing Science & Information Technology*, 7, 61-72.

Bergeron, M. Z., & Fornero, S. C. (2018). Centralized and Decentralized Approaches to Managing Online Programs. *In Leading and Managing e-Learning* (pp. 29-43). Springer, Cham.

Biggs, J., & Tang, C. (2007). Teaching for quality learning at university (society for research into higher education). *Open University Press*.

Biggs, J. (2003). Aligning teaching for constructing learning. *Higher Education Academy*, 1-4.

Black, P. and Wiliam, D. (1998). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan*, 80 (2): 139-148.

Bourne, J., Harris, D., & Mayadas, F. (2005). Online engineering education: Learning anywhere, anytime. *Journal of Engineering Education*, 94(1), 131-146.

Bowen, J. E. (2014). Teaching Naked: How Moving Technology Out of Your College Classroom Will Improve Student Learning by José Antonio Bowen. *Journal of College Student Development*, 55(7), 751-753.

Bruner, J. (1996). Chapter 1 in *The culture of education.* Cambridge, MA: Harvard UP.

Callahan, C., Saye, J., & Brush, T. (2013). Designing web-based educative curriculum materials for the social studies. *Contemporary Issues in Technology and Teacher Education*, 13(2), 126-155.

Carliner, S. (2004). *An overview of online learning*. Human Resource Development.

Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE bulletin*, 3, 7.

Clark, R. C., & Mayer, R. E. (2016). *E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning*. John Wiley & Sons.

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological assessment*, 7(3), 309.

Conole, G. (2013) MOOCs as disruptive technologies: strategies for enhancing the learner experience and quality of MOOCs, *Revista de Educación a Distancia*, 39, 1-17.

Conrad, R. M., & Donaldson, J. A. (2010). *Engaging the online learner: Activities and resources for creative instruction* (Vol. 31). John Wiley & Sons.

Creasman, P. A. (2012). Considerations in online course design. *IDEA paper*, 52.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*. 16, 297-334.

Cross, M. & Adam, F. (2007). ICT Policies and Strategies in Higher Education in South Africa: National and Institutional Pathways', *Higher Education Policy* 20(1), 73–95.

Dahalan, N., Hasan, H., Hassan, F., Zakaria, Z. & Noor, W., A., W., M. (2013). ENGAGING STUDENTS ON-LINE: Does Gender Matter in Adoption of Learning Material Design? *World Journal on Educational Technology*, 5(3), 413-419.

Daukilas, S., Kaciniene, I., Vaisnoriene, D., & Vascila, V. (2008). Factors that Impact Quality of E-Teaching/Learning Technologies in Higher Education. *Quality of Higher Education*, 5, 132-151.

Davis, J.F., Sauber, M.H. & Edwards, E.A. (2011) 'Managing quality in online education: a conceptual model for program development and improvement', *Int. J. Management in Education*, 5(1), 93-108.

Delandshere, G. & Petrosky, A. (1998) "Assessment of complex performances: Limitations of key measurement assumptions." *Educational Researcher*, 27(2), 14-25.

Dole, S., & Bloom, L. (2008). Online course design: A case study. *In EdMedia: World Conference on Educational Media and Technology* (pp. 609-617). Association for the Advancement of Computing in Education (AACE).

Du, Z., Fu, X., Zhao, C., Liu, Q., & Liu, T. (2013). Interactive and collaborative e learning platform with integrated social software and learning management systems. Proceedings of the 2012 International Conference on Information Technology and software Engineering & Digital Media Technology. *Lecture notes in Electrical Engineering* 212, Springer, 11-19.

Eom, S. B., & Ashill, N. (2016). The determinants of students' perceived learning outcomes and satisfaction in university online education: An update. *Decision Sciences Journal of Innovative Education*, 14(2), 185-215.

Farin, N. J., Rahman, A., Manoor, N., & Hossain, S. (2016). Wotcoms: A novel cross-layered web-of-things based framework for course management system. *In ICAICT*.

Flick, U. (2014). *An introduction to qualitative research*. Sage.

Garrison, D. R., & Anderson, T. (2003). E–Learning in the 21st century: A framework for research and practice. London: Routledge/Falmer.

Gedik, N., Kiraz, E., & Ozden, M. Y. (2013). Design of a blended learning environment: Considerations and implementation issues. *Australasian Journal of Educational Technology*, 29(1).

Gray, J. A., & DiLoreto, M. (2016). The Effects of Student Engagement, Student Satisfaction, and Perceived Learning in Online Learning Environments. *International Journal of Educational Leadership Preparation*, 11(1), n1.

Harvey, B. (2003). Investing in technology: *The impact in student learning. ERIC Digest.* ERIC Clearinghouse on Information & Technology. ERIC Document No: ED479843. http://www.ericdigests.org/2005-2/technology.html. [Accessed 27 March 2018].

He, X., WATANABE, M., & ONO, K. (2018). Intention-oriented classification of the visual representation of numerical data. *Journal of the Science of Design*, 2(1), 11-16.

Helm, F., Bradley, L., Guarda, M., & Thouësny, S. (Eds.). (2015). *Critical CALL–Proceedings of the 2015 EUROCALL Conference, Padova, Italy*. Research-publishing. net.

Hew, K. F. (2016). Promoting engagement in online courses: What strategies can we learn from three highly rated MOOCS. *British Journal of Educational Technology*, 47(2), 320-341.

Hrastinski, S. (2008). Asynchronous and synchronous e-learning. *Educause quarterly*, 31(4), 51-55.

Ice, P., Curtis, R., Phillips, P., & Wells, J. (2007). Using asynchronous audio feedback to enhance teaching presence and students' sense of community. *Journal of Asynchronous Learning Networks*, 11(2), 3-25.

Ishida, M., Saitoh, J., Wada, M., & Nagai, M. (2010). Effects of anticipatory anxiety and visual input on postural sway in an aversive situation. *Neuroscience letters*, 474(1), 1-4.

Ishikawa, Y., Akahane-Yamada, R., Smith, C., Kondo, M., Tsubota, Y., & Dantsuji, M. (2015). An EFL flipped learning course design: utilizing students' mobile online devices. In F. Helm, L. Bradley, M. Guarda, & S. Thou sny (Eds.), *Critical CALL–Proceedings of the 2015 EUROCALL Conference, Padova, Italy*. 261-267.

Jacobs, P. (2014). Engaging students in online courses. *Research in Higher Education Journal*, 26, 1.

Johnson, S. D., Palma-Rivas, N., Suriya, C., & Downey, S. (1999). Examination of critical issues for development and implementation of online instruction. *In Proceedings of the Academy for Human Resource Development*. 434-442.

