Student perceptions of a blended learning approach to paramedic education

by

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Thesis
Submitted in fulfillment of the requirements for the degree of

CA73 Master of Education
School of Education and the Arts
Central Queensland University

12th September 2019

Abstract

Distance education has been used in various forms since the 1800s. The progression of distance education has seen the paper-based system replaced by modern computing technology for a more effective approach. CQUniversity has a long history of offering distance education across a wide range of disciplines. The Bachelor of Paramedic Science is one of the health-related undergraduate courses offered by distance since 2011. At the time, CQUniversity was the only Australian university that offered an entire pre-employment undergraduate course in paramedicine in a distance mode. Currently, there remain only two universities offering a distance course.

Rather than using a standard approach of on-campus lectures and tutorials, CQUniversity uses a blended learning mode which incorporates online (distance) and face-to-face components to the unit. A student enrolled in the blended mode of study views all lectures and resources through a learning management system in an online environment at a time and in a place that suits the student's personal circumstances. In addition to the online management system, blended learning students travel to a university campus to attend an intensive teaching block known as a residential school for several days during the study term. The residential school activities include tutorials to learn and practise clinical skills, simulated paramedic scenarios and practical assessments.

This research is concerned with the perceptions of the end user of this non-traditional blended learning approach to paramedic education, the students undertaking the 'Foundations of Paramedic Clinical Practice' unit. The unit is the first of the clinical units in the undergraduate course and teaches basic patient care assessments and life-saving skills and procedures. It is essential students can gain the knowledge and skills in this unit as it provides an integral foundation for more advanced skills and procedures later in the course.

Acknowledgements

I would like firstly to acknowledge my supervisors, Associate Professor Julie Fleming and Dr Linda Pfeiffer. Without the continued and unwavering guidance and support of both of my supervisors, I do not believe that I could have completed this journey. I don't think either of my supervisors realised the challenge they had undertaken in moulding an inexperienced paramedic researcher into someone that could present a completed thesis for examination. My heartfelt thanks to you both for what you have helped me achieve.

To my husband, Paul and my daughter, Amy who have supported me, cheered me on and continue to love me every day despite my shortcomings during this process, I can't thank you enough. Without the love and support you have both shown me, I would not have overcome the hurdles that occurred during this journey, both personal and research related. I love you both more than I can put into words.

Thank you to my wonderful parents who despite not fully understanding what I was doing or why on earth I chose to do it, supported me and cheered me on anyway. My heart breaks you could not see me finish the journey, but I know you would be proud of what I have achieved.

To the rest of my family and my many colleagues who have helped me along the way with information, support or chocolate, all of your efforts have been appreciated and valued. It has definitely been a team effort that I hope to repay in some way in the future.

Declaration

CANDIDATE'S STATEMENT

By submitting this thesis for formal examination at CQUniversity Australia, I declare that it meets all requirements as outlined in the Research Higher Degree Theses Policy and Procedure.

STATEMENT OF AUTHORSHIP AND ORIGINALITY

By submitting this thesis for formal examination at CQUniversity Australia, I declare that all of the research and discussion presented in this thesis is original work performed by the author. No content of this thesis has been submitted or considered either in whole or in part, at any tertiary institute or university for a degree or any other category of award. I also declare that any material presented in this thesis performed by another person or institute has been referenced and listed in the reference section.

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ACKNOWLEDGEMENT OF SUPPORT PROVIDED BY THE AUSTRALIAN GOVERNMENT

This RHD candidature was supported under the Commonwealth Government's Research Training Program/Research Training Scheme. I gratefully acknowledge the financial support provided by the Australian Government.

ACKNOWLEDGEMENT OF PROFESSIONAL SERVICES

Professional editor, Susan Lydia Bond, provided copyediting and proof-reading services, according to the guidelines laid out in the University-endorsed national guidelines, 'The editing of research theses by professional editors'.

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Glossary of terms

A range of terms have been used throughout this thesis. To avoid confusion and ensure clarity in the meaning of the terms, a list of key terms has been included.

Asynchronous	Communication between participants that takes place with a time lag, for example email or online forums.
Blended Learning	A version of distance education which could be described as an integration of online and face-to-face teaching to create a learning environment that supports a variety of learning styles.
Casual academic	Paramedic employed on a short term contract by CQUniversity for the sole purpose of teaching students attending a residential school.
Course	A group of units in a related field of study. In Australia, normally 24 x 6 credit points are required for a three year undergraduate bachelor's degree course.
CQUniversity	Commonly used abbreviation of Central Queensland University.
Discussion forums	Communication areas located in the Moodle page of the unit.
Distance education	"Institution-based, formal education where the learning group is separated and where interactive telecommunications systems are used to connect learners, resources and instructors" (Simonson, Smaldino, & Zvacek, 2014, p. 31).

ELT	Experiential Learning Theory
Higher Education Institution	Government and private providers that offer tertiary level education, for example, universities
LMS	Learning Management System. A software application used for the delivery of educational courses. CQUniversity uses Moodle as the Learning Management System.
Mean	The average measure in a dataset. Mean is calculated by adding all of the datapoints and then dividing by the number of datapoints.
Moodle	Learning Management System (LMS) used by Central Queensland University
NVivo	Qualitative data analysis software package
QATB	Queensland Ambulance Transport Brigade. This was the former name of the state run ambulance service now known as Queensland Ambulance Service.
RASS	Researcher-administered student survey. Anonymous online survey administered by the researcher after the end of the term 2 2016 teaching period.

Residential school	Intensive block of teaching undertaken on a university campus from three to five days in length per unit.
SD	Standard Deviation - a statistical measure of the amount of variation in a dataset.
SPSS	Statistical Package for the Social Sciences – a software package used for the analysis of statistical data.
Synchronous	Real time communication between participants, for example: telephone calls, Blackboard Collaborate sessions, tutorials.
UAUES	University-administered unit evaluation survey available for students to comment on certain aspects of unit. The survey is offered to students every term of study and for each unit undertaken.
Unit	A single component in a course of study.

Chapter 1.

1.1 Introduction

Distance education can be described as “institution-based, formal education where the learning group is separated and where interactive telecommunications systems are used to connect learners, resources and instructors” (Simonson et al., 2014, p. 31)

As a means of providing learning opportunities, distance education has been used in various forms since the 1800s (Sumner, 2000). The paper-based system, or correspondence model that was available in the early days has more or less been replaced by 21st century computing technology, providing a more effective approach for both learner and teacher. A quick desktop search for distance models of learning reveals several different approaches being used in all levels of the Australian educational system from primary school through to tertiary providers. It is well known that distance learning within higher education is firmly established with some of the latest data revealing 31.5% of university students study via distance education (Universities Australia, 2017).

Central Queensland University (CQUniversity) has a long history of offering distance education in a wide range of disciplines. The 2018 Annual Report shows the distance education cohort of students had exceeded 12 200 or almost 37% of the total student enrolments (Central Queensland University, 2018a).

The Bachelor of Paramedic Science is one of the undergraduate courses in the School of Health, Medical and Applied Sciences and has been offered by CQUniversity since 2011. A pre-employment undergraduate course offered in a distance mode is unusual for paramedicine, with distance modes normally offered to currently employed paramedics (Good Education Group, 2019). Despite this, CQUniversity data shows that of the 274 new paramedic students who commenced in 2016, over 59% (n=163) chose to study by distance.

The CQUniversity Bachelor of Paramedic Science holds full accreditation with the Council of Ambulance Authorities (Council of Ambulance Authorities, 2010). While this accreditation ensures public accountability and some academic quality, it does not ensure students have a good learning experience through appropriate curriculum or course design. To bridge the gap between industry accreditation and student experience, universities often used student evaluations to assess components of a unit or course.

Student evaluations administered by universities at the end of each teaching term have been widely used over a number of years to rate the learning experience in a unit of study (Boysen, 2016; S. J. Jones, 2012; M. H. Oermann, Conklin, Rushton, & Bush, 2018; Shevlin, Banyard, Davies, & Griffiths, 2000). M. Oermann (2017) suggests the use of student evaluation data can have limited usefulness for evaluating course requirements such as accuracy, currency or depth of knowledge, the data can be very useful when exploring other components. Data such as student satisfaction levels of the teaching methods, assessment requirements, enthusiasm of academic staff and organisation of unit structure collected from student evaluations, can provide useful information for course improvements (M. Oermann, 2017). Qualitative comments included in the student evaluations allow students the freedom to provide feedback on areas that are important to them (Stupans, McGuren, & Babey, 2016).

This thesis investigates the perceptions of the learning experiences of a group of distance students enrolled in the first practical clinical skills unit in the first year of study in the Bachelor of Paramedic Science at CQUniversity. Information has been analysed from three sources of data to allow for a deeper understanding of the student experience and this will be discussed further in the thesis.

It should be noted the term distance is used throughout the researcher-administered student survey (RASS) and the university-administered unit evaluation survey (UAUES) to describe

the blended learning mode of study. Distance is a term that is commonly used by students to describe off-campus study options.

1.2 Identification and background of the topic

To gain a better understanding of Australian paramedic education development, it is useful to review the history of the profession and how it has progressed to the current era. This will be followed by the transition of paramedic education into a higher education context. Lastly, the environment of the CQUniversity paramedic program will provide context for the remainder of this thesis.

1.2.1 History of Australian ambulance services

While Ambulance services are considered an essential emergency service by Australian modern society, they have developed from humble beginnings. In the 1800s the reported mode of transport for injured people to medical care varied depending on the state of residency. Some treatment and transport was provided by Ambulance Corps embedded in agencies such as the Fire Brigade, Police, Railway or Port Authorities but it wasn't until 1883 that a formal ambulance service was established in Melbourne, Victoria (St John Ambulance Australia, 2018). Other states of Australia followed with Queensland establishing a similar model in 1892 and New South Wales in 1895 (Ambulance Service of New South Wales, n.d.-b; Queensland Ambulance Service, 2016). The remaining states of Australia did not have dedicated Ambulance services until the 1900s (Alexander, 2006; Government of South Australia; St John Ambulance Australia, 2018). Figure 1 shows the timeline related to the establishment of formal ambulance services across Australia.

Figure 1-1 Timeline of ambulance service establishment in Australia

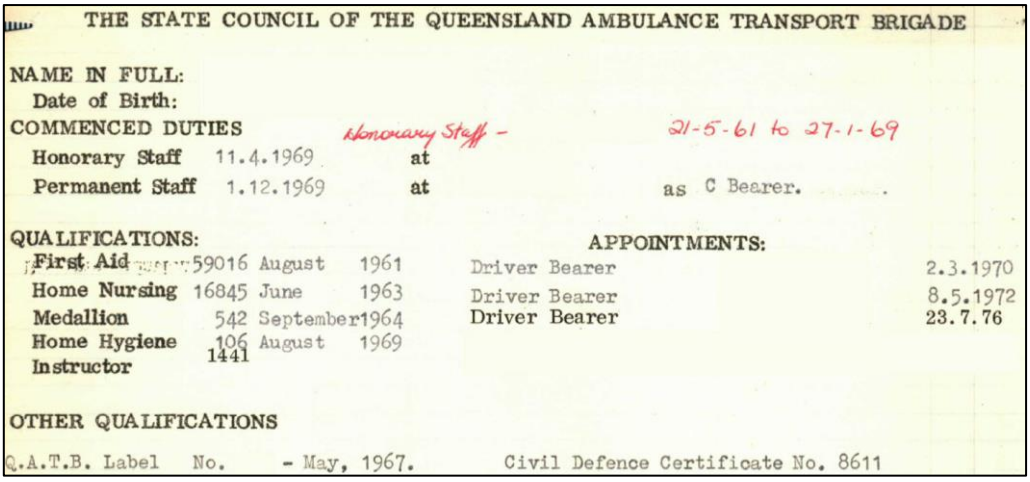
The officers treating the sick and injured in the historical ambulance services provided what would be considered nowadays as very basic care and transportation. The only option to

transport patients to medical care was using wooden doors carried by volunteers or horse drawn hansom cabs. Dedicated motorised ambulance vehicles did not begin to appear in the services until around 1910 (Ambulance Historical Society Museum, 2016). Examples of early ambulance vehicles are shown in Figures 1-2 and 1-3.

Figure 1-2 Queensland Ambulance Transport Brigade vehicle 1920 (Image courtesy of Bonzle.com)

Figure 1-3 Hansom cab (Photo courtesy of Museums Victoria)

At the inception of the Ambulance Services, the educational requirements to undertake a treating role were minimal. A first aid certificate was the primary educational requirement to treat injured and sick people. For many years there was little structure to paramedic training, with many regions relying on supportive local medical officers to provide clinical education and training. It was not until the 1960s that training schools offering standardised patient care education began to be established by the ambulance services (Bradley, n.d.; Government of South Australia; Museums Victoria). Figure 1-4 shows an example of the educational requirements in Queensland during the 1960s.



THE STATE COUNCIL OF THE QUEENSLAND AMBULANCE TRANSPORT BRIGADE

NAME IN FULL:
Date of Birth:
COMMENCED DUTIES
Honorary Staff 11.4.1969 at
Permanent Staff 1.12.1969 at

Honorary Staff - 21-5-61 to 27-1-69
as C Bearer.

QUALIFICATIONS:

First Aid	59016	August	1961
Home Nursing	16845	June	1963
Medallion	542	September	1964
Home Hygiene Instructor	106 1441	August	1969

APPOINTMENTS:

Driver Bearer	2.3.1970
Driver Bearer	8.5.1972
Driver Bearer	23.7.76

OTHER QUALIFICATIONS

Q.A.T.B. Label No. - May, 1967. Civil Defence Certificate No. 8611

Figure 1-4 Example of QATB staff education qualifications file (Photo courtesy of Queensland Ambulance Museum, Wynnum)

The term to describe an officer in the ambulance service has changed many times since the 1880s. Ambulance attendants, stretcher bearers, ambulance officers and paramedics have all been used at different stages in a number of ambulance services. Since the early 2000s, *paramedic* has been the general term used to describe an officer with the primary role of treating patients. While *paramedic* was an accepted term, it was not until 2014 that state governments began to legislate the educational requirements associated with the title. With the introduction of national registration in September 2018, the protection of the paramedic term and mandatory educational requirements to use the paramedic title has further increased (Paramedicine Board of Australia, 2018a).

1.2.2 Paramedic education in higher education

Since the 1960s, most Australian states have transitioned through providing essential education and training from the Ambulance Service's own training centres, to vocational training provided by external educational institutions, such as Technical and Further Education (TAFE) institutes. Recent years have seen a shift of paramedic education towards higher education to a point where, in 2019, pre-employment paramedic training is predominately via university-based education. (Ambulance Service of New South Wales, n.d.-b; Bradley, n.d.; Queensland Ambulance Service, 2019). New South Wales remains the

only ambulance service to offer a trainee pathway for people with no medical qualifications or experience to become a diploma level paramedic (Ambulance Service of New South Wales, n.d.-a).

Paramedic courses have proven to be desirable to students entering the higher education sector with fifteen Australian universities, one New Zealand university and one New Zealand tertiary Institute of Technology offering an undergraduate course in 2018 (Council of Ambulance Authorities Inc, n.d.). Currently, universities hold accreditation with the Council of Ambulance Authorities with a rating of preliminary approval, provisional accreditation or full accreditation. While paramedics are required to be registered with the Australian Health Practitioner Regulation Agency (AHPRA), currently there has been no indication from the registration body of a specific curriculum that universities will be required to offer (Paramedicine Board of Australia, 2018b). Therefore each institution has the freedom to create and present curriculum in any way they choose provided it meets the accreditation standard of the Council of Ambulance Authorities (Council of Ambulance Authorities, 2010).

Despite the lack of a national curriculum, there are commonalities in the way the paramedic courses are delivered. The traditional approach found in the majority of universities offers on-campus lectures followed by practical laboratory sessions.

This approach for paramedic tertiary education can be found at all universities: however, at this point in time, only two universities additionally offer a distance education pre-employment alternative.

1.2.3 Paramedic education at CQUniversity Australia

CQUniversity Australia is one of the fifteen universities offering a three year full time pre-employment undergraduate paramedic science course using traditional on-campus learning and teaching.

CQUniversity has a high ratio of disadvantaged, mature age, Indigenous and first in family students (Central Queensland University, 2016a). With the focus on these student groups, CQUniversity decided to offer an alternative approach for the paramedic course from the commencement in 2011. The alternative approach was designed to be suitable for distance students who were unable to attend a university campus due to location, work, lifestyle or family commitments. At the time, CQUniversity was the only Australian university offering a second learning and teaching approach to deliver a distance course to pre-employment undergraduate students.

The alternative approach was specifically designed and offers video lectures and online resources in the Learning Management System (LMS), called Moodle, for all students. However, to teach the practical clinical skills required in the paramedic field, students studying by distance education are required to attend a university campus for short intensive teaching blocks. The intensive blocks are known within CQUniversity as residential schools and vary in length from three days to five days per practical paramedic unit. It is at the residential schools that students learn, practise and are assessed on the clinical skills required for the unit. Due to the large numbers of students attending the residential schools, the role of teacher/tutor/assessor is undertaken by casual academics while university academics are generally used as supervisors. These casual staff are sourced from industry, primarily Queensland Ambulance Service, where they work as advanced care or critical care paramedics. While this alternative learning and teaching approach to teaching paramedic students has been available for some time at CQUniversity, the perceptions of the end user, that is the students, has not been researched.

It is the perceptions of the first year cohort undertaking the ‘Foundations of Paramedic Clinical Practice’ unit, that is the focus of investigation in this research thesis.

1.3 Research aims, objectives and research questions

Introduction

From a desktop search, there is evidence of the use of common approach to learning and teaching using on-campus lectures and tutorials, in pre-employment undergraduate paramedic courses within Australian and New Zealand universities. However, there is a lack of empirical literature on the effectiveness of a specific approach to blended learning in the paramedic discipline. To ensure the blended learning approach is suitable as an alternative to an on-campus offering, research needs to be undertaken to investigate the change in design and delivery. As a first step, an analysis of the student perceptions of a blended learning approach in the CQUniversity's paramedic course was undertaken. This research has identified strengths and weaknesses from a student's perspective in the current blended learning approach.

1.3.1 Aim

The aim of this research was to investigate the perceptions of students enrolled in the blended learning approach used by CQUniversity's School of Health, Medical and Applied Science to teach pre-employment undergraduate paramedic science students. As a starting point for investigation, the PMSC11002 Foundations of Paramedic Clinical Practice unit was identified as a crucial component for review. Due to the scaffolding of units in the paramedic course, if students are unable to understand the information and skills in this unit, it will impact their ability to perform the advanced skills in later units.

1.3.2 Research questions

This research aims to answer the following research question regarding first year distance students studying the unit in term two, 2016.

1. What are distance students' perceptions of learning and teaching in the unit known as 'Foundations of Paramedic Clinical Practice'?

1.3.3 Objectives

This research examines three sources of data to investigate the perceptions of students' experience of learning and teaching in the first year 'Foundations of Paramedic Clinical Practice' unit of the undergraduate paramedic science course at CQUniversity. This research included:

1. Data from the university-administered student evaluation survey (UAUES)
2. A researcher-administered student survey (RASS)
3. Unit discussion forum data.

The data sources and objectives are shown in Figure 1-5.

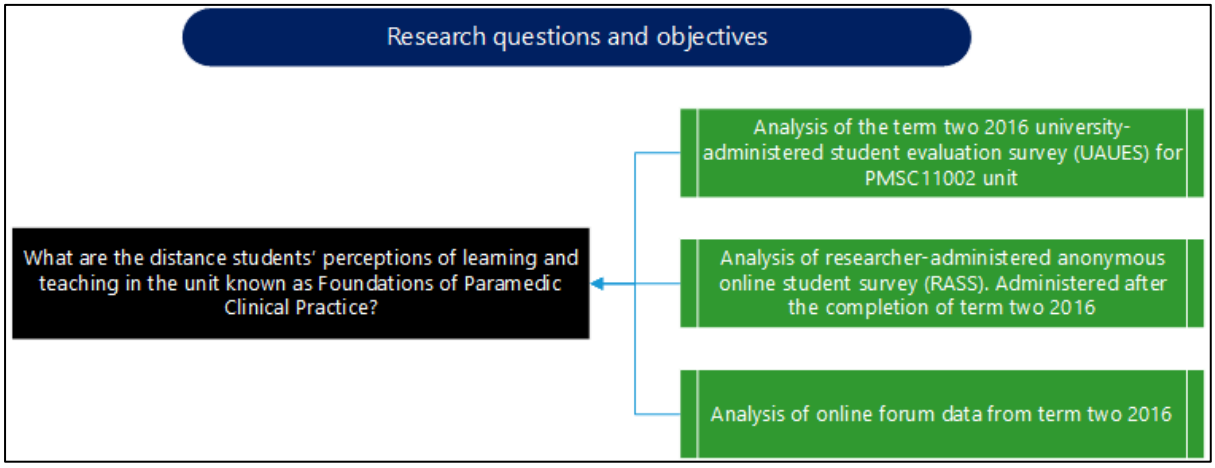


Figure 1-5 Research question and objectives

The objectives that have been used to address the research question include:

1. An analysis of qualitative comments included in the university-administered unit evaluation survey (UAUES) feedback received from the questionnaire after the completion of term two 2016 for the PMSC11002 'Foundations of Paramedic Clinical Practice' unit.

2. An analysis of an anonymous online survey administered by the researcher (RASS), to distance students after the completion of term two 2016.

3. An analysis of LMS Moodle online forum data from term two 2016.

1.4 Significance and contribution to knowledge

There are few studies that focus on how paramedic education is delivered in higher education within Australia. There does not appear to be any literature that researches the perceptions of students studying a paramedic course in a blended learning approach. This thesis provides insight into the perceptions of one group of students undertaking the first clinical unit in the CQUniversity paramedic course. The results will identify strengths and weakness with the blended learning approach as indicated by the students which can be used to inform reviews on the current paramedic education practices at CQUniversity. Further, the results will add a student voice to any future discussion on the appropriateness of a blended learning approach within paramedic education in Australia.

1.5 Scope and limitations

This research was limited to one university in one term of study in a single year. This is the scope of the research.

The data used in this research was obtained from mixed methods and has limitations in the following areas:

- Sample size
- Student demographic
- Researcher's bias
- Research/Participant power imbalance.

1.5.1 Sample size

This research captured data from several different sources including university archival databases, unit evaluation data and online survey responses. The researcher had no influence on student participation in the unit evaluation survey or the online survey.

Participation in the surveys was voluntary and anonymous. This resulted in smaller sample sizes in some areas of data collection.

1.5.2 Student demographic

This research was limited to the evaluation of one clinical-skills based unit in a single term of study. The student demographic in this research may differ from student cohorts undertaking the same unit in other terms of study in this university. In the same way, it may be different to student demographics in other institutions. Therefore, the results may or may not be transferable to other student groups.

1.5.3 Researcher/participant power imbalance

The researcher is aware of potential ethical conflicts when a researcher collects data within their own workplace and when participants have a direct relationship with the researcher (Creswell, 2014). While the researcher of this project was one of three university academics involved in the unit being studied, the student survey data was not collected until after the completion of the study term and did not record any identifying information. Additionally, the researcher was not involved in lecturing or marking in any further units the student participants would undertake in the paramedic program. However, it is acknowledged that not all participants may have been aware of the teaching allocations for future units of study at the time of undertaking the unit.

1.5.4 Researcher bias

As a long term industry paramedic and more recently a paramedic academic, the researcher has a range of beliefs and values. Therefore, this research cannot be considered value-free. In her role as part of the academic teaching staff in the unit that forms the basis of this research and previous academic responsibilities, the researcher had insights about the CQUniversity paramedic undergraduate course. In the development of the survey instrument used in this research, some biases may have been revealed, either knowingly or unknowingly.

It could be argued that there is no research that could be considered truly bias free. Every researcher has their own belief, values, background and social standing that may consciously or unconsciously impact on the research method or interpretation of data in any project (Byrne, 2017).

1.6 Thesis chapter structure

Chapter 1 – Introduction

The introduction defines the research topic by presenting the research question, aims and objectives. The identification and background of the research will provide context into paramedic education development within Australia.

Chapter 2 – Situating the study

Current trends in specific paramedic learning and teaching, definitions for distance education and blended learning provide context for this research. Furthermore, findings from other health-related fields using blended learning are presented. Additionally, the structure of the CQUniversity paramedic course and the 'Foundations of Paramedic Clinical Practice' unit are explained.

Chapter 3 – Research Design

The research design of the project, including the methodology, is detailed. Further, data collection methods, instrument design, data analysis and ethics are explained.

Chapter 4 – Results

Study demographics of the blended learning cohort of students who participated in the research project are examined. Quantitative results from the research are presented in detail. Qualitative categories are identified and presented.

Chapter 5 – Consideration of results

A detailed discussion on the main themes identified in the research results are presented. This chapter includes discussion on the current resources and design as well as suggestions for future development of resources presented by students.

Chapter 6 – Recommendations and conclusion

The final chapter discusses recommendations for improvement in the blended learning format as identified in the research. The chapter conclusion identifies further opportunities for research.

Chapter 2. Situating the study

Chapter 1 introduced the research including the aims, objectives and research question. Additionally, it provided some context around paramedic educational progression from the early requirements to the current higher education qualifications that are now commonplace across the industry. Further, Chapter 1 discussed the different approach to blended learning that is being offered in two Australian universities.

This chapter examines current trends in specific paramedic learning and teaching, definitions for distance education and an explanation of blended learning. Furthermore, findings from other health-related fields using blended learning will be presented. Finally, the structure of the CQUniversity paramedic course and the 'Foundations of Paramedic Clinical Practice' unit will be explained.

2.1 Paramedic education in higher education

A review of the paramedic education literature in Australia and New Zealand has shown that most of the research to date has been focusing on a narrow range of skills or topics relating to learning and teaching. Dominating these studies are, for example, individual components of learning design (Eastwood, Boyle, Kim, Stam, & Williams, 2015; Lim, Hou, & Tippett, 2016; Lynch, Barr, & Oprescu, 2012; Thompson, Grantham, & Houston, 2015; Williams, 2009; Williams, Brown, & Winship, 2013), the importance of graduate attributes (O'Meara, Tourle, Madigan, & Lighton, 2012; Williams, Onsman, & Brown, 2010), the movement of paramedicine into a registered profession (Joyce, Wainer, Piterman, Wyatt, & Archer, 2009; Williams, Fielder, Strong, Acker, & Thompson, 2015; Williams, Onsman, & Brown, 2009) and the use of simulation equipment in teaching (Birt, Moore, & Cowling, 2017; McKenna et al., 2015) .

There has however, been a small amount of published literature on distance education in the paramedic field. In a small study by Hubble and Richards (2006), they found that distance education using technology to enhance learning showed the same or better academic

results as on-campus students. Although the findings from Hubble and Richards (2006) are dated, the paper examined a dimension of paramedic education in a distance mode which does not appear in more current literature. MacQueen (2013) found that distance learning for the paramedic field was cost effective for organisations in terms of a reduction in rostering impacts due to the loss of paramedic staff to attend a university classroom. Similarly it was found the flexibility offered by distance learning was beneficial for students who were juggling work, life and study commitments (MacQueen, 2013). While these studies show the potential for distance education to be successful in paramedic courses in the higher education arena, they do not consider the student experience when studying in a non-traditional mode of delivery.

There appears to be little literature that specifically examines student perceptions of any approach used to teach paramedic clinical units within higher education. The unit under review in this project is delivered to distance students using a blended learning format. It is therefore necessary to provide a number of key definitions for this research, namely distance education and the unique point-of-difference used in this unit of study, the approach to blended learning.

2.2 Distance education

Distance education is a general term describing learning and teaching where students are not physically present in a classroom. Traditional definitions of distance education have altered over time as the way we use modern technology has changed the way knowledge is shared and/or transmitted to students. Simonson et al. (2014) redefine distance education as “institution-based, formal education where the learning group is separated and where interactive telecommunications systems are used to connect learners, resources and instructors” (p. 31).

With the use of modern communication technologies, distance education can be delivered synchronously or asynchronously. Synchronous activities or lectures use technology such as

video conferencing through platforms like Blackboard Collaborate or Zoom, where the speaker/lecturer is interacting with participants in real time. Asynchronous interactions, where exchanges between participants are delayed, include email communication, learning management system (LMS) discussion forums and social media communications including Facebook and Twitter.

Distance education, using the definition above, can be offered as an online mode of study. However, a second distance approach that includes additional benefits, is blended learning.

2.3 Blended learning

Blended learning is a version of distance education which is described as an integration of online and face-to-face teaching to create a learning environment that supports a variety of learning styles (Ilic, Nordin, Glasziou, Tilson, & Villanueva, 2015; Rowe, Frantz, & Bozalek, 2012). While most studies support this overarching definition for blended learning, there is no true consensus on what the appropriate mix of online and face-to-face components should be. As Rowe et al. (2012) discovered, the type of content delivered online varies widely between health disciplines with units being customised to suit university and cohort requirements. Some disciplines have replaced or reduced the number of face-to-face lectures with online pre-recorded lectures (Green & Whitburn, 2016; Hua, Goodwin, & Weiss, 2013; Kiviniemi, 2014). Others continue to use didactic lectures using the online component as a synchronous or asynchronous supportive environment implementing tutorials, activities, forums and additional resources for enhanced learning (Gagnon, Gagnon, Desmartis, & Njoya, 2013; Ilic et al., 2015).

For the purpose of this research, the researcher defines blended learning as distance education that incorporates the following components:

- Asynchronous and synchronous communication, such as forum discussions and video conferencing

- Core unit materials including video lectures, readings and learning guides that are available in an online environment
- Face-to-face tutorials and practical assessments in an intensive residential school environment on a university campus.

From herein, the term blended learning will be used to describe the learning and teaching approach utilised in the CQUniversity paramedic program.

The next section discusses the current use of blended learning in a variety of health disciplines.