Journell, W. (2008). Facilitating historical discussions using asynchronous communication: The role of the teacher. *Theory and Research in Social Education*, 36(4), 317-355.

Kember, D., & Leung, D. Y. (2008). Establishing the validity and reliability of course evaluation questionnaires. *Assessment & Evaluation in Higher Education*, 33(4), 341-353.

Kim, M.K., Kim, S.M., Khera, O. & Getman, J. (2014). The experience of three flipped classrooms in an urban university: An exploration of design principles. *Internet and Higher Education*, 22, 37-50.

Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.

Lister, M. (2014). Trends in the design of e-learning and online learning. *Journal of Online Learning and Teaching*, 10(4), 671.

Little, B. B. (2009). The use of standards for peer review of online nursing courses: A pilot study. *Journal of nursing education*, 48(7), 411-415.

Loeb, S., Dynarski, S., McFarland, D., Morris, P., Reardon, S., & Reber, S. (2017). Descriptive Analysis in Education: A Guide for Researchers. NCEE 2017-4023. *National Center for Education Evaluation and Regional Assistance*.

Lowenthal, P., & Hodges, C. (2015). In search of quality: Using Quality Matters to analyze the quality of massive, open, online courses (MOOCs*). The International Review of Research in Open and Distributed Learning*, 16(5).

Margaryan, A., Bianco, M., and Littlejohn, A. (2015) Instructional quality of Massive Open online Courses (MOOCs), *Computers & Education*, 80, 77-83.

Matters, Q. (2011). Quality matters rubric standards 2011-2013 edition. *Quality Matters Program*.

Mayer, R. E. (2003). The promise of multimedia learning: using the same instructional design methods across different media. *Learning and instruction*, 13(2), 125-139.

Mayer, R. E., & Moreno, R. (2003). Nine ways to reduce cognitive load in multimedia learning. *Educational psychologist*, 38(1), 43-52.

Mishra, S. (2018). Unit 9: E-Learning. IGNOU.

Moore, J. C. (2005). The Sloan Consortium quality framework and the five pillars. The Sloan Consortium.

Moore, M. G. (1989). *Editorial: Three types of interaction*. 3(2), 1-7.

Moreno, R. (2004). Animated pedagogical agents in educational technology. *Educational Technology*, 44(6), 23-30.

Moskal, B. M., & Leydens, J. A. (2000). Scoring rubric development: Validity and reliability. *Practical assessment, research & evaluation*, 7(10), 71-81.

Muilenburg, M. and Berge, Z. L. (2006). A framework for designing questions for online learning. Academia.edu.

Netemeyer, R. G., Bearden, W. O., & Sharma, S. (2003). *Scaling procedures: Issues and applications*. Sage Publications.

Oldfield, A., Broadfoot, P., Sutherland, R., & Timmis, S. Assessment in a Digital Age: A research.

Page-Bucci, H. (2003). The value of Likert scales in measuring attitudes of online learners. *HKA Designs*. Feb, 20.

Palloff, R. M., & Pratt, K. (2010). *Collaborating online: Learning together in community* (Vol. 32). John Wiley & Sons.

Palloff, R. M., & Pratt, K. (2009). *Assessing the online learner: Resources and strategies for faculty* (Vol. 7). John Wiley & Sons.

Perera-Diltz, D. M., & Moe, J. L. (2014). Formative and summative assessment in online education. *Journal of Research in Innovative Teaching*, 7(1).

Quality Matters. (2014). Quality Matters Rubric Standards 5th Edition, 2014, with Assigned Point Values. (2014). Retrieved from https://www.qualitymatters.org/rubric. [Accessed 20 April 2018].

Raitman, R., Ngo, L., Augar, N., & Zhou, W. (2005). Security in the online e-learning environment. *In Advanced Learning Technologies, 2005. ICALT 2005. Fifth IEEE International Conference on* (pp. 702-706). IEEE.

Ralston-Berg, P., & Nath, L. (2008). What makes a quality online course? The student perspective. *In Proceedings of the 24th Annual Conference on Distance Teaching and Learning.*

Roehrs, C., Wang, L., & Kendrick, D. (2013). Preparing faculty to use the quality matters model for course improvement. *Journal of Online Learning and Teaching*, 9(1), 52.

Rumelhart, D. E., Norman, D. A., (1998). Representation in memory in Atkinson, R. C., Herrnstein, R. J., Lindzey, G., & Luce, R. D. *Handbook of experimental psychology*. Wiley, New York.

Scott, D., & Morrison, M. (2005). *Key ideas in educational research*. A&C Black.

Shackelford, J. L., & Maxwell, M. (2012). Contribution of learner-instructor interaction to sense of community in graduate online education. *Journal of Online Learning and Teaching*, 8(4), 248-260.

Shen, S. T., Prior, S. D., Chen, K. M., & You, M. L. (2007). Chinese web browser design utilising cultural icons. *In International Conference on Usability and Internationalization* (pp. 249-258). Springer, Berlin, Heidelberg.

Shneiderman, B. (2010). *Designing the user interface: strategies for effective human-computer interaction*. Pearson Education. India.

Simpson, J. M. (2012). *Student perceptions of quality and satisfaction in online education*. The University of Alabama.

Smith, R. M. (2014). *Conquering the content: a blueprint for online course design and development*. John Wiley & Sons.

Soloway, E., Guzdial, M., & Hay, K. E. (1994). Learner-centered design: The challenge for HCI in the 21st century. *Interactions*, 1(2), 36-48.

Swan, K., Day, S. L., Bogle, L. R., & Matthews, D. B. (2014). A collaborative, design-based approach to improving an online program. *The Internet and Higher Education*, 21, 74-81.

Taylor, J. M., Dunn, M., & Winn, S. K. (2015). Innovative orientation leads to improved success in online courses. *Online Learning*, 19(4), n4.

Teras, H., & Herrington, J. (2014). Neither the frying pan nor the fire: In search of a balanced authentic e-learning design through an educational design research process. *The international review of research in open and distributed learning*, 15(2).

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Wang, H. (2008). Benchmarks and quality assurance for online course development in higher education. *US-China Education Review*, 5, 31-34.

Wolf, K., & Stevens E. (2007). The role of rubrics in advancing and assessing student learning. *The Journal of Effective Teaching*, 7(1), 3-14.

Young, A., & Norgard, C. (2006). Assessing the quality of online courses from the students' perspective. *The Internet and Higher Education*, 9(2), 107-115.

Zydney, J. (2014). Strategies for creating a community of inquiry through online asynchronous discussions. *Journal of online learning and teaching*, 10(1), 153.