2.4 Blended learning in health disciplines

Within the health disciplines, many fields have used blended learning to deliver education including medicine, allied health and nursing (Cooper & Higgins, 2015; Hurst, 2016; Ilic et al., 2015; McCutcheon, Lohan, Traynor, & Martin, 2015). Blended learning in health professions education has been reported as having the best components of face-to-face and online learning included in a student-centred approach to learning (de Jong, Savin-Baden, Cunningham, & Verstegen, 2014). Additionally, blended learning has other positive attributes reported in the literature.

Using blended learning in health professions education by incorporating video lectures has been shown to meet the needs of different learning styles of students while still maintaining consistency in delivery of information (Coyne et al., 2018). Furthermore, moving some content of clinical units into a blended format allows real time contact with students to be used in higher levels of learning and meaningful activities (Phillips, Schumacher, & Arif, 2016; Posey & Pintz, 2017). For students studying in the health-related fields, blended learning offers flexibility, allows the learning to be interactive and assists in reinforcing concepts and ideas within the subject matter (Phillips et al., 2016).

Other studies caution that blended learning has disadvantages as well. To produce a high quality blended learning environment, additional development time and resources are required in the preliminary phases when compared to traditional methods (Lehmann, Seitz, Bosse, Lutz, & Huwendiek, 2016; Pizzi, 2014).The initial set up costs to implement a blended learning format were found to be significant; however, once established, ongoing costs were reduced (Maloney et al., 2015).

Regardless of the advantages and disadvantages identified in a number of studies, the effectiveness of a blended learning approach has been shown to equal or surpass the non-blended on-campus or purely online learning environments when carefully designed (Liu et al., 2016; Nortvig, Petersen, & Balle, 2018).

Blended learning is used extensively in the undergraduate paramedic course offered by CQUniversity because of its advantages to students.

2.5 CQUniversity paramedic science undergraduate course

As previously discussed, CQUniversity has offered a three year undergraduate paramedic science course since 2011. The paramedic undergraduate degree learning and teaching is delivered by a team of academics who are either current or past qualified paramedics from within Australia or internationally. All paramedic academics have had extensive industry experience prior to undertaking an academic role.

The CQUniversity paramedic course is offered on-campus in Queensland at Cairns, Townsville and Rockhampton campuses. Additionally, a blended learning approach is available for students who require flexibility due to personal preference, circumstances or geographical location which makes it difficult to regularly attend a university campus.

Due to the number of clinical placement hours in the final year, all students transition to the blended learning mode of study in third year units. Clinical placement locations are allocated by the state Ambulance Service hosting the student, normally Queensland Ambulance

Service (QAS). Students may be required to relocate away from their normal residential address for up to six weeks to meet the placement requirements of the paramedic course. Offering the final year units in a blended learning mode allows the students to continue with other units of study whilst at the placement location.

The paramedic course contains both science based and paramedic specific units as shown in Figure 2-1. A full time student would normally enrol in four units each over term one and term two of the academic calendar. The highlighted unit 'Foundations of Paramedic Clinical Practice' is the focus of this research project and is positioned in term two of the first year of study in a fulltime course plan.

Unit Code	Unit Name	Full Time Study Plan	Credit Points
CHEM11042	Fundamentals of Chemistry	Term 1 Year 1	6
BMSC11001	Human Body Systems 1		6
ESSC11004	Study and Research Skills for Health Science		6
PMSC11001	Foundations of Paramedic Science		6
BMSC11005	Foundations of Biochemistry	Term 2 Year 1	6
PMSC11002	Foundations of Paramedic Clinical Practice		6
BMSC11002	Human Body Systems 2		6
PMSC11003	Principles of Paramedic Practice		6
BMSC12007	Neurological Physiology & Measurement	Term 1 Year 2	6
MBIO12013	Microbiology for Health Care		6
PMSC12001	Procedures and Skills in Paramedic Care		6
PMSC12004	Advanced Electrophysiology and Coronary Care		6
PMSC12002	Clinical Paramedic Practice 1	Term 2 Year 2	6
PMSC12003	Special Populations in Paramedic Practice		6
BMSC12010	Clinical Biochemistry		6
MPAT12001	Medical Pathophysiology		6
PMSC13001	Mental health for Paramedics and Other Health Professionals	Term 1 Year 3	6
PMSC13002	Clinical Paramedic Practice 2		6
PMSC13003	Pharmacology in Paramedic Practice		6
BMSC13010	Pharmacology		6
PMSC13004	Clinical Paramedic Practice 3	Term 2 Year 3	6
PMSC13010	Consolidated Paramedic Practice		6
PMSC13011	Paramedic Trauma & Environmental Emergency		12
		Total	144

Figure 2-1 Course structure for CG95 Bachelor of Paramedic Science

The 'Foundations of Paramedic Clinical Practice' is the first of the practical units in the paramedic course. The practical units, excluding the Clinical Paramedic Practice units which involve industry placement, teach the range of paramedic skills and knowledge required for practice as a registered paramedic in Australia. The design of the practical units is closely aligned to experiential learning theory which is discussed in detail in the next section.

2.5.1 Theoretical basis for CQUniversity paramedic course

As discussed above, the design of the CQUniversity paramedic units is closely aligned to Kolb's Experiential Learning Theory. Experiential Learning Theory (ELT) was first published in 1984 by David Kolb, but the origins of experience as a foundation for learning can be traced back to twentieth century scholars including John Dewey, Kurt Lewin, Jean Piaget, Lev Vygotsky, William James, Carl Jung, Paulo Freire, Carl Rogers and Mary Parker Follett (Kolb, 2015).

In order to understand the learning theory, it is important to define learning in the eyes of the theorist. Kolb (2015) uses the definition "*Learning is the process whereby knowledge is created through the transformation of experience*" (p. 49). He goes further to say that learners need to have four different abilities to be effective. Learners must be able to:

- Get involved in new activities without preconceived ideas (Concrete experience - CO)
- Undertake reflection from a number of perspectives (Reflective Observation - RO)
- Create connections that join the reflections with the concepts into logical theories (Abstract Conceptualisation - AC)
- Use the theories the learner created to problem solve and aid in decision making (Active Experimentation- AE)(Kolb, 2015).

The four actions listed above are the basis of Kolb's learning cycle as shown in Figure 2-2.

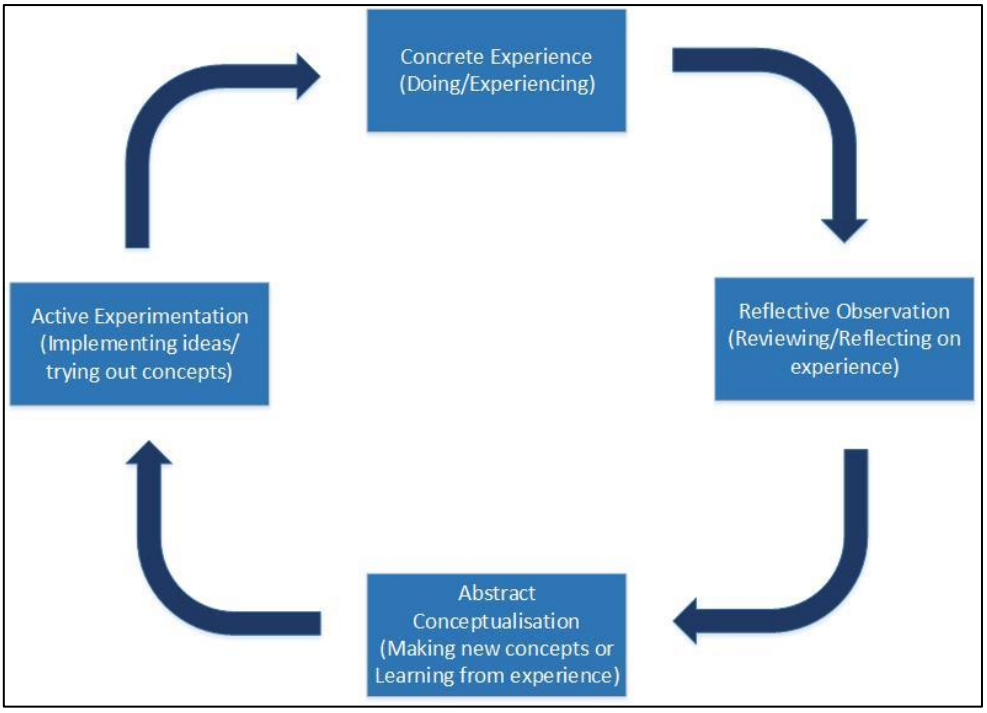


Figure 2-2 Experiential Learning Theory – based on Kolb (2015)

Kolb (2015) explains that experience, as the core component of ELT, occurs through the 'here and now' learning (CE) and through reflecting or observing (RO). Learners must then be able to grasp the information they have experienced and build new concepts into solid theories. The theory can then be utilised as the basis for making decisions and/or solving challenges or issues. While learning begins with experience, knowledge is created by "*grasping and transforming*" (Kolb, 2015, p. 67) that experience.

Kolb (2015) emphasises the learning cycle should be considered more of a spiral than a static circle with ideal learning conditions occurring when the learner passes through all phases of the cycle.

As shown in Figure 2-3 below, the theoretical and practical components of the CQUniversity paramedic course align to the ELT.

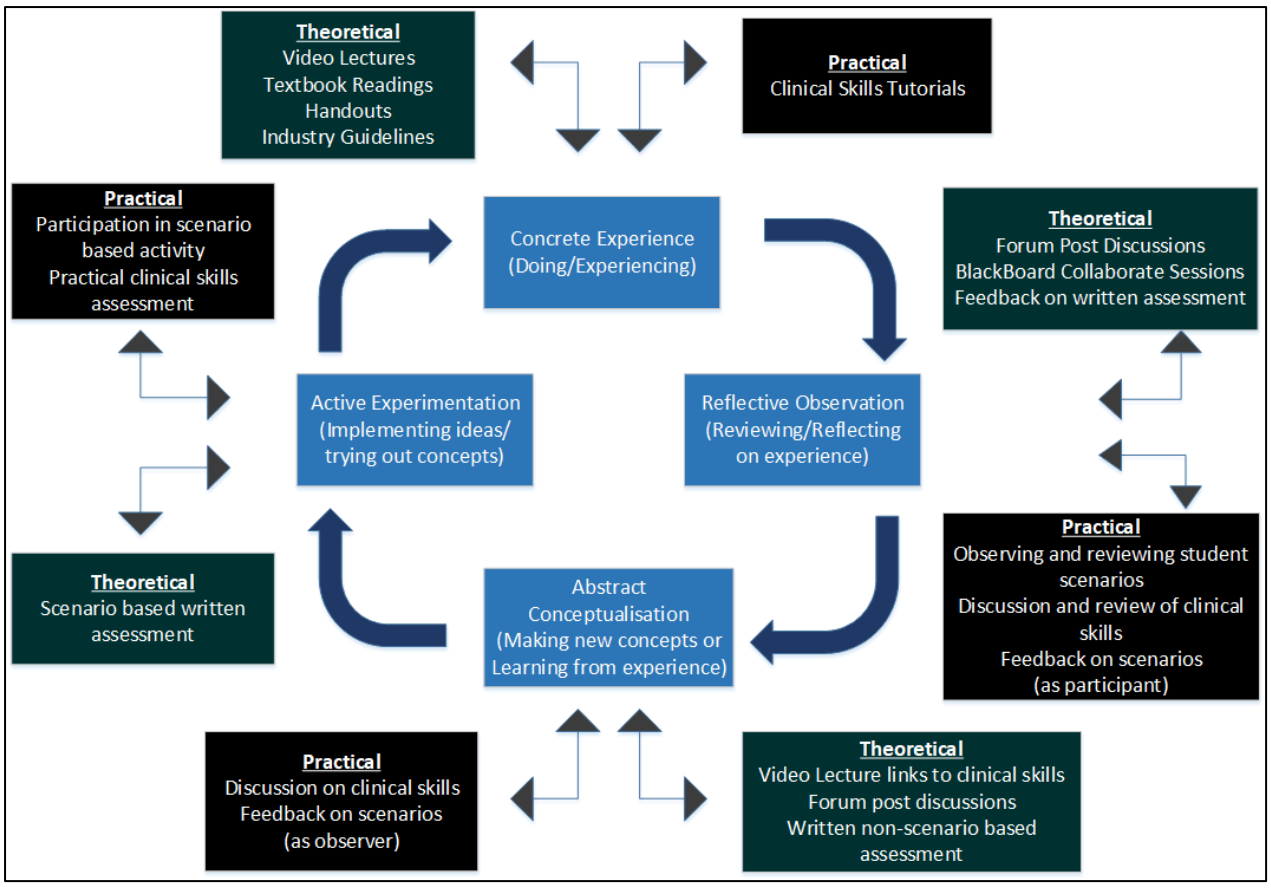


Figure 2-3 Paramedic experiential learning cycle based on Kolb (2015)

The theoretical and practical components shown in Figure 2-3 are a reflection on Kolb's learning cycle, specifically relating to the design of the paramedic unit under discussion. It will be discussed in later sections, particularly in the context of the 'Foundations of Paramedic Clinical Practice' unit.

To enable delivery of courses, resources must be stored in an accessible platform to allow easy access by students and academic teaching staff. This is achieved by using a learning management system (LMS). Learning management systems (LMS) are now common place in universities across the world as a facility to store and display learning resources, assessments and unit or course specific materials. CQUniversity uses the LMS Moodle for all Australian Qualifications Framework level of courses including vocational educational training (VET), undergraduate and post-graduate level studies.

2.5.2 Learning management system (LMS) Moodle

Once enrolled in the paramedic course at CQUniversity, all students have access to the LMS Moodle site. Each unit has a dedicated Moodle page which contains all the content in weekly tabs or content areas within a unit. An example of a paramedic unit Moodle page is shown in Figure 2-4. Within each tab, weekly objectives, unit lectures, required textbook readings, resources, links and activities are displayed. An example of the tab display is shown in Figure 2-5.

Lectures for all units are either recorded live sessions delivered on a campus or they are pre-recorded video lectures, which are then uploaded onto the Moodle page for all students to access.

The on-campus mode of study for the paramedic clinical units require students to attend regular compulsory tutorial classes in a paramedic laboratory where they learn and develop their practical skills. In contrast, the blended learning students travel from their home location to a CQUniversity campus located in Cairns, Townsville or Rockhampton, to attend an intensive teaching block commonly referred to as a residential school. Tutorials at the residential school cover the same practical content delivered in on-campus tutorial sessions. However, the tutorials are condensed into a number of consecutive days rather than over the entire term of study. Practical summative assessments for the paramedic units are completed at the end of the study term (on-campus students) or at the end of the residential school (blended learning students).

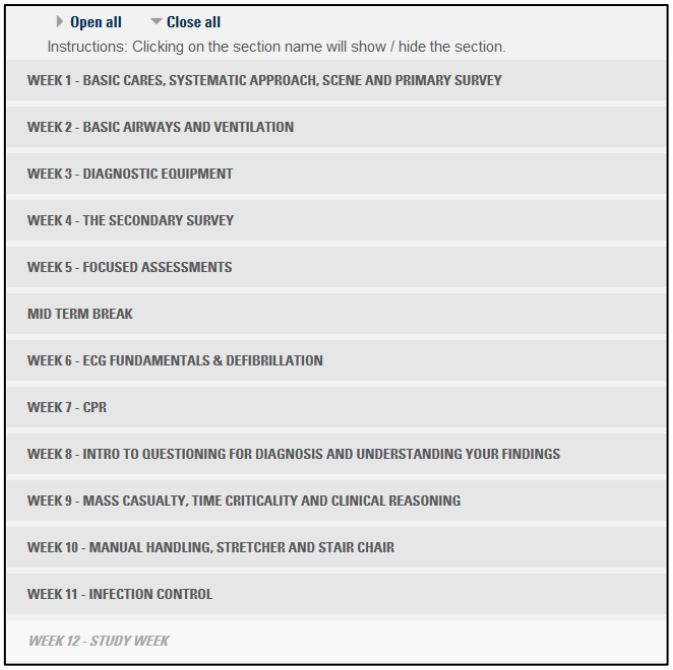


Figure 2-4 Moodle page example from Bachelor of Paramedic Science

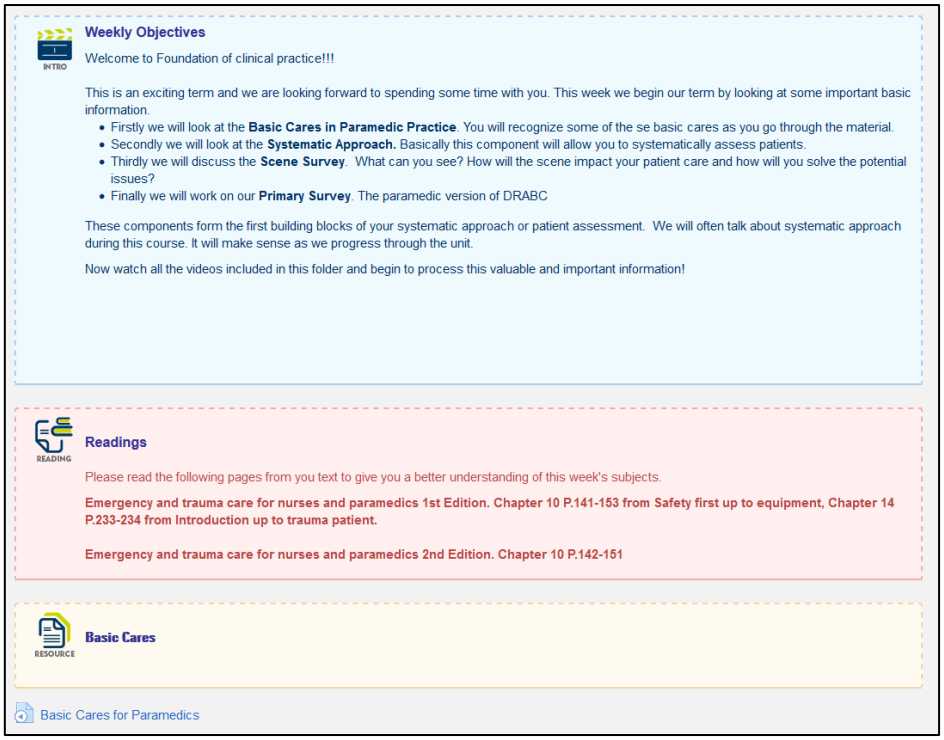


Figure 2-5 Moodle (LMS) tab example

Residential schools are coordinated by CQUniversity academics in each location. A team of casual academics are sourced from industry, predominately Queensland Ambulance Service, to teach practical skills at the tutorial sessions and to assess students at the

residential school. The casual academics are required to have a minimum of two years post-graduate experience in a clinical position within an Ambulance Service. There is no requirement for the casual academics to have formal teaching qualifications. The casual academics are employed for the length of the residential schools and do not normally undertake any additional academic duties for the university during the term. The casual academics may be employed to assist at multiple residential schools over the term. Due to the limited nature of their employment to teach clinical skills, casual academics do not have access to university systems, including the LMS Moodle.

The ‘Foundations of Paramedic Clinical Practice’ is the first practical paramedic unit in the undergraduate course. As previously discussed, this unit is scheduled in term 2 of the first year. The ‘Foundations of Paramedic Clinical Practice’ unit has been identified as a crucial unit to evaluate as the skills and knowledge covered provide the foundation for future development of advanced essential skills and procedures.

2.6 Foundations of Paramedic Clinical Practice Unit

The ‘Foundations of Paramedic Clinical Practice’ unit is a level one, six credit point unit that is scheduled over a twelve week study term (Central Queensland University, 2018b). Students can enrol into the unit in an on-campus or a blended learning mode. The learning outcomes for this unit are broad in nature and comprise a range of basic paramedic skills, including:

- Conscious and unconscious patient assessment
- Incident scene assessment
- Medical history-taking skills
- Diagnostic tests using a range of equipment
- Principles of safe working practices for manual handling, defibrillation and infection control
- Evaluation and management of a patient requiring cardiac life support.

The basic skills attained in the unit align with the Council of Ambulance Authorities accreditation standards and professional competency standards required for paramedic practice (Council of Ambulance Authorities, 2010).

The ‘Foundations of Paramedic Clinical Practice’ unit has core similarities between the on-campus and the blended learning students. The learning resources and assessment requirements remain the same between the cohorts. However, the delivery of the practical tutorial sessions is very different in approach. The on-campus students are required to attend regular laboratory sessions during the term which are run by a CQUniversity paramedic academic. In contrast, the blended learning students are required to travel to a residential school in the second half of the term to undertake the practical sessions. The blended learning tutorial sessions are completed by casual academics employed specifically for the residential school. CQUniversity academics take on the role of residential school coordinators to oversee the tutorials and assessments completed by the casual academics.

The following sections will highlight the features of the ‘Foundations of Paramedic Clinical Practice’ unit in more detail.

To assist students with the practical skills and the underlying theoretical concepts, the LMS Moodle site contains several different learning resources.

2.6.1 Learning resources

The ‘Foundations of Paramedic Clinical Practice’ Moodle page is presented in weekly tabs covering several new concepts each week. Each section contains weekly objectives, textbook reading, video lectures, lecture slides and fact sheets or industry clinical practice guidelines. Lectures in this unit are pre-recorded video lectures that are uploaded into the Moodle page early in the study term. Video lectures are used to demonstrate the practical skills students are required to perform during the term, as well as discussing the different components of patient assessment procedures.

Furthermore, some weeks include additional student resources, including Blackboard collaborate sessions, links and other relevant web resources. Figure 2-6 shows an example of a weekly format.

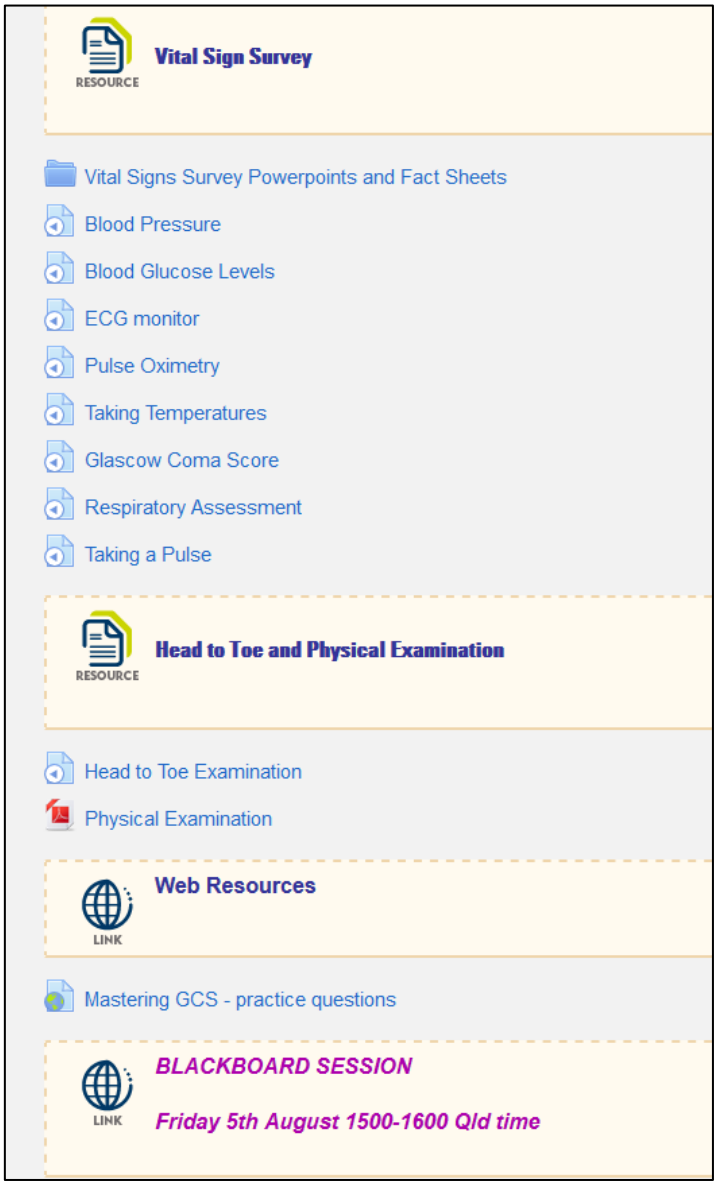


Figure 2-6 'Foundations of Paramedic Clinical Practice' unit weekly view

Due to the practical nature of the unit, students are required to attend compulsory tutorial sessions to learn and practise skills and patient assessment. These practical sessions are completed on a campus for all students however, the attendance schedule is different for on-campus students and blended learning students.

2.6.2 Practical requirements

On-campus students enrolled in the ‘Foundations of Paramedic Clinical Practice’ unit are required to attend nine compulsory practical tutorial sessions over a twelve week academic term. The final session of the term is scheduled for summative assessments of the practical skills learned during the tutorials. The assessment day is timetabled into week eleven or week twelve of the study term.

In place of regular on-campus tutorial sessions, blended learning students enrolled in this unit are required to attend a compulsory four day residential school during the second half of the term. It is at the residential school that blended learning students undertake the same practical tutorial sessions and assessments as on-campus students.

A comparison of the unit requirements of the on-campus and blended learning students can be seen in Figure 2-7.

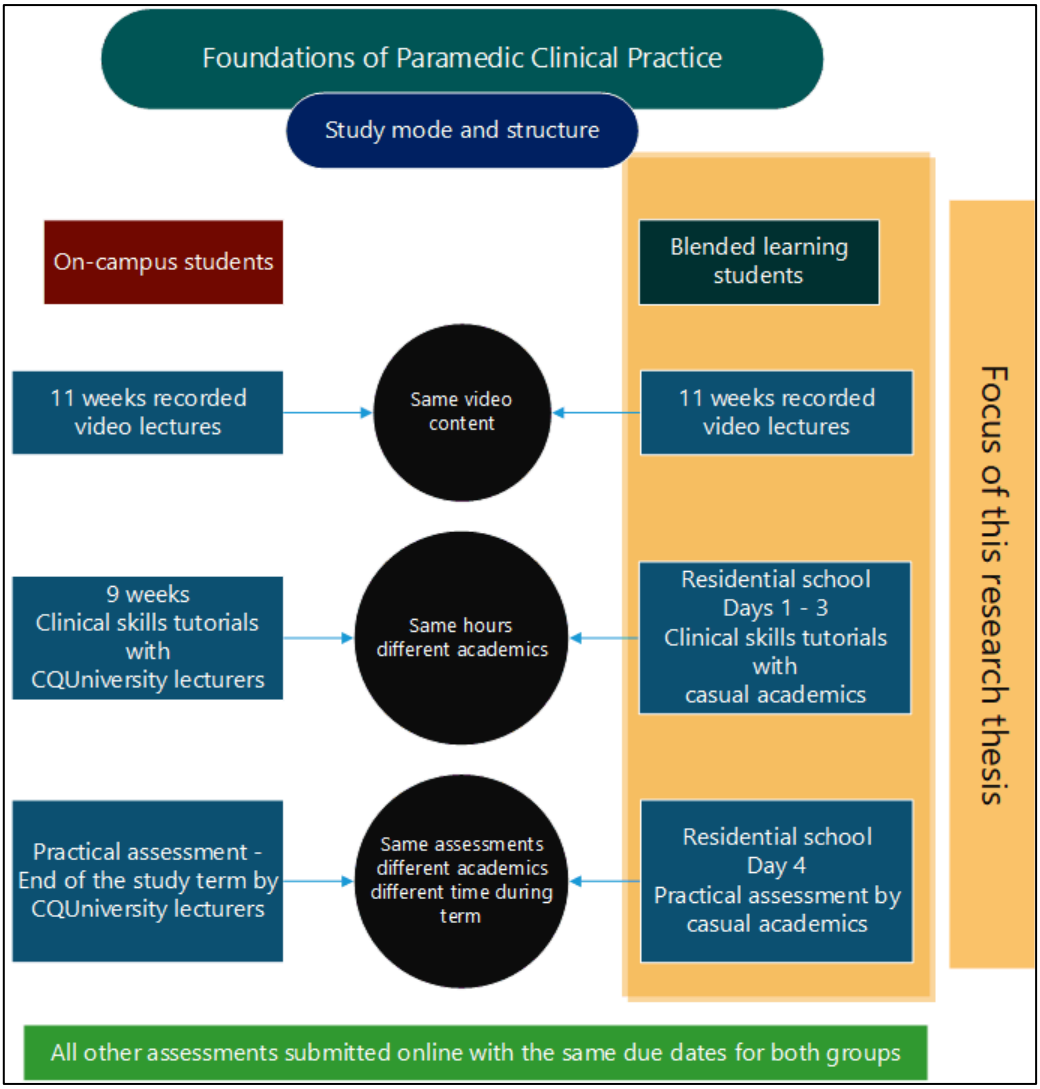


Figure 2-7 Comparison of on-campus and blended learning unit requirements

This research focuses on the blended learning students who are required to attend the residential schools. A more detailed explanation of the residential school structure is provided in the next section.

2.6.3 Residential school

Residential schools for the 'Foundations of Paramedic Clinical Practice' unit are offered at a CQUniversity campus in Cairns, Townsville or Rockhampton. Students nominate for the residential school location they wish to attend. However, the residential schools have a limited number of available places based on space and resources at each location. Therefore, students are allocated to residential schools as they submit a nomination, and

once the residential school location maximum capacity is reached, students must enrol in a different location. Students are responsible for the cost and organisation of travel to, and accommodation, at the residential school.

During term 2 2016, one residential school was held on Cairns and one on Townsville campuses and two were held on the Rockhampton campus. Residential schools for this unit in 2016 were timetabled in week seven to nine of the term (Central Queensland University, 2016b).

The residential school schedule was divided into morning and afternoon sessions for the first three days. Students were randomly placed in groups which rotated through each session once during the three days. Casual academics, employed specifically for the residential school, delivered the tutorial sessions which covered different practical skills and practice scenarios. Each day commenced with a briefing on the requirements of each session and a debrief was undertaken at the end of each day to identify any issues or concerns.

During the practice scenario sessions, students were required to undertake several roles, including:

- Team leader (2 students) in a number of different scenarios. Scenario practice mimics exam requirements.
- Second officer who follows the instructions of the team leader in a scenario.
- Observer – watching and giving feedback to other students undertaking scenario practice.