Appendices

A1 – Letters of Course Access Information Sheet and Consent Form



Course Access Information Sheet and Consent Form

Project Title: Using a Developed Valid and Reliable Quality Design Criterion Rubric to Evaluate Online Short Courses: A Case of three Entrepreneurial Online Short Courses at The University of the Witwatersrand (WITS).

Information Sheet

Good day,

My name is Fatima Makda, MEd student from the University of the Witwatersrand School of Education. I am conducting a study to determine a best practices criterion and use this to develop a valid and reliable evaluation rubric. This rubric will enable the actual evaluation of designed courses. I will use this rubric to evaluate the quality of the design of online short courses at the University of the Witwatersrand. Clearance has been granted by the Wits University Human Research Ethics Committee (Non-Medical), Protocol Number: 2018ECE033M to conduct this research.

I would like to request permission for full access to your online short courses to evaluate them for the purposes of this research study. Your involvement in this study is entirely voluntary. Before agreeing to grant me access and permission to evaluate the WITS online short courses, it is important that you read and understand the explanation of the purpose of the study and study procedures. This information sheet is to help you decide if you would like to assist. If you have any questions, please do not hesitate to ask me. If you agree to grant me access and permission to evaluate the WITS online short courses initially, you are still free to remove access at any point and this will not be held against you. If you agree to grant me access, you will be asked to sign this document to confirm that you understand the study and agree to assist

by granting me access and permission to evaluate the WITS online short courses. You will be given a copy to keep.

Purpose of the study

The purpose of the current research study is to determine a best practice evaluation criterion and develop a framework to evaluate and measure the effectiveness of the design of online short courses for teaching and learning. A criterion for course information, course structure and course organisation, interaction and communication, multimedia design, assessment and feedback, and the effective use of technology will be developed into a theoretical framework to compare and evaluate online short courses. This will result in a tool with a set of best practice guidelines that can be useful for online short courses development, benchmarking and evaluation.

Risks and Benefits

There are no known risks involved in participating in this study. The aim of the current study is to determine and create an effective model that assists in the evaluation of the design of online short courses. This model will be used in the future to assess structure, organisation, collaboration and communication, content and quality for future developed online short courses. The framework will contain a set of benchmarks that will assist instructors and/or course designers to formally assess their online short course.

Cost Compensation

Involvement in this study will involve no costs or payments to you.

Confidentiality and Anonymity

All information obtained during the current study will be kept strictly confidential. The researcher will not share Intellectual Property with another person and will be the only one accessing the online short course. When screenshots are captured as part of the current study the instructors name and the course name will be excluded.

Informed Consent

I, _____ (facilitator's name), understand that I am being asked to assist by granting access to WITS online short courses and allowing the WITS online short courses to be evaluated as part of Fatima Makda's required coursework in her Master's in Education.

I hereby confirm that I have been informed and given some general information about this research project, access required and the types of evaluation that will occur.

By signing this form, I agree that;

1. I am voluntarily providing access to my course in this project;
2. I understand that even if I agree to grant access now, I can revoke access to the courses at any time and have the right to withdraw from the research at any time;
3. I have read the Information Sheet;
4. I understand that I will not benefit from participating in this research;
5. I understand that, with my permission, screenshots of my online short course may be used as part of the current study;
6. I understand that signed consent forms will be retained in a secured environment that only the researcher has access to. This will be kept for approximately three years from the date of completion of the researchers Masters in Education;
7. I can ask any questions I might have, and I understand that I am free to contact the researcher with any questions I may have in the future; and
8. I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

I have read the information above. By signing below and returning this form, I am consenting to grant access to WITS online short courses and allow permission for the online short courses to be evaluated for the purposes of this research project as designed by the below-named University of the Witwatersrand student.

Contact Details:

Principal Investigator: Fatima Makda

Telephone Number: [redacted]

e-mail Address: 364441@students.wits.ac.za

Supervisor: Tom Waspe

Telephone Number: 0117173276

e-mail Address: Tom.Waspe@wits.ac.za

Name of Instructor: _____

Date: _____

Place: _____

Signature or mark: _____

Witnessed by:

Name of Witness: _____

Signature: _____

Date: _____

A2 – Ethics Clearance Certificate

Wits School of Education

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

27 St Andrews Road, Parktown, Johannesburg, 2193 • Private Bag 3, Wits 2050, South Africa
Tel: +27 11 717-3221 • Fax: +27 11 717-3009 • E-mail: enquiries@educ.wits.ac.za • Website: www.wits.ac.za

23 July 2018

Student Number: 364441

Protocol Number: 2018ECE033M

Dear Fatima Makda

Application for Ethics Clearance:

Thank you very much for your ethics application. The Ethics Committee in Education of the Faculty of Humanities, acting on behalf of the Senate, has considered your application for ethics clearance for your proposal entitled:

Comparative Design and Evaluation of Online Short Courses Using a Developed Quality Design Criterion Evaluation Rubric: A Case of three Entrepreneurial Online Short Courses at The University of the Witwatersrand

The committee recently met and I am pleased to inform you that **clearance was granted**. Please use the above protocol number in all correspondence to the relevant research parties (schools, parents, learners etc.) and include it in your research report or project on the title page.

The Protocol Number above should be submitted to the Graduate Studies in Education Committee upon submission of your final research report.

All the best with your research project.