An example of a paramedic simulation is shown in Figure 2-8 below.

Figure 2-8 Paramedic student participating in scenarios

By undertaking the different roles, receiving feedback from casual academics and participating in clinical discussions, students cover all components of both the theory and practical, as outlined in Chapter 2 Figure 2-3. The practical component has been designed to ensure experiential learning (Kolb, 2015).

Day four of the residential school was allocated for summative assessments, of which there were three.

The residential school schedule used in term 2, 2016 can be seen in Figure 2-9.

Day	1	2	3	4 Assessments
Session 1	1 - Basic airway + Ventilation (2x + 3x airway manoeuvre, OP, Naso, suction) 2- Primary survey	1 – CPR (stop, ROLE, Brady) CPR scenarios	Stair Chair + Stretcher Scenarios involving all components	Scenario 1
Session 2	1- Diagnostics (BP, BSL, SPo2, Temp ECG fundamentals (including daily check) + Defib	1- Secondary survey (Hx taking, VSS, Head 2 toe) 2- Focused assessments (Neuro, perfusion, respiratory assessment)	Scenarios involving all components	Scenario 2

Figure 2-9 Term 2 2016 residential school format

The two summative assessment pieces students were required to undertake at the residential school were both practical scenarios which included skills and patient assessment techniques covered in the previous three days of tutorial sessions.

2.6.4 Assessment

Due to the range of foundational skills and knowledge developed in this unit, the learning outcomes required to be achieved were broad in nature. While each of the summative assessment pieces were different scenarios or different theoretical application, the learning outcomes were assessed in all assessment pieces as demonstrated in Figure 2-10.

The summative assessments for the 'Foundations of Paramedic Clinical Practice' unit included two online quizzes which formed a single assessment activity, as well as two practical assessments as described in the previous section. The assessments and weighting of each piece can be seen in Table 2-1.

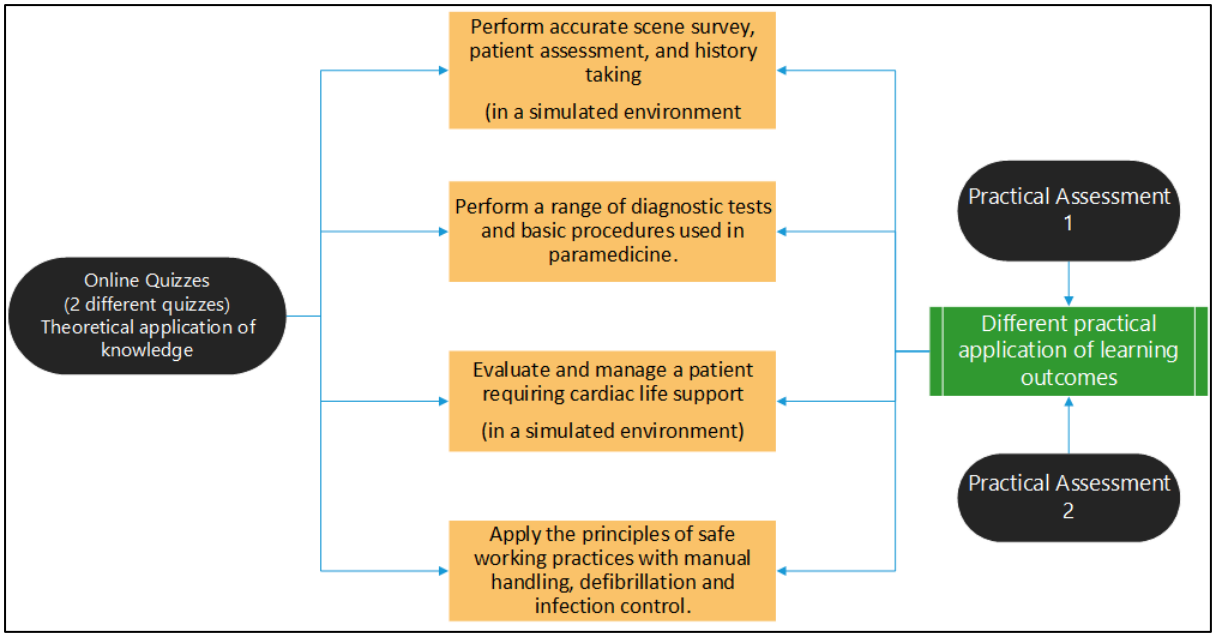


Figure 2-10 Alignment of assessment to learning outcomes

The online quizzes contained questions that required the student to apply the theoretical knowledge learnt from the previous week's content. Each question required the student to provide a short answer that identified key theoretical points or an analysis of a patient assessment finding. This online assessment was weighted at 30% of the overall unit total.

Assessment Piece	Weighting (% of total)
Online Quizzes (2 different quizzes)	30%
Practical Assessment 1	35%
Practical Assessment 2	35%
Total	**100%**

Table 2-1 Assessment pieces and weighting

As previously described, the practical assessments were scenario based. Each practical assessment was weighted at 35% of the overall unit total. The scenarios were based on cases that students may experience as a paramedic in the field. It is standard practice that two officers would be despatched to attend the scene of a patient, but it is also very common

for officers to respond alone due to location or workplace demands. As such, there was one scenario which required a team response although only one student is assessed and the second that was a single response.

The team response scenario required the student undertaking the assessment to be the treating officer. The second officer had been briefed prior to the assessment and was required to do only what the treating student directed them to do. No verbal or physical prompts were allowed from the second officer. In this assessment, the student needed to correctly identify and treat a cardiopulmonary arrest within a set time limit. The student was given a written case outline prior to entering the examination room. On entering the room, the student was required to quickly identify that the simulated patient was unconscious and pulseless, before safely carrying out life-saving procedures including defibrillation and cardiopulmonary resuscitation (CPR).

The single response scenario required the student to complete a full patient care assessment on a simulated conscious patient using a range of examination procedures and diagnostic tools within a set time limit. The student was required to complete all skills in real time and to undertake patient questioning as they would a real person. The assessor in the room provided all responses to questions and supplied patient observations such as blood pressure and pulse, as required.

While on-campus and blended learning students completed the same practical assessments, the timing of the assessments in the study term were different. On-campus students completed the practical assessments at the end of the term with a university academic. The academic would normally be the same person who had been in tutorials with the students all term. In contrast, the blended learning students completed the practical assessments on day four of the residential school having only learned and practised the skills in the three days prior. Casual academics completed the assessment grading for

blended learning students. All practical assessments were video recorded for moderation or appeal of marks.

While the online content and the assessments remain constant between the on-campus and the blended learning students, the structure of the practical learning and teaching is different for the two groups. The blended learning student's perceptions of the entire unit including these differences was the focus of this thesis. The following section will outline the research design that was used in the project.

Chapter 3. Research design

Chapter 2 examined the literature surrounding paramedic education, distance education and blended learning. It also examined the CQUniversity paramedic course and the unit that is the focus of this research, 'Foundations of Paramedic Clinical Practice', was explained. This chapter will outline the research design of the project, including the methodology. Further, data collection methods, instrument design, data analysis and ethics will be explained.

In any project, it is important to identify the researcher's philosophical worldviews as this will influence the way the research is conducted (Creswell, 2014). The following sections outline the researcher's views that have influenced the chosen research design.

3.1 Methodology

Creswell (2014) maintains philosophical worldviews influence the way in which research is undertaken. If considered as a straight line, the positivist would be visualised on one end of the line and constructivist on the opposite end. Positivists believe reality is completely objective, independent of the researcher and separate from the study object/s (Hamilton & Corbett Whittier, 2013). Constructivists, on the other end of the scale, believe in multiple realities where the researcher's lived experience will be evident in the generated knowledge and data (Denzin & Lincoln, 2011). The researcher in this instance holds the view that there is value in both belief systems and the most appropriate is dependent on the research question. This pragmatic worldview favours a position of focusing on the problem rather than on choosing a particular method in an effort to understand the issues (Creswell, 2014; Hamilton & Corbett Whittier, 2013).

Creswell (2014, p. 11) reports pragmatism has the following characteristics:

- Not committed to any one system of philosophy and reality
- Researchers have freedom of choice
- The truth is what works at the time

- The World is not seen as an absolute unity
- Looks to a *what and how to* approach
- Researchers agree learning always occurs in social, historical, political and other contexts
- Believes in an external world independent of the mind as well as that lodged in the mind
- For a mixed methods researcher, it opens the door to multiple methods, worldviews and assumptions as well as different forms of data collection and analysis.

The pragmatic stance offers the researcher flexibility to answer the research question. In this instance, it is to find what are the perceptions of students undertaking a blended learning unit of clinical skills. The pragmatic stance is also reflected in the choice of study design using mixed methods in a case study design.

3.2 Study design

While a quantitative or a qualitative study would have given some insight into the perceptions of students in the 'Foundations of Paramedic Clinical Practice' unit, neither would give a balanced and complete result. Therefore, the researcher decided the study design of this project would be a mixed methods case study design. The following sections will explain mixed methods research and case study research design.

3.2.1 Mixed methods research

Mixing methods of data capture have been used for some years, however it wasn't until 2003 that a handbook on mixed method research (MMR) procedures was released to assist researchers in the development of proposals (Teddlie & Tashakkori, 2003). Mixed method research involves collecting multiple streams of data, that includes both qualitative and quantitative, with the aim of providing a better or more in-depth understanding of the results than could be achieved with a single data type (Creswell, 2014; Plano Clark & Ivankova,

2016). Creswell (2014) notes there have been several terms used for this approach including "integrating, synthesis, quantitative and qualitative methods, multimethod and mixed methodology" (p. 217). However, the more common term in recent literature is mixed methods.

There are several different reasons that a researcher may choose a MMR design. Creswell (2014), Plano Clark and Ivankova (2016) and Bryman (2012) identify the following purposes for undertaking a MMR:

- Offsetting strengths and weaknesses – using both qualitative and quantitative methods allow for a more rigorous interpretation as the weakness in either method can be compensated by the strength of the other method.
- Triangulation – directly comparing results from both methods can identify converging or diverging data allowing for more valid conclusions.
- Complementarity – looking for overlapping facets in the different methods to get a more complete picture of a phenomenon.
- Development – using one research method to inform or shape the second method.
- Initiation – re-examining the results of one method using the second method as a way of seeking a new paradox or lens to view the data.
- Expansion – building on the results of one method by using the second method to expand the findings.
- Social justice – to uncover and challenge oppression in a society by using both methods that is guided by a social justice perspective.

In order to achieve the goals of the research, careful consideration must be given to the design of the MMR.

MMR has three basic designs. Creswell (2014) describes the designs as convergent parallel and two different explanatory sequential methods. The accepted abbreviation for the mixed method designs indicates the importance of the data type. Convergent parallel identifies both

data sets to be of equal standing and therefore is displayed as QUAN/QUAL. In explanatory sequential designs the one data set informs the second and therefore it is the first data that is prioritised – QUAN/qual or QUAL/quan (Creswell, 2014).

A convergent parallel mixed method design has concurrent collection of quantitative and qualitative data. Both sets of data are analysed separately. From this point the researcher can interpret the results in a “side-by-side comparison” (p. 222) or by merging data. The merging interpretation requires the qualitative data to be transformed into a quantitative format through counting of themes or codes (Creswell, 2014; Plano Clark & Ivankova, 2016).

The explanatory sequential mixed methods require the researcher to collect the data at different times with the first data collection informing the second data collection (Creswell, 2014; Plano Clark & Ivankova, 2016). As an example, a quantitative survey might be administered initially. The results from the survey may identify themes that could be the focus of follow up individual or group interviews. Likewise, a focus group may identify qualitative themes that could be used to inform a survey to be administered to a larger group of participants to ascertain if the issue or theme is widespread within the larger cohort.

The three basic mixed methods designs can be seen in Figure 3-1.

The MMR design used for this research project was the convergent parallel method. The data was collected at similar times and the quantitative and qualitative data was analysed separately before the findings were combined for interpretation of the student perceptions.

Qualitative data was collected from open-ended questions included in the university-administered unit evaluation survey (UAUES) and the researcher-administered student survey (RASS). Additional qualitative data was sourced from the LMS Moodle communication forums. Quantitative data was collected from the RASS.

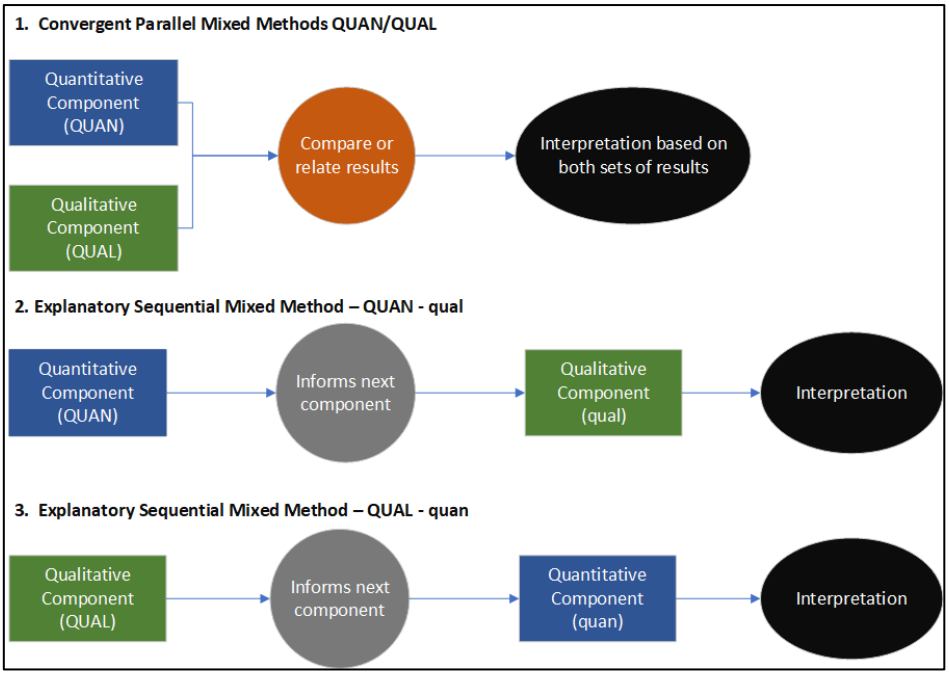


Figure 3-1 Mixed methods research designs modified from Creswell 2014

Figure 3-2 shows the sequence of data capture in the research project. As shown below, the data from the forums and UAUES was collected in University databases during the teaching period. However, this information was not collected by the researcher until after the end of the study term. The RASS data was collected after the end of the study term and before the commencement of the next term.

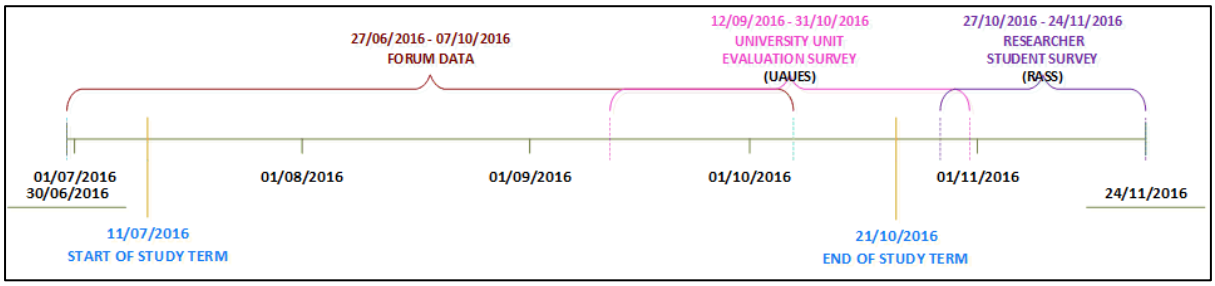


Figure 3-2 Research data capture timeline

Mixed methods research has been used in a variety of health-related disciplines, including mental health, nursing, medicine, rheumatology and speech therapy (Glogowska, 2011; Holden, Nicholls, Young, Hay, & Foster, 2015; Holland et al., 2013; Kettles, Creswell, & Zhang, 2011; Ross et al., 2016; Stebbings, Bagheri, Perrie, Blyth, & McDonald, 2012). It is therefore considered an appropriate approach for this research.

3.2.2 Case study research design

Case study research within educational enquiry has been gaining in prominence since the 1970s in what was generally seen as a reaction against the dominant quantitative approaches. As can be seen in a number of research design approaches, the definition for a case study has changed over the past forty years. Combining several different definitions from researchers in this field, Simons (2009) offers the following as a definition for a case study.

> "*Case study is an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institution, programme or system in a real life context. It is research based, inclusive of different methods and is evidence led. The primary purpose is to generate in-depth understanding of a specific topic*" (Simons, 2009, p. 9).

Creswell (2014) gives further clarification of a case study. "Case studies are designs of inquiry found in many fields, especially evaluation, in which the researcher develops an in-depth analysis of a case. Case studies are bound by time and activity" (Creswell, 2014, p. 14).

Additional consideration needs to be given to the type of case study that is most appropriate to meet the aims of the research. Yin (2014) and Bryman (2012) assert there are five different types of case studies including:

- Critical – The researcher/s have a well developed theoretical basis for the study and the chosen case will help to further identify circumstances when the hypothesis will be proven or not proven.
- Unusual/Extreme/Unique – Where the case deviates from theoretical or everyday norms.
- Common/Representative/Typical/Exemplifying – The study aim is to "capture the circumstances and conditions of an everyday situation" (Yin, 2014, p. 52)

- Revelatory – The opportunity arises where the researcher can observe and analyse a case previously unavailable for inquiry.
- Longitudinal – Studying the same case at two or more intervals over a set period.

While not exclusive, case study research is still considered predominately a qualitative approach. However, the addition of quantitative data can enrich the context and understanding of the chosen case (Hamilton & Corbett Whittier, 2013).

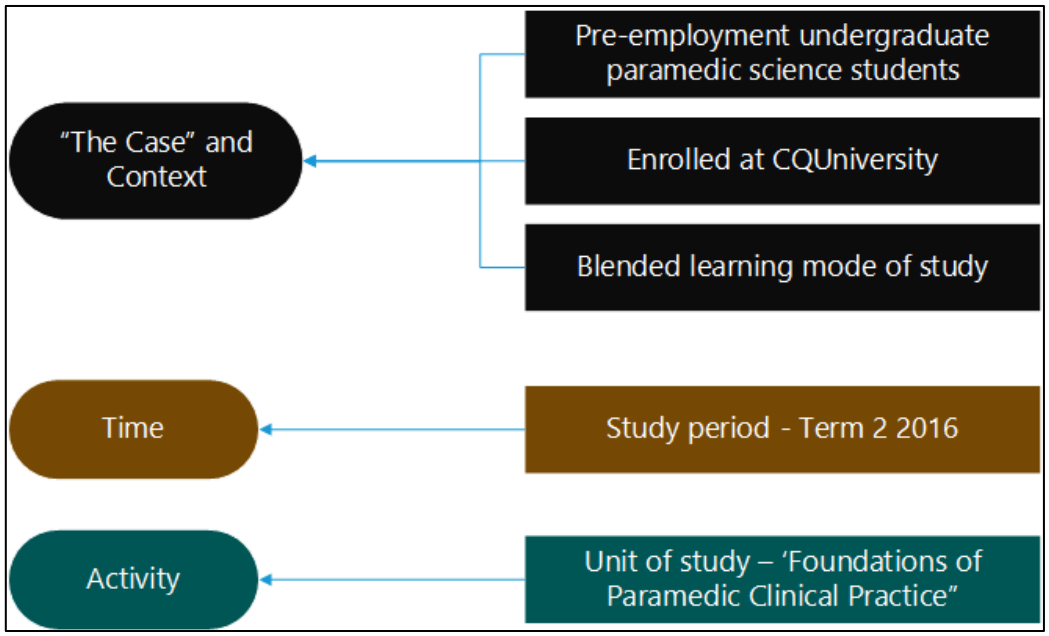


Figure 3-3 Case study boundaries

The pragmatic approach used in mixed methods research and the very specific boundaries outlined in this research project align well with a case study research design. The boundaries of this research are shown in Figure 3-3 above. The case study will consider an unusual occurrence as paramedic clinical skills are routinely delivered in an on-campus mode in most universities. As discussed previously, the student cohort in this case study is studying by a blended learning mode which is uncommon in higher education in the paramedic discipline. The choice of research design allows the data collected to be analysed and interpreted in a variety of ways (Kitchenham, 2010).

3.3 Data collection methods

Before data collection can be undertaken, a process to determine who, how and with what techniques must be considered. Creswell (2013) defines a five step process that should be undertaken regardless of the type of data required.

1. Identify the participants to be included
2. Obtain permission from required entities – participants, organisations, etc
3. Determine the type of information you require to answer the research question
4. Locate, select or develop appropriate instruments to use in data collection
5. Determine how to administer the data collection.

The process outlined above has been followed in this case study. The following section outlines the information required for each point.

3.3.1 Participants

All students enrolled in the blended learning mode of the 'Foundations of Paramedic Clinical Practice' unit in term 2 2016 were potential participants in this study. 89 students were enrolled in the blended learning offering of this unit and therefore eligible to be included in the research project. 34 (38.29%) of students participated in the researcher administered student survey (RASS) and 58 (65.16%) of students completed the university administered unit evaluation survey (UAUES). Given the anonymous nature of the student responses, it is not possible to ascertain which students participated in one or both surveys.

3.3.2 Permission

As the data collected for this project was either archival data from university databases or was a survey that was voluntary to participate in, written consent was not required from the participants. If students opted to participate in either the UAUES or the RASS, they were considered to have given consent for the data to be collected.

Permission to collect archival data from the university databases was given by the Dean of the School of Health, Medical and Applied Sciences and the Pro Vice-Chancellor of Learning and Teaching from CQUniversity.

CQUniversity Human Research Ethics approval was given for this research project. Full details are shown in section 3.6.

3.3.3 Type of information required

While a purely quantitative or qualitative study would have been possible to answer the research question of this study, it was decided a mixed methods approach would give a more in-depth understanding of the perceptions of the students.

Quantitative data was sourced from:

- The researcher-administered student survey (RASS) in Likert style question responses
- CQUniversity databases.

Qualitative data was collected from three different sources:

- The researcher-administered student survey (RASS) open answer responses
- The university-administered unit evaluation survey (UAUES) open answer responses
- LMS Moodle forum posts.

3.3.4 Instruments used in data collection

The university-administered student evaluation survey (UAUES) has been previously developed and administered to all students enrolled in units of study over a number of years. The UAUES used by CQUniversity has been independently evaluated and reviewed to ensure the validity of the questionnaire.

The LMS Moodle forum posts are a standard communication tool used in CQUniversity in all units of study. The posts were collated and de-identified at the end of the study term.

The RASS was developed by the researcher as there were no established surveys found that could answer the needs of the research question. The survey questions were based on issues identified from current literature as well as professional knowledge of the researcher, who is a lecturer in the paramedicine field. Further information on the development of the survey tool will be explained in the following section.

De-identified demographic data was sourced from CQUniversity databases in the form of an Excel spreadsheet.

3.3.5 Administration of data collection

The UAUES is administered through a link in the LMS Moodle page of each unit of study. Any student enrolled in the unit can access the survey link.

The RASS was managed through the online survey platform Survey Monkey. All blended learning students enrolled in the 'Foundations of Paramedic Clinical Practice' unit were emailed an information sheet and the link to the survey.

3.4 Data collection instruments design, development and administration

Two different data collection instruments were used in this research in conjunction with archival CQUniversity enrolment databases.

The UAUES is a CQUniversity developed and tested survey instrument. The researcher did not have any input into the development or administration of the survey. The unit evaluation survey is open to all students from week nine of the study term until after the examination period which is approximately six weeks. The data collected from the unit evaluation survey is available to all teaching staff after the collection period.

The qualitative data captured from the university survey is from two open answer questions. The questions ask the student for comment on the following areas:

- what was the best aspect of your course
- what aspects of your course are most in need of improvement.

The qualitative data from open-ended questions in surveys such as the UAUES is seen in the literature as a way to investigate student perceptions of strengths and weakness in a unit of study by allowing students to focus on elements that are important to them (Stupans et al., 2016).

It should be noted that the terminology now adopted by the university and used in this thesis is ‘unit’ where a single component of an undergraduate course is being referred to. The term ‘course’ was current at the time of the data collection.

The student survey (RASS) was developed and administered by the researcher. The student survey has three separate areas of interest including the demographics of the student group, issues that have been identified in current literature, and issues that have been observed by the researcher in the CQUniversity paramedic program.

The student demographic information was collected in the student survey to identify participant characteristics. This was compared to demographic data collected from university databases to identify if the respondents to the student survey could be considered representative of the whole blended learning student cohort enrolled in the unit. Furthermore, it allowed additional insights into the personal circumstances that may be impacting on the student’s study.

This research focused on the perceptions of a blended learning cohort of paramedic students studying a clinical skills unit. During a review of current literature, there were a number of areas relevant to this research that were identified and used to inform questions in the RASS. Evaluation of distance study, clinical skills delivered by distance modes, why students chose to study in a distance mode and resources used to support student learning

have previously been investigated (Bloomfield & Jones, 2013; Frimming & Bordelon, 2016; Heartfield et al., 2013; O'Leary & Janson, 2010; Tricker, Rangecroft, Long, & Gilroy, 2001).

The researcher has been a lecturer involved in the 'Foundations of Paramedic Clinical Practice' unit for three years including the term two 2016 offering. During this time, there have been repetitive comments and issues raised by students that have informed questions specifically relating to the residential school environment within CQUniversity.

The RASS was not tested by a pilot group prior to the release to students for several reasons. A trial of the RASS with students that had previously studied the 'Foundations of Paramedic Clinical Practice' unit would not have been appropriate as the more advanced cohort would have completed multiple residential schools. This may have led to inconsistent feedback. A trial was not considered on the 2016 blended learning cohort as this was a limited pool of potential participants and any responses to a pilot would have reduced the available number of valid responses to the final survey. Additionally, there were time constraints with the development of the RASS and the release to students prior to participants recommencing further studies as discussed below. The survey was developed in conjunction with the researcher's supervisors which resulted in several drafts being developed to ensure clarity and appropriateness of the questions prior to the finalised survey instrument being administered to the student cohort.

Administration of the RASS was done via the Survey Monkey platform as previously discussed. The survey was opened to eligible students on the 27th October 2016 and closed approximately one month later on the 24th November. This timeframe was chosen so that students could complete the survey prior to undertaking any further residential schools that may have altered the responses given.

3.5 Data analysis

3.5.1 Quantitative data analysis

Quantitative data from the researcher-administered student survey (RASS) was collected by the Survey Monkey platform and downloaded into an Excel spreadsheet. The data was checked and transferred to the software program IBM Statistical Package for the Social Sciences (SPSS) version 24. Descriptive analysis, including means and standard deviations were calculated for all questions.

3.5.2 Qualitative data analysis

Qualitative data was collected from the RASS, UAUES and Moodle (LMS) forums. All data was downloaded into Excel spreadsheets prior to coding.

Saldaña (2016) suggests qualitative data analysis is a cyclical process rather than a linear one and requires a number of steps. Rather than being a process of placing data into categories in a single step, it is in fact a “process of comparing data to data, data to code, code to code, code to category, category to category, category back to data” (p. 68). In the first pass of coding, Saldaña (2016) asserts there are seven coding methods that incorporate additional subcategories that can be used. Figure 3-3 illustrates the seven methods and associated categories. For this project, the researcher decided to use the Elemental method using descriptive coding. Elemental coding has “basic but focused filters” (Saldaña, 2016, p. 97) used to analyse the data. Descriptive coding assigns basic labels, a word or a short phrase to identify the topic within the data (Saldaña, 2016). The descriptive codes are a necessary first stage of analysis prior to a second round of analysis and interpretation.

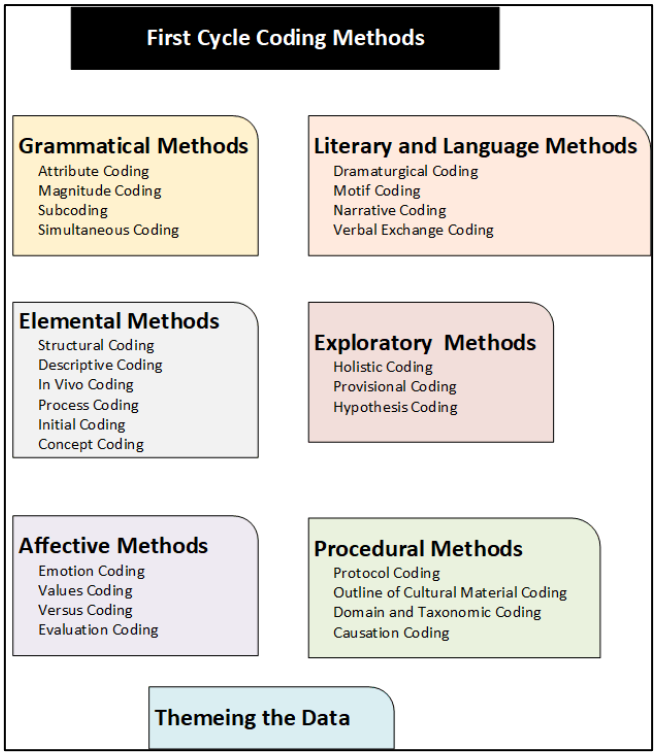


Figure 3-4 First cycle coding methods adapted from Saldana (2016)

Saldaña (2016) describes several second cycle coding methods, including pattern coding, focused coding, axial coding and theoretical coding, to reorganise and reanalyse data into a more coherent system. Pattern coding was employed in this project.