Yours sincerely,

M Mabetha

Wits School of Education
011 717-3416

cc Supervisor – Mr Tom Waspe

A3 – The Research Instrument: The Rubric

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Course Information, Structure and Organisation								**0**	**0%**
Course information entails a clear description and overview of the online course. Online courses should encompass clear instruction, clear course objectives and outcomes, a list of requirements and policies, a course schedule, important dates, list of assignments with its deadlines and the required hours – this allows students to have a feel of what to expect and what is expected of them. Course structure and organisation refers to elements of instructional design in an online course which includes the structure, instructional strategies, and the overall set-up of the course.									
Course Administration	No course information is provided.	Limited course information is provided.	Course information for some aspects of the course are provided.	Course information for all key aspects of the course are provided.	Course information for most aspects of the course are provided.	Course information for all aspects of the course are provided.	Course information should include the course schedule, syllabus, outline, scope, grading policy including grading scale and weights, procedure for submission of assignments, preferred modes of communication, types of assessments that will need to be completed.		0%
Events	No information of calendar dates for events are provided.	Little information of calendar dates for events are provided.	Calendar dates for some course events throughout the year are provided.	Calendar dates for all major course events throughout the year are provided.	Calendar dates for most course events throughout the year are provided.	Calendar dates for all course events throughout the year are provided.	Events such as online sessions, task, activities, assignments release and due dates, group projects and exams should be provided.		0%
Course Materials	No list of materials required is provided.	List of materials required is incomplete.	A list of some course materials needed throughout the year is provided.	A list of key course materials needed throughout the year is provided.	A list of most course materials needed throughout the year is provided.	A list of all materials needed throughout the year is provided.	Examples of a textbook required 'Textbooks: Financial Accounting Makda, 1st edition; 2018; Wiley. ISBN: 987-78325693486, headphones, instructional materials.'		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Hardware Specifications	No information of hardware requirements is provided.	List of hardware requirements are incomplete.	A list of some hardware requirements of the course is specified.	A list of key hardware requirements of the course is specified.	A list of most hardware requirements of the course is specified in detail.	A list of all hardware requirements of the course is specified in great detail.	Example of a piece of information relating to hardware specifications 'The course will be conducted online therefore you must have the following hardware: monitor, system unit, disk drive, keyboard and mouse, modem, mic and speakers.		0%
Software Specifications	No information of software requirements is provided.	List of software requirements are incomplete.	A list of some software requirements of the course is specified.	A list of key software requirements of the course is specified.	A list of most software requirements of the course is specified in detail.	A list of all software requirements of the course is specified in great detail.	Example of a piece of information relating to software specifications 'The course will be conducted online therefore you must have the following software: internet browser, word processor, email account and plug-ins like adobe flash and a computer with access to the internet in order to complete this course.		0%
Prerequisite Technology Skills	No information on the prerequisite skills in the use of technology are provided.	List of prerequisite skills required in the use of technology are incomplete.	A list of some prerequisite skills in the use of technology are specified.	A list of key prerequisite skills in the use of technology are specified.	A list of most prerequisite skills in the use of technology are listed.	A list of all prerequisite skills (technology, content) are listed.	Some basics of Microsoft Word, Microsoft Excel, Microsoft PowerPoint, internet and e-mail, graphics and multimedia may be examples of prerequisite technology skills that are required for a course.		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
School Information	No program, faculty and campus information are provided.	Partial contact information for the school is provided.	Sufficient contact information for the school is provided.	Key contact information for the school is provided.	Most contact information for the school is provided.	All contact information for the school is provided.	- School information relates to the program, faculty and campus contact information. - An example of a contact us page that lists the program, faculty and campus contact telephone number, contact e-mail address and operating times may constitute school information.		0%
Instructor Information	No instructor information is provided.	Partial instructor information is provided.	Sufficient instructor information is provided.	Key instructor information is provided.	Most instructor information is provided.	All instructor information is provided.	Instructor information may include the instructors name, biographical, picture, active email address, active telephone number, availability information, expected response times, photograph, personal information such as likes or hobbies, past experience.		0%
Instructor Contact Methods	No information on contact methods are provided to the students.	Information on contact methods are not clearly stated.	Sufficient information on contact methods are provided.	Key information on contact methods are provided.	Most information on contact methods are provided.	Detailed information on contact methods are provided.	An example of how to contact the instructor might read 'You can contact your instructor through the course messaging tool, by email, directly on the LMS or call during the hours of 08:00-12:00.'		0%
Objectives	Learning objectives are absent.	Vague learning objectives are stated.	Some learning objectives are clearly stated.	Key learning objectives are clearly stated.	Most learning objectives are clearly stated.	All learning objectives are clearly stated.	After completing this course, you should be able to: 1. Assess theories and practices in accounting; and 2. Evaluate alternative accounting cost methods to optimise business solutions.		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Key Components Access	No instruction provided on accessing key components of the course.	Incomplete instruction provided on accessing key components of the course.	Comprehensive instruction provided on accessing some key components of the course.	Comprehensive instruction provided on accessing major key components of the course.	Comprehensive instruction provided on accessing most key components of the course.	Comprehensive instruction provided on accessing all key components of the course.	Instructors may produce a tour or do a scavenger hunt assignment that allows students to explore the different areas of the course or clear statements like 'The various components of the course can be accessed through the various links or for quick access through the navigation drawer on the top left-hand corner.'		0%
Chunking	Content is not chunked into manageable segments.	Chunked content segments are not appropriately sized.	Some course content is chunked appropriately into manageable segments.	Key course content is chunked appropriately into manageable segments.	Most course content is chunked appropriately into manageable segments.	All course content is chunked appropriately into manageable segments.	Existence of modules, lessons and units.		0%
Sequencing	Sequencing of content is non-existent.	Content is not sequenced well, resulting in bad learning pathways.	Logical sequencing of some the course content exists that allows for the best learning pathways.	Logical sequencing of the key course content exists that allows for the best learning pathways.	Logical sequencing of most of the course content exists that allows for the best learning pathways.	Logical sequencing of all the course content exists that allows for the best learning pathways.	The concept of teaching of road signs before teaching how to drive a car.		0%
Unit Overviews	No unit overviews exist.	Unclear unit overviews exist.	Clear unit overviews exist that describe some of the relevant information.	Clear unit overviews exist that describe key areas of the relevant information.	Clear unit overviews exist that describe most of the relevant information.	Clear unit overviews exist that describe all of the relevant information.	Each unit overview contains the objectives, content, activities, tasks, resources, assessments for that unit.		0%
Navigation Through the Course	Navigation through the course is non-existent.	Navigation through the course is challenging.	Some of the course is easy to navigate.	Key areas of the course is easy to navigate.	Most of the course is easy to navigate.	The entire course is easy to navigate.	Navigation indicators are present, clearly identifiable, exists both in text and graphical format e.g. arrow buttons, links are based on visual cues such as colour, underlining, and text directives e.g. Click here.		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Content Map	Content map is non-existent.	Unclear content map exists.	Clear content map exist that contains some of the relevant content of the modules.	Clear content map exist that contains key relevant content of the modules.	Clear content map exist that contains most of the relevant content of the modules.	Clear content map exist that contains all the relevant content of the modules.	The Content Map is a proper visual representation of the various sections in the course. It shows the organisation of the content and the position of the current module/lesson topic within the context of the entire course.		0%
Consistency	No consistency exists whatsoever within the online course.	Most web pages are both visually and functionally inconsistent.	Some of web pages are both visually and functionally consistent.	Key web pages are both visually and functionally consistent.	Most web pages are both visually and functionally consistent.	All web pages are both visually and functionally consistent.	Concepts such as grammar, usage of words, fonts, formatting, page layouts, table layouts, colour, graphic design, icons, buttons, language, terminology need to have consistency.		0%
Requirements for Successful Completion	No information provided relating to successful completion of the course.	Limited information provided relating to successful completion of the course.	Partial information provided relating to successful completion of the course.	Sufficient information provided relating to successful completion of the course.	Adequate information provided relating to successful completion of the course.	Detailed information provided relating to successful completion of the course.	Successful completion information relates to grading criteria and credit hours. Example: Your grade in the course will be determined as follows: Discussion forums 20 % Synchronous events 10 % Written assignments 20 % Final project 20 % Final Exam 30 %		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Academic Support and Resources	No information on academic resources are provided.	Limited information for academic support exists.	Some information for academic support exists.	Sufficient information for academic support exists.	Adequate information for academic support exists.	Extensive information for academic support exists.	Learner support can include course manuals, overviews of the course also on a module level, e-textbook, links to external web sites that also indicate the purpose of the links, glossary, academic resources, links to the educational institution's library, tutoring centre, counselling services and other resources.		0%
Legal and Acceptable Use Policies	No policy statements exist.	Underdeveloped policy statements exist.	Basic policy statements exist.	Sufficient policy statements exist.	Adequate policy statements exist.	Detailed policy statements exist.	- Policies can include plagiarism, privacy and usage policies. - Example of a policy statement 'The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Plagiarism is the use of someone else's work, words, or ideas as if they were your own.' - Example of a policy statement for the act of plagiarism 'Students who are found guilty of plagiarism may face harsh penalties including suspension from the university.'		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Netiquette	Internet etiquette expectations are non-existent.	Internet etiquette expectations are inconclusive.	Internet etiquette expectations are simply stated.	Internet etiquette expectations are sufficiently stated.	Internet etiquette expectations are adequately stated.	Internet etiquette expectations are stated in depth.	Netiquette guidelines may include rules of conduct during discussions, rules of conduct for emails, speaking styles, the appropriate use of language and tone, expectations for grammar, punctuation, text fonts and colours, respect and consideration for other students, issues of privacy and information sharing outside of class.		0%
Comment:									