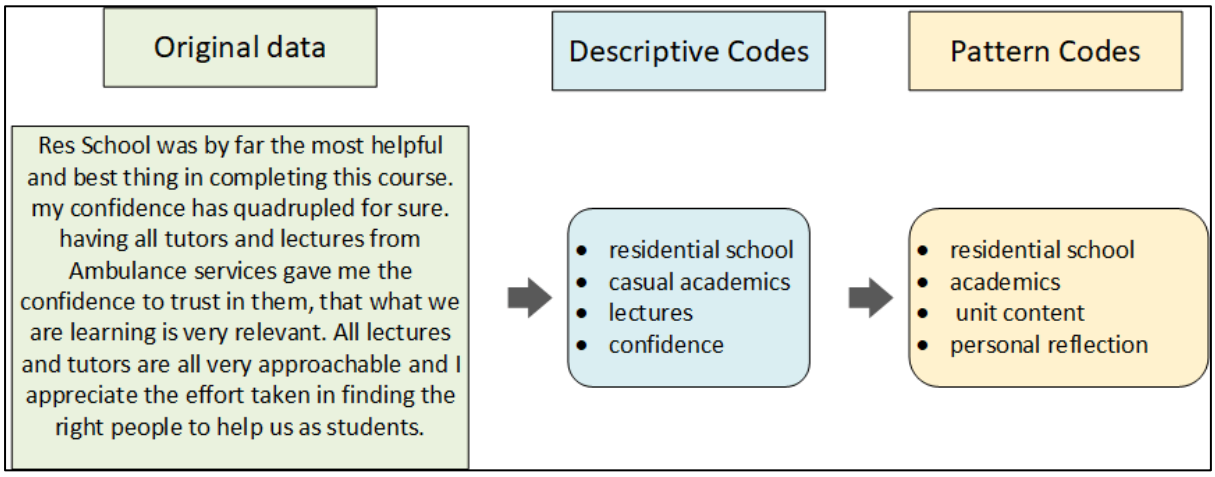


Figure 3-5 Example of coding cycles

Pattern coding is a way to condense the first cycle codes into smaller explanatory codes or categories. The second cycle analysis gathers the first cycle codes into relevant, more meaningful clusters of data (Saldaña, 2016).

Figure 3-5 shows an example of the first cycle descriptive coding and the second cycle pattern coding.

After completing a manual first cycle coding, the data in this project was entered into the qualitative data analysis software package QSR International NVivo 12 Pro to assist with further data coding and analysis.

3.6 Research ethics

This research was conducted in compliance with the CQUniversity Human Research Ethics Review Committee requirements.

A low risk ethics application was approved for the collection of archival data from CQUniversity databases. Two modifications were approved allowing access to additional databases that have been included in this research. Approval number H15/07-164 and modifications are included in Appendix A.

An additional low risk application was approved for the collection of data from an online survey. Approval no. H16/10-273 is included in Appendix B. The full online survey and participant information sheet is included in Appendix C.

Some of the data collection approved in the ethics applications has not been used in the thesis as it was not relevant to the research question.

The main ethical consideration for the research project was protection of the identities of the online survey participants. The researcher ensured the survey did not collect any personal details or specific locations that may have been used to identify participants. An email

invitation including a link and an information sheet outlining research and complaints information was distributed to all eligible students.

All electronic data was password protected and stored on an online data storage facility approved by CQUniversity.

As identified, this mixed methods case study was completed with full ethics and data collection approvals from the appropriate authorities. To give a better understanding of the student cohort involved in the research, Chapter 4 will discuss some demographics of the group prior to presenting the results of the data collection.

Chapter 4. Results

Chapter 3 outlined the research design of the project. Methodology, data collection methods, analysis and instruments were explained. Further, ethics approval was detailed.

This chapter presents the data analysis results. The following sections outline the study demographics of the blended learning student group. This is followed by the results from analysis of quantitative and an overview of the qualitative data. Chapter 5 is dedicated to discussing the findings from this results chapter in detail. Qualitative comments will be included in Chapter 5 as they highlight the student perceptions throughout the discussion.

Section 4.1 that follows will present demographic information on the blended learning cohort of students. This will section does include some discussion about the demographic findings of this study and the positioning against the current available literature. The demographic information has not been included in the Chapter 5 for the discussion as it does not directly relate to the research question around student perceptions. However, the researcher believes it is important to show who the participants are to give context to the perceptions that are voiced.

Chapter 4.2 will present the results of the data analysis from all the sources. It should be noted that the terminology ‘distance’ was used throughout the RASS. This is a term that is commonly used within the paramedic student group when describing students who do not study on-campus. Therefore the ‘distance’ term was used in the survey to minimise the risk of students becoming confused with the blended learning terminology used in this thesis.

4.1 Study demographics

In order to understand the student perceptions of the unit, it is important to have a concept on who the blended learning student is. This section will present the demographic information of the students who enrolled in the ‘Foundations of Paramedic Clinical Practice’ in term two 2016.

As displayed in Figure 4-1, out of a total of one hundred and sixty-nine students enrolled in this unit, eighty-nine were enrolled in the blended learning mode of delivery and feature in this research. Of the eighty-nine students, a total of thirty-four (38.2%) responded to the researcher-administered student survey (RASS) and fifty-eight (65.16%) responded to the university-administered unit evaluation survey (UAUES).

The CQUniversity enrolment data showed the blended learning student group was predominately female, aged under thirty years of age and studying full-time. Nearly all students were Australian citizens with the majority living in Queensland. Due to the anonymous nature of the UAUES, demographics of the students who participated are unavailable. De-identified demographic information was collected in the RASS. The student survey included additional demographic information, including hours of paid work, study hours per week and learning preferences.

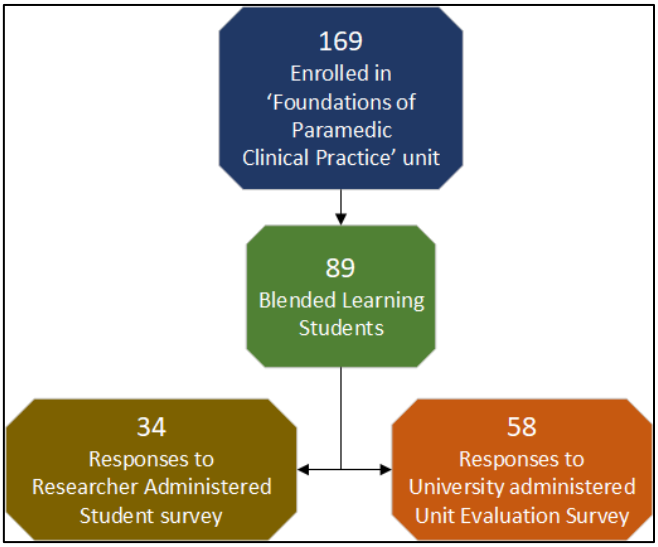


Figure 4-1 Study samples for research project

As shown in Figure 4-2 the respondents to the student survey are representative of the blended learning student cohort. The student group is predominately female under thirty years of age. The high prevalence of female students in the paramedic course are reflected in other healthcare courses with the Australian Bureau of Statistics (2018) finding 72% of students across all age groups were female.

Additionally, the Australian Bureau of Statistics (2018) data shows that more than 81% of students aged fifteen years or over were engaged in paid work to some level. This includes secondary school and non-school based formal education students who are working full-time or part-time (Australian Bureau of Statistics, 2018). The trend of working while studying was very clear in the students who participated in the RASS. The RASS data showed 56% of all students worked in excess of thirty hours per week during the study term. In students with a full-time study load, 45% were continuing to work long hours.

The reason for students undertaking paid work during the study term may be evident in the age demographics of the blended learning student cohort.

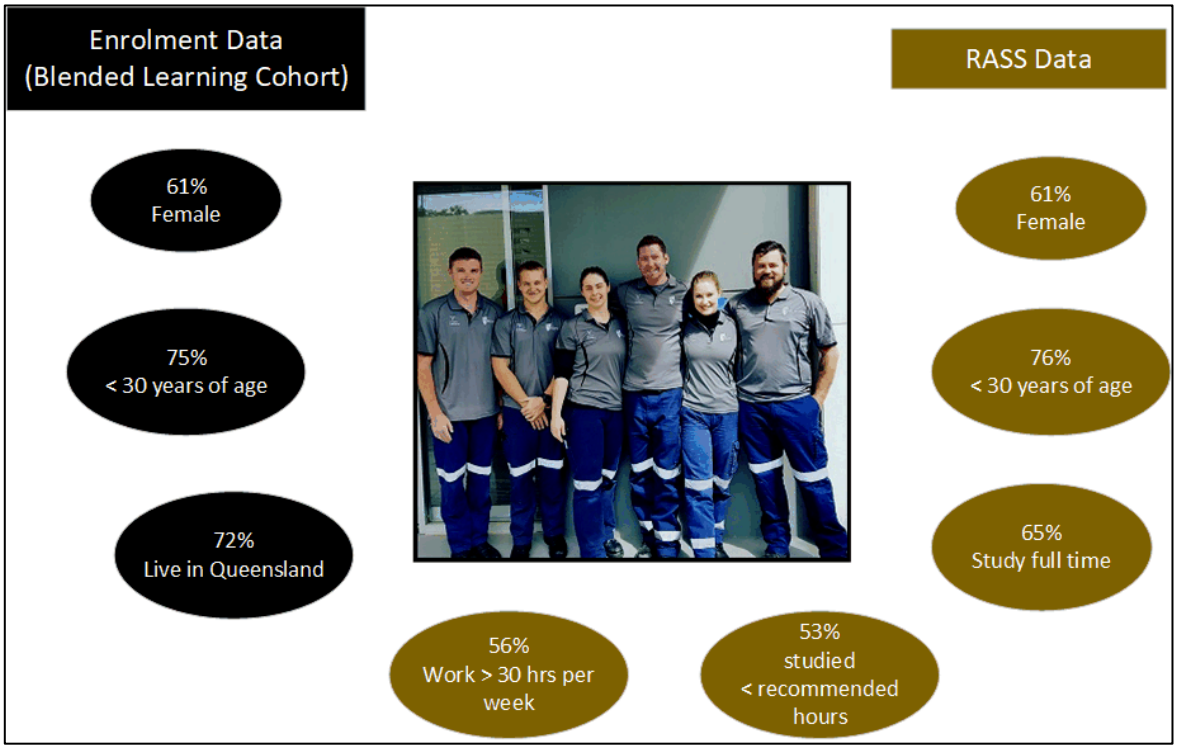


Figure 4-2 Paramedic students (photo courtesy of CQUniversity)

The majority of blended learning students enrolled in the 'Foundations of Paramedic Clinical Practice' unit, do not match the school leaver profile for Australia. While compulsory secondary education ends at sixteen years of age, most students entering higher education as a school leaver must have completed the final year of secondary study the year prior to the university application (Central Queensland University, 2018b; Queensland Government,

2017). Generally, this would place them into the seventeen to nineteen year age bracket. As shown in Table 4-1 and Figure 4-3, the fifteen to nineteen year age bracket only represents 14.7% of students who participated in the RASS and 22.5% of the student cohort enrolled in the 'Foundations of Paramedic Clinical Practice' unit. As noted by Creed, French, and Hood (2015), the older demographic is less likely to have parental or adequate government support and require paid work to meet basic financial needs.

Table 4-1 Age group of RASS respondents

Age Group					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 20	5	14.7	14.7	14.7
	20 - 24	8	23.5	23.5	38.2
	25 - 29	13	38.2	38.2	76.5
	30 - 34	5	14.7	14.7	91.2
	35 - 39	2	5.9	5.9	97.1
	45 - 49	1	2.9	2.9	100.0
	Total	34	100.0	100.0	

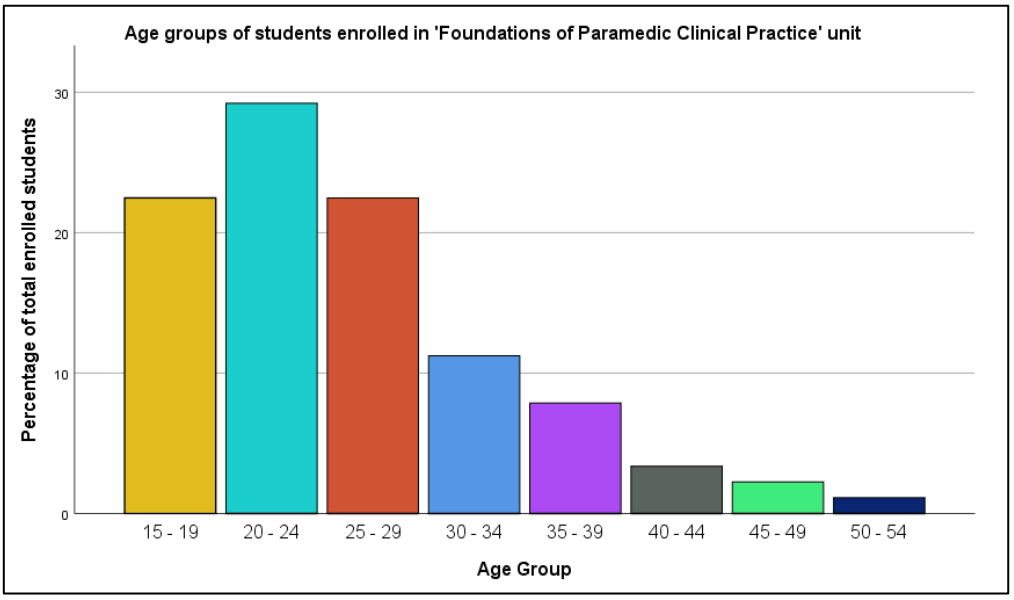


Figure 4-3 Age group of enrolments in 'Foundations of Paramedic Clinical Practice' unit

The results from this research indicate that students needed to work and study to meet financial commitments and, in some instances, would not be able to attain higher education qualifications if they were unable to work.

"If I didn't have a mortgage and bills to pay I would like on campus (study). Distance is great for this and I would not have been able to start uni if it wasn't for your distance offerings" (RASS34)

"I need to work to keep on top of financial commitments" (RASS14)

The requirement to work while studying may also be having an impact on the amount of time a student has available to study. Research has shown that some students achieve a work study balance by decreasing the amount of time dedicated to study and leisure activities (Darolia, 2014; Hall, 2010). The suggestion that students are dedicating less time to study is supported with the results of the RASS. As shown in Figure 5-3, approximately 72% of students in this group spent less than the recommended study time of 12.5 hrs per week (Central Queensland University, 2018b).