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Interaction and Communication								**0**	**0%**
Interaction and Collaboration refers to the extent to which there is student-instructor, student-student, and student-content interaction. Interaction denotes communication between and among students and instructors both synchronously or asynchronously. Collaboration is a subset of interaction and refers specifically to those activities in which groups are working interdependently toward a shared result. Interaction and communication addresses how the course design, content, assignments, and technology effectively encourage exchanges amongst the instructor, students, and content.									
Student-to-student Opportunities	No opportunities of interaction are provided within the course for student-to-student interaction.	Limited opportunities of student-to-student interaction exist within the course.	Some opportunities of student-to-student interaction exist within the course.	Sufficient opportunities of student-to-student interaction exist within the course.	Adequate opportunities of student-to-student interaction exist within the course.	Ample opportunities of student-to-student interaction exist within the course.	Student-to-student opportunities need to exist in order to promote learning. Activities such as wikis, blogs, forums, breakrooms, chat, discussion boards, media pages, email and any activity that encourages student interaction, promotes active and collaborative learning that reinforce the course content and learning outcomes.		0%
Instructor-to-Student Communication	No communication exists between instructor and students.	Limited communication exists between instructor and students.	Some communication exists between instructor and students.	Sufficient communication exists between instructor and students.	Constant communication exists between instructor and students.	Thorough communication exists between instructor and students.	Instructor-to-student communication is important. Communications can include announcements and reminders for course events, updated announcements and frequent feedback on course content. An example of an announcement could be 'Hello everybody, my apologies. I am afraid I have to postpone today's online session for the accounting course...'		0%
Instructor-to-Student Participation	The instructor never participates in activities with students.	The instructor rarely guides students in their activities.	The instructor sometimes guides students in their activities.	The instructor guides students in their major activities.	The instructor mostly guides students in their activities.	The instructor always guides students in their activities.	The instructor should participate with his/her students as he/she can provide guidance and facilitation to students for given discussions or tasks.		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Collaboration Tools	No collaborative tools exist within the course.	Limited collaborative tools exist within the course.	Some collaborative tools exist within the course.	Sufficient collaborative tools exist within the course.	Adequate collaborative tools exist within the course.	Extensive collaborative tools exist within the course.	Collaborative tools require a social presence and a sense of shared responsibility. These can include group assignments, research assignments whereby peers act as a resource, case studies required to be completed in groups, shared facilitations, activity forums, real time discussions of course content and discussion questions, work posted by students that require feedback from peers.		0%
Development of Learning Community	No attention has been devoted to building a sense of community in this course.	Little attention has been devoted to building a sense of community in this course.	Some effort is displayed to fostering a sense of community within the course but only minimally.	Most communication activities are well designed and help in building a sense of community amongst the students.	All communication activities are well-designed and help in building a sense of community amongst the students.	Innovative strategies and well designed communication activities that help in building a sense of community amongst the students.	Encouragement given to students to interact and build relationships of trust, demonstrate effective facilitation skills, support and encourage interdependence and creativity.		0%
Active learning and Participation	Strategies that allow students to actively engage in the learning process are not present.	Strategies that exist are limited in allowing students to actively engage in the learning process.	Some strategies exist that allow students to actively engage in the learning process.	Sufficient strategies exist that allow students to actively engage in the learning process.	Adequate strategies exist that allow majority of students to actively engage in the learning process.	Insightful strategies exist that allow all students to actively engage in the learning process.	Strategies that can allow students to actively engage can include in-lesson writing, team problem solving, analysis, evaluation (rather than passive lectures).		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Aesthetic Design	Inconsistent to no use of aesthetic design principles.	Aesthetic design does not present course information clearly.	Use of aesthetic design that presents and communicates some course content clearly.	Use of aesthetic design that presents and communicates key course content clearly.	Use of aesthetic design that presents and communicates most course content clearly.	Use of aesthetic design that presents and communicates all course content clearly.	Course banner is used to identify the course, consistent use of heading styles, lists are created using the bullet or numbered list tool, colour and text are not overpowering, underlining is only used to denote active hyperlinks, text is easy to read, text on pages are at an appropriate length with sufficient white space, text font and size is readable, images are used as support to content and spelling and grammar are accurate.		0%
Overall Content	Content is not cohesive.	Content is unclear.	Some content is cohesive.	Key content is cohesive.	Most content is cohesive.	All content is cohesive.	Course content needs to be well structured, free from spelling and grammar error, appropriate to the topic at hand, detailed yet brief to ensure learning is taking place while avoiding boredom and/or confusion.		0%
Content Alignment	Course content is not aligned with the learning objectives.	Course content is limited in alignment with the learning objectives.	Course content is somewhat aligned with the learning objectives.	Course content is sufficiently aligned with the learning objectives.	Course content is adequately aligned with the learning objectives.	Course content is thoroughly aligned with the learning objectives.	Course content needs to be well structured and aligned with the course objectives.		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Appropriate Answers	No information provided relating to what constitutes an 'appropriate' answer.	Limited information provided relating to what constitutes an 'appropriate' answer.	Little information provided relating to what constitutes an 'appropriate' answer.	Sufficient information provided relating to what constitutes an 'appropriate' answer.	Adequate information provided relating to what constitutes an 'appropriate' answer.	Detailed information provided relating to what constitutes an 'appropriate' answer.	Examples of completion information when introducing oneself to others in the course: To complete this activity you need to start a discussion by clicking the 'Add a new discussion topic' button below and introducing yourself. There is no correct or incorrect answer. An example: 'Hi, my name is John. I am passion-driven, inquisitive and a versatile learner....' Another example might be if students are required to complete an essay and a previously completed essay is provided to them.		0%
Synchronous Interaction	Synchronous interactions are absent from the course.	Synchronous interactions are used mostly for instructor-focused activities.	Synchronous interactions are meaningful but may not take full advantage of the real-time presence of instructor or other students.	Synchronous interactions are meaningful and take advantage of most of the real-time presence of instructor and other students.	Synchronous interactions are meaningful and take full advantage of the real-time presence of instructor and other students.	A plethora of synchronous communication activities that benefit from real-time interactions and facilitate "rapid response" communication.	Examples of synchronous interactions are chat and video conferencing. Students gain practice discussing course content extemporaneously without looking up basic and declarative information.		0%
Asynchronous Interaction	Asynchronous interactions are absent from the course.	Asynchronous interaction strategies exist but do not promote critical reflection or other higher order thinking.	Asynchronous communications are focused primarily on lower levels of thinking (e.g., summarizing, describing, interpreting, etc.).	Asynchronous communications sometimes require reflection or other higher order thinking.	Variety of asynchronous interaction strategies promote critical reflection or other higher order thinking that are aligned with the goals and learning objectives.	Variety of asynchronous interaction strategies promote critical reflection and other higher order thinking aligned with the goals and learning objectives.	- Examples of asynchronous interactions are email and messages posted on online forums that allow for flexibility; - Lower levels of thinking include summarising, describing and interpreting; and - Higher order thinking includes connecting concepts, questioning, encouragement of problem-solving strategies,		0%
Comment:									

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Multimedia Design								**0**	**0%**
Well-designed and well-structured multimedia consists of a variety and combination of pictures, audio, video and text to allow for deeper student learning.									
Graphics	No use of graphics at all.	Use of graphics are for decorative purposes only.	Basic use of the six types of graphics.	Sufficient use of the six types of graphics.	Adequate use of the six types of graphics.	Innovative use of the six types of graphics.	Decorative graphics, representational graphics, relational graphics, organisational graphics, transformational graphics and interpretive graphics are used appropriately.		0%
Animations	No use of animations at all.	Use of animations for decorative purposes only.	Apparent use of animations to primarily display hands-on procedures.	Relevant use of animations to primarily display hands-on procedures.	Adequate use of animations to primarily display hands-on procedures.	Comprehensive use of animations to primarily display hands-on procedures.	- Information animations - role of a video supporting tool; - Narration animation - storytelling to narrate to students in a visual and engaging manner; and look at - Does the animation amplify the point? Illustrate the concepts while being entertaining? Allow learning to be a fun and fulfilling		0%
Audio Aids	No use of audio aids.	Limited use of audio aids.	Standard use of all audio files.	Suitable use of all audio files.	Relevant use of all audio files.	Comprehensive use of all audio files.	Audio is appropriate, the audio quality is clear, and the length is adequate to meet the goals of the task without additional unnecessary information that increases the mental load.		0%
Video Aids	No use of video aids.	Limited use of video aids.	Standard use of all video files.	Suitable use of all video files.	Relevant use of all video files.	Comprehensive use of all video files.	Video is appropriate, the video quality is clear, and the length is adequate to meet the goals of the task without additional unnecessary information that increases the mental load.		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Coherence Principle - Extraneous Material	No use of pictures, sound or words.	There is too much extraneous material.	There is some additional and unnecessary extraneous material.	There is little additional and unnecessary extraneous material.	There is limited additional and unnecessary extraneous material.	There is no additional and unnecessary extraneous material.	To avoid extraneous material designers should introduce visual coherence (the removal of unnecessary words and pictures), sound coherence (removal of unnecessary sounds from a presentation) and word coherence (removal of unnecessary words)		0%
Signalling Principle - Complexity	No use of devices to draw attention of students in complex graphics/animations.	Limited use of devices such as colour or arrows to draw the attention of students in complex graphics/animations as students learn better when attention is drawn to critical parts of the instruction.	Some use of devices such as colour or arrows to draw the attention of students in complex graphics/animations as students learn better when attention is drawn to critical parts of the instruction.	Adequate use of devices such as colour or arrows to draw the attention of students in complex graphics/animations as students learn better when attention is drawn to critical parts of the instruction.	Substantial use of devices such as colour or arrows to draw the attention of students in complex graphics/animations as students learn better when attention is drawn to critical	Comprehensive use of devices such as colour or arrows to draw the attention of students in complex graphics/animations as students learn better when attention is drawn to critical	Use of colour, fonts, diagrams to zoom into focus on critical parts.		0%
Contiguity Principle - Graphics & Text	Text is not used with graphics.	Corresponding text are separated from the graphics.	Some screens are structured; text is placed next to or within graphics rather than below or beside the portion of the graphic it describes.	Key screens are structured; text is placed next to or within graphics rather than below or beside the portion of the graphic it describes.	Most screens are structured; text is placed next to or within graphics rather than below or beside the portion of the graphic it describes.	All screens are structured; text is placed next to or within graphics rather than below or beside the portion of the graphic it describes.	Text and graphics are in correct and close proximity of each other.		0%
Contiguity Principle - Feedback Display	No text feedback is provided.	Text feedback is displayed on a separate screen from the question and answer.	Some insightful text feedback is provided on the same screen as the question and response.	Most insightful text feedback is provided on the same screen as the question and response.	All insightful text feedback is provided on the same screen as the question and response.	All insightful text feedback is provided on the same screen as the question and response. Additionally, audio feedback is provided.	Feedback is provided on the same screen as the question and answer.		0%
Contiguity Principle - Instruction Display	No text instruction is provided.	Instructions to complete activities/exercises are placed on a separate screen from the application screen.	Some text instruction appear on the same screen in which the steps are to be applied.	Most text instruction appears on the same screen in which the steps are to be applied.	All text instruction appears on the same screen in which the steps are to be applied.	All text instruction appears on the same screen in which the steps are to be applied. Additionally, audio instruction is provided.	Instruction is provided on the same screen as the question.		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Contiguity Principle - Instruction	No text instruction is provided.	Instructions are incomplete.	Some text instruction are clear.	Key text instruction are clear.	Most text instruction are clear.	All text instruction are clear.	Instruction that is provided are clear and comprehensive allowing students to understand exactly what is required of them.		0%
Contiguity Principle - Timing	No use of correct timing in the course.	Inappropriate timing of narration for some multimedia used.	Appropriate timing of narration for some multimedia used.	Appropriate timing of narration for key multimedia used.	Appropriate timing of narration for most multimedia used.	Appropriate timing of narration for all multimedia used.	Timing is accurate and efficient in the narration of the various related elements such as slides, video, animation whereby the corresponding words and		0%
Modality Principle - Audio Narration	No use of audio narration with graphics.	Audio is not synchronised with the corresponding graphics.	Precise synchronisation for some audio with corresponding graphics.	Precise synchronisation for all key audio with corresponding graphics.	Precise synchronisation for most audio with corresponding graphics.	Precise synchronisation for all audio with corresponding graphics.	Synchronisation exists between audio and graphics.		0%
Comment:									

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Assessment and Feedback								**0**	**0%**
Assessment focuses on instructional activities designed to measure and evaluate students achieving the learning outcomes and the quality, type and structure of the assessments used. Feedback is used to provide students with verification of their progress in terms of their progress/regress and readiness for future concepts, knowledge and skill gain.									
Alignment of Learning Objectives and Assessment	Assessments are not aligned with the objectives of the course.	Assessments depict limited resemblance and alignment to the learning objectives of the course.	Some assessments align with the learning objectives of the course.	Major assessments align with the learning objectives of the course.	Most assessments align with the learning objectives of the course.	All assessments align with the learning objectives of the course.	Students are assessed on the concepts described in the course learning objectives.		0%
Assessment Instruction	No instruction provided for assessments.	Instructions for assessments are unclear.	Clear instructions for some assessments are provided that assist students in understanding how to complete the assessment.	Clear instructions for key assessments are provided that assist students in understanding how to complete the assessment.	Clear instructions for most assessments are provided that assist students in understanding how to complete the assessment.	Clear instructions for all assessments are provided that assist students in understanding how to complete the assessment.	Instructions need to be clear and in detail. They can include a descriptive question of what is required, the assessment method, the grade/weight it carries, the due date, resources that can be used, submission requirements etc.		0%
Descriptive Criteria	No descriptive criteria provided for the assessments.	Descriptive criteria are limited.	Well-structured descriptive criteria which contains the desired outcomes for some of the assessments are provided.	Well-structured descriptive criteria which contains the desired outcomes for key assessments are provided.	Well-structured descriptive criteria which contains the desired outcomes for most of the assessments are provided.	Well-structured descriptive criteria which contains the desired outcomes for all of the assessments are provided.	A descriptive rubric may be included to guide students on the level of their answers. This will help by giving an example of what constitutes a correct and appropriate answer.		0%
Formative Assessments Types	No formative assessments exist in the course.	Assessment types are limited to only one type of assessment.	Some variety of formative assessments are used throughout the course.	Sufficient variety of formative assessments are used throughout the course.	Adequate variety of formative assessments are used throughout the course.	Wide variety of formative assessments are used throughout the course.	Formative assessments can include research project, group projects, objective test, discussions, concept tests, quizzes, essays etc.		0%
Formative Assessments Frequency	No formative assessments exist in the course.	Few formative assessments occur at regular intervals throughout the course.	Occasional formative assessments occur at regular intervals throughout the course.	Multiple formative assessments occur at regular intervals throughout the course.	Frequent formative assessments occur at regular intervals throughout the course.	Continuous and constant formative assessments occur at regular intervals throughout the course.	Formative assessments can include research project, group projects, objective test, discussions, concept tests, quizzes, essays etc.		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Summative Assessment	No summative assessment exists in the course.	Entire summative assessment does not measure student learning.	Some sections of the summative assessment measures student learning.	Enough sections of the summative assessment measures student learning.	Most sections of the summative assessment measures student learning.	All sections of the summative assessment measures student learning.	The final exam contains and tests all the main concepts from the course content. The summative assessment needs to be accurate, cohesive and aligned with the course learning outcomes to evaluate student learning, knowledge, proficiency and skill.		0%
Student Feedback Quality	Feedback is not provided to students in the course.	Comprehensive feedback about student performance is limited.	Comprehensive feedback on some of the assessments for student performance is provided.	Comprehensive feedback on key assessments for student performance is provided.	Comprehensive feedback on most assessments for student performance is provided.	Comprehensive feedback on all assessments for student performance is provided.	- Feedback can be given on written assignments that require a draft whereby the instructor provides suggestions for improvement; - Tests and quizzes that include feedback with each answer; and - Overall formative assessment feedback.		0%
Student Feedback Frequency	Feedback is not provided to students of the course.	Feedback that is provided is infrequent.	Feedback is consistently provided three weeks after the assessment.	Feedback is consistently provided two weeks after assessment.	Feedback is consistently provided one week after assessment.	Feedback is consistently provided immediately to three days after the assessment.	It is important for students to receive timeous and regular feedback as it aids in there learning process by showing them their strengths and developmental areas as it allows students to know their progress/regress and verify their knowledge.		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Assessment Authenticity	No assessments occur in the course.	Assessments contain limited to no evidence of authenticity.	Some assessments contain a segment that is similar to the real world and workplace environments.	Key assessments contain a segment that is similar to the real world and workplace environments.	Most assessments contain a segment that is designed to mimic the real world and workplace environments.	All assessments contain a segment that is designed to mimic the real world and workplace environments.	Assessments contain some practical work or theory that may be applied to the real world for example in an accounting course the actual financial statements of an existing company are provided to the students to work with or in an Economic and Management Science course the assessment deals with the budget speech.		0%
Assessment Design	No assessments occur in the course.	Assessments contain only lower order thinking questions.	Assessments contain mostly lower order thinking questions.	Assessments contain both lower order and higher order thinking questions equally.	Assessments contain both lower order and higher order thinking questions with a variety of both lower order and higher order thinking questions.	Assessments contain a balanced variety of both lower order and higher order thinking questions.	- Low order questions include knowledge, comprehension and simple application type questions. - Higher order questions include higher order thinking questions, analysis, problem-solving.		0%
Learner Progress	No gradebook (or something equivalent) is present in the course.	The gradebook (or something equivalent) is not updated.	The gradebook (or something equivalent) is updated but only at the end of each semester/term to allow students to track their own progress.	The gradebook (or something equivalent) is updated during the semester/term to allow students to track their own progress.	The gradebook (or something equivalent) is always updated timeously to allow students to track their own progress.	Well-structured and up to date gradebook (or something equivalent) is available to allow students to track their own progress.	The gradebook should contain the grade for all the assessments, the weighting it carries thus allowing students to know their current standing.		0%
Faculty and Course Feedback	No opportunities exist for students to provide feedback.	Students are offered limited opportunities to provide feedback.	Students are provided with enough opportunities to give feedback.	Students are provided with sufficient opportunities to give feedback.	Students are provided with adequate opportunities to give feedback.	Students are provided with multiple opportunities to give feedback.	Feedback can be provided on course content, accessibility of the course, ease of online technology, the instructor and the faculty.		0%
Comment:									

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Effective Use of Technology								**0**	**0%**
Effective use of technology refers to the successful integration of technology into the online course and its use in a variety of formats that help students to achieve course goals and objectives.									
Current Technology	No use of modern technology integrated within the course.	Outdated technologies used within the course.	Somewhat up-to-date with emerging technologies.	Mostly up-to-date with emerging technologies.	Up-to-date with emerging technologies.	Current with emerging technologies which are compatible with different systems that only requires a standard plug-in.	The technologies used in the online environment needs to be the most efficient and effective for example the use of word 2003 compared to word 2010 or the use of applications that are outdated for example Microsoft Paint.		0%
Application Use	No use of applications within the course.	Limited use of application software.	Some rational use of application software.	Sufficient rational use of application software.	Adequate rational use of application software.	Exceptional rational use of application software.	- The correct use of applications such as word-processing, spreadsheet and presentation software must be in place for example if the course presents a budget with amounts and totals then it should be done in Microsoft Excel rather than Microsoft Word. - Making use of compressed folders or files to reduce downloading time; and - Delivering audio, video, spreadsheets, word-processing etc in a common file type such as xls, real player, doc etc.		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Web Tools	No use of web 2.0 and web 3.0 tools.	Limited use of Web 1.0, Web 2.0 or Web 3.0 applications.	Some use of Web 1.0, Web 2.0 or Web 3.0 applications.	Sufficient use of Web 1.0, Web 2.0 and Web 3.0 applications.	Adequate use of Web 1.0, Web 2.0 and Web 3.0 applications.	Comprehensive use of Web 1.0, Web 2.0 and Web 3.0 applications.	A variety of Web 1.0 (basic applications, World Wide Web, tutorials, simulations, chat, email), Web 2.0 (blogs, wikis, online journals, podcasts and videocasts, mobile learning such as the use of instant messaging and social networking sites such as Facebook, Twitter, YouTube etc.) and Web 3.0 (creation of virtual participation, use of cloud-based applications such as Google Drive, OneDrive) applications are appropriately used to ensure efficiency in		0%
Technology Orientation	No use of technologies to create student centred instruction.	No expectation of students to make use of available tools within the Learning Management System.	Use of technologies are by instructors only, thus making students recipients of content only.	Use of technologies replicate the traditional face-to-face instruction.	Use of technologies to create student centred instruction.	Intuitive use of technologies to create innovative ways that transcend traditional teacher centred instruction to enhance student learning, interactively engage student and support pedagogical aims.	The use of technology is promoting a more learner centred approach enabling learners to be involved in more active learning rather than passive learning where instruction is teacher centred.		0%
Technology Support	No technology support is provided to the students.	Limited technology support is provided to the students.	Technology support is somewhat provided.	Technology support is sufficiently provided.	Technology support is adequately provided.	Technology support is comprehensively provided.	Detailed links are provided for technology and technical support, access to FAQs, the platforms website is provided or contact details to parties that may be able to assist.		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Technical Support	Instructor does not provide technical support.	Limited technical support provided.	Basic technical support provided.	Sufficient technical support provided.	Adequate technical support provided.	In-depth technical support provided.	- Technical support can include orientation training provided and descriptive user manuals provided. - Available demo videos, user manuals, orientation videos, details for technical support and FAQ are made available to students.		0%
Technical Support Turn Around Time	Instructor does not provide technical support.	Assistance takes longer than 48 hours to assist students with technical support and queries.	Assistance with technical support are given to students within 48 hours.	Assistance with technical support are given to students within 36 hours.	Assistance with technical support are given to students within 24 hours.	Assistance with technical support are given to students within 12 hours.	Turnaround time is between 12 to 48 hours.		0%
Mobility	All course content is only accessible on a desktop or laptop.	All course content is only accessible on a desktop and laptop.	Some parts of the course content is accessible through multiple devices.	Key parts of the course content is accessible through multiple devices.	Most course content is accessible through multiple devices.	All course content is accessible through multiple devices.	Devices can include laptops, desktops, tablets and smart phones.		0%
Course Tools	No promotion of learner engagement through course tools.	Limited course tools promote learner engagement.	Some course tools promote learner engagement.	Sufficient use of course tools that promote learner engagement.	Most course tools promote learner engagement.	All course tools promote learner engagement.	Course tools are used appropriately and effectively that enable students to actively learn. These tools should provide guidance and ongoing help and support to students, monitor participation and progress, support independent learning and promote student engagement within the various areas of the course. A variety and appropriate use of multimedia and tools offered on the LMS should be used. Tools may include functionalities such as blogs, forums, wikis, videos, text, audio etc.		0%

	No Information/Non-existent (0)	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Examples/Descriptions	Score Total	Score Percentage
Data Privacy and Security	There is no consideration of data privacy and security.	There are limited systems in place to ensure students data privacy and security.	There are enough systems in place to ensure students data privacy and security.	There are sufficient systems in place to ensure students data privacy and security.	There are adequate systems in place to ensure students data privacy and security.	There are thorough systems in place to ensure students data privacy and security.	Anonymity and confidentiality for individual feedback, assignments, tests and exam integrity.		0%
Comment:									

Level of Measurement

Level of Measurement	Qualifier Quantity
No Information (0)	0%
Poor (1)	≥ 1% < 20%
Fair (2)	≥ 20% < 40%
Good (3)	≥ 40% < 60%
Very Good (4)	≥ 60% < 80%
Excellent (5)	≥ 80% ≤ 100%

Please Note:
Where a criterion contains descriptions that relate to a quantity, then the level of measurement needs to correlate with the provided Qualifier Quantity. E.g. if a criterion reads "'Some hardware requirements are specified.", and this criterion is contained within the level of measurement fair, then the quantity qualifier will be ≥ 20% < 40%. This means that when one looks at the aspect of some hardware being specified then they need to see that between 20% to 40% of the requirements for hardware is identified.

Score Summary Per Dimension

	Score Total	Score Percentage
Course Information, Structure and Organisation		
Interaction and Communication		
Multimedia Design		
Assessment and Feedback		
Effective Use of Technology		