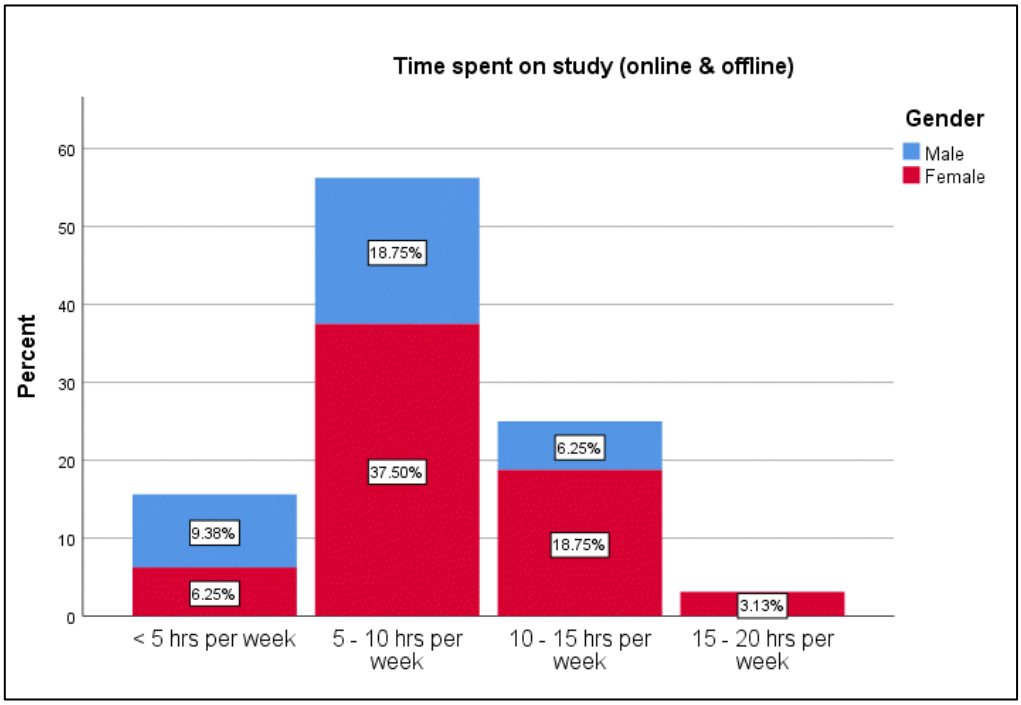


Figure 4-4 Time spent on study by gender (RASS)

While some students clarified the reduced hours were due to unexpected events or having prior knowledge of the subject matter, most did not offer any specific explanation for the reduced study time.

"Due to private unforeseen circumstances I did not study as much as I would normally study this semester," (RASS17)

I can't pinpoint an exact amount of time (on study) as I am on an on call roster, so it can be quite random. (RASS6)

I had a bit of prior knowledge meaning that I did not spend as many hours studying this course every week as what I would have if I had no prior knowledge. (RASS30)

Although the decision to study in a blended learning format is a voluntary one, research has shown, in some instances, this may be a pragmatic decision instead of a matter of preference (Zeldenryk & Bradey, 2013). The situations that impacted on this decision of study mode were evident in the student comments. In some cases, it did appear to be a definite preference for the blended study mode.

I require to work full time therefore part time distance is the best opportunity for me to study. Also, I live 1.5 hours from the closest campus. (RASS17)

I find distance learning easy if not better than on campus. However, it would not be for every student. Will depend on maturity, learning style and life commitments. (RASS28)

As can be seen by the earlier discussions, the student cohort enrolled in the 'Foundations of Paramedic Clinical Practice' could not be considered a traditional cohort of university students. The student group is predominantly female, more mature, work longer hours, dedicates less time to study and has other commitments to schedule into their available time. When developing a blended learning format for a unit of study, these factors should be considered.

4.2 Quantitative data results

Quantitative data in this research project was collected through the researcher-administered student survey (RASS). The RASS was comprised of twenty one questions including Likert scale type responses and open answer questions. The survey covered a range of themes relevant to the student learning journey in conjunction with the demographic data already reported.

As previously discussed, the themes were identified through current literature as well as from the researcher's knowledge of the paramedic course.

The areas covered include:

- Advantages and disadvantages of distance learning
- Learning preferences and the usefulness of available resources
- Support of blended learning students
- Residential school preparation and experience.

The complete student survey is included in Appendix C.

The next section will detail the quantitative data analysis collected from the researcher-administered student survey (RASS). The RASS was originally designed for a larger project which incorporated multiple student groups. However, due to the refining of the research question, some questions on the original survey have not been included as they are not relevant to the current research question. Questions 1-3 and 6-7 have not been reported below as the gathered data has been previously reported in the demographic information. Qualitative data captured in the student survey will be discussed in section 4.3 of this chapter.

The questions as stated in the survey are included in each section. An abbreviated statement has been included at the end of some responses to assist with presentation of the data in the relevant tables.

4.2.1 Questions 4, 5 and 8

This section examines what the students perceive are the advantages and disadvantages of choosing to study in a blended learning mode. Furthermore, it will show, if given the opportunity, whether students would have preferred to study on a university campus.

Advantages of distance study

Question 4 as stated in the student survey is:

> *I feel the advantages of studying by distance are (Please mark all that are relevant to your situation)*
>
> a. *I am able to listen to lectures and study at a time that suits me (Flexibility)*
> b. *I am able to pace my learning to suit me (Self-Paced)*
> c. *I am able to work and study (Work & Study)*
> d. *I only have to visit a campus for a few days each term to do residential school (Limited campus visits)*
> e. *I have contact with multiple practicing paramedics as tutors for residential school (Contact with Paramedics)*

Responses for Question 4 are shown in Table 4-2.

Table 4-2 RASS Q4 – Advantages of distance study (n=33)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S D
Percentage Response							
Flexibility				39.4	60.6	4.61	0.496
Self-Paced			3.0	63.6	33.3	4.30	0.529
Work & Study			9.1	36.4	54.5	4.45	0.666
Limited campus visits	3.0	6.1	3.0	45.5	42.4	4.18	0.983
Contact with paramedics	3.0	9.1	18.2	45.5	24.2	3.79	1.023

All respondents showed strong agreement that the flexibility to study at a time and place that suited them was an advantage in a blended study mode. Similarly, over ninety percent of participants identified the ability to self-pace the study load and to be able to work while studying as other advantages of distance study. While limited campus visits and the ability to have contact with paramedics were considered advantages for a majority of students, there was a wider standard deviation evident in the responses indicating these features were not as important to all students.

Disadvantages of Distance Study

Question 5 as stated in the student survey is:

I feel the disadvantages of studying by distance are (Please mark all that are relevant):

a. *Feeling isolated (Isolation)*
b. *Difficult to maintain motivation (Motivation)*
c. *Limited contact with other students (Limited Student Interaction)*
d. *Limited contact with course lecturers (Limited Lecturer Interaction)*
e. *Limited time to practise skills (Limited Skills Practice)*
f. *Extended time between residential schools makes it hard to remember skills (Skills Retention)*
g. *Time away from family to attend residential schools (Family Impact)*
h. *Cost of attending residential schools (Financial)*
i. *No disadvantages (Nil)*

Responses for Question 5 are shown in Table 4-3.

Table 4-3 RASS Q5 – Disadvantages of distance study (n=33)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S D
			Percentage Response				
Isolation	3.0	15.2	18.2	39.4	24.2	3.67	1.109
Motivation	3.0	18.2	21.2	45.5	12.1	3.45	1.034
Limited student Interaction	3.0	6.1	30.3	48.5	12.1	3.61	0.899
Limited lecturer Interaction	9.1	24.2	12.1	45.5	9.1	3.21	1.193
Limited skills practice		9.1	9.1	39.4	42.4	4.15	0.939
Skills retention		12.1	21.2	36.4	30.3	3.85	1.004
Family impact	12.1	39.4	33.3	6.1	9.1	2.61	1.088
Financial	3.0	15.2	30.3	27.3	24.2	3.55	1.121
Nil	21.9	31.3	34.4	9.4	3.1	2.41	1.043

The majority of participants in the survey identified that there were disadvantages to studying by distance. There was strong agreement that the time allowed for practicing new skills was considered a major disadvantage. Students further identified isolation, motivation, skill retention and the financial cost to attend residential schools as disadvantages in distance study. The time away from family to attend residential schools did not appear to be as concerning to the students as other issues identified in the survey.

Preference for on-campus study

Question 8 as stated in the student survey was:

> *If given the opportunity, I would have preferred to study on-campus.*

Responses for Question 8 are shown in Figure 4-5.

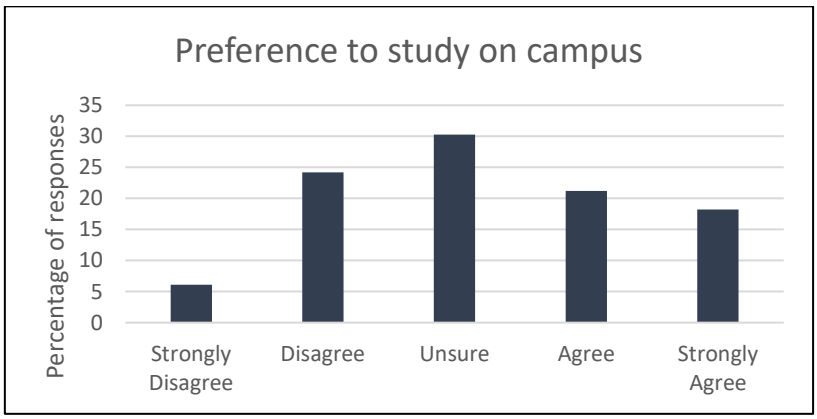


Figure 4-5 RASS Q8 - Preference to study on-campus (n=33)

Responses to this question indicate the decision to undertake the blended learning mode of study may not have been the preferred choice of study mode for some students.

Of the participants, 39.4% indicated a preference for on-campus study and another 30.3% showed that they were unsure if on-campus study would have been preferred. Less than one third of students indicated that distance study was definitely the preferred option of study mode.

4.2.2 Questions 9-10

This section will examine how the blended learning students would prefer to learn and whether the resources available in the unit were perceived as useful.

Learning preferences

Question 9 as stated in the student survey is:

> *I feel the best way for me to learn new information is by:*
>
> a. *Listening to audio recordings of lectures*
> b. *Watching video recordings or live Blackboard sessions*
> c. *Doing a skill or procedure*
> d. *Reading textbooks and handouts*
> e. *Writing notes during lectures or writing summaries on readings*
> f. *A combination of ways*

Responses for question 9 are shown in Figure 4-6.

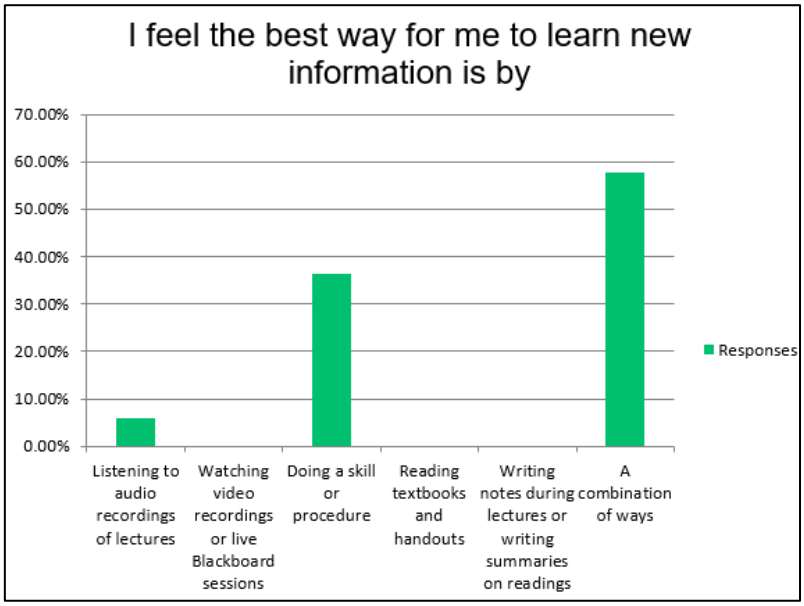


Figure 4-6 Learning preferences

Responses to this question show nearly 60% of students prefer to use a combination of techniques to help them learn new information. A further 35% of students prefer to actively undertake a skill or procedure to learn the required information. Only a small percentage of students indicated a preference that did not include a practical component when learning new information.

Usefulness of learning resources

This question in the survey includes a unit code for the 'Foundations of Paramedic Clinical Practice'. Students often refer to the units of study by the unit code rather than by the full title.

Question 10 as stated in the student survey is:

I found the following learning resources useful when studying PMSC11002

a. *Video Lectures (Video)*
b. *Recommended textbook readings (Readings)*
c. *Written resources eg. Fact sheets and handouts, Ambulance clinical practice documents (Written)*
d. *Live sessions with a lecturer eg. Blackboard collaborate sessions (Synchronous)*
e. *Forum posts (Asynchronous)*

Responses are shown in Table 4-4.

Table 4-4 RASS Q10 – Useful learning resources (n=32)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S D
			Percentage Response				
Video		3.0		57.6	39.4	4.33	0.645
Readings	12.1	12.1	21.2	51.5	3.0	3.21	1.111
Written		6.1	12.1	54.5	27.3	4.03	0.810
Synchronous	6.1	9.1	18.2	33.3	33.3	3.79	1.193
Asynchronous	9.1	12.1	33.3	30.3	15.2	3.30	1.159

The recorded video lectures provided in this unit appeared to be the most useful learning resource with results showing 97% of students agree or strongly agree with this statement. Written resources also proved to be useful to most students. The remaining resources showed a lower mean and a wider standard deviation within the group. This would indicate while useful to some students, others did not find the same value in the resources.

4.2.3 Questions 12-14

This section examines whether students felt questions were answered in a timely and helpful way, how they communicated with the academics, and if they felt supported in the unit. The term lecturer is interchangeable with academic in this context and generally pertains to continuing academics in the university. Casual academics employed for residential schools do not interact with students outside of the residential schools. However, they may have been considered when students answered comments around assessment and support.

Timely responses

Question 12 as stated in the student survey is:

I feel responses to my question from my lecturers were received in a timely manner.

a. *Email questions*
b. *Forum posts*

c. *Telephone Calls*

d. *Assessment marking*

Table 4-5 RASS Q12 - Responses received in a timely manner (n=33)

Statement	Not utilised	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S D
Percentage Response								
Email Questions	15.2			3.0	36.4	45.5	3.82	1.722
Forum Posts	21.2	3.0		6.1	33.3	36.4	3.36	1.950
Telephone calls	75.0	6.3		6.3	9.4	3.1	0.78	1.539
Assessment Marking	6.1			9.1	42.4	42.4	4.09	1.234

The responses as shown above in Table 4-5, indicate a strong agreement that responses to questions and assessment marking by email were received in a timely manner. The responses also highlighted that students did not utilise telephone calls as a routine way of asking questions of lecturers, with 75% of students indicating they had not used this communication method during the term.

Helpful Responses

Question 13 as stated in the student survey is:

I feel the responses from my lecturers were helpful to my learning.

a. *Emails*
b. *Forum Posts*
c. *Assessment Feedback*
d. *Telephone Calls*
e. *Blackboard Collaborate Sessions*

Table 4-6 RASS Q13 - Responses from lecturers – helpful (n=33)

Statement	Not utilised	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S D
Percentage Response								
Email	12.1			12.1	48.5	27.3	3.67	1.514
Forum Posts	15.2	3.0	3.0	6.1	42.4	30.3	3.48	1.734
Assessment Feedback	3.0		6.1	15.2	45.5	30.3	3.91	1.100
Telephone calls	69.7	3.0	3.0	3.0	15.2	6.1	1.09	1.809
Blackboard Collaborate sessions	24.2	6.1		12.1	30.3	27.3	3.0	1.984

As shown in Table 4-6, responses for this question are consistent with the previous question showing that a majority of students do not utilise telephone communication with lecturers. Responses indicate that students found assessment feedback the most helpful communication, however email and forum posts were also well received.

Feelings of support as a distance student

Question 14 as stated in the student survey was:

> *I felt supported by my lecturers as a distance student.*

Responses for Question 14 are shown in Figure 4-7.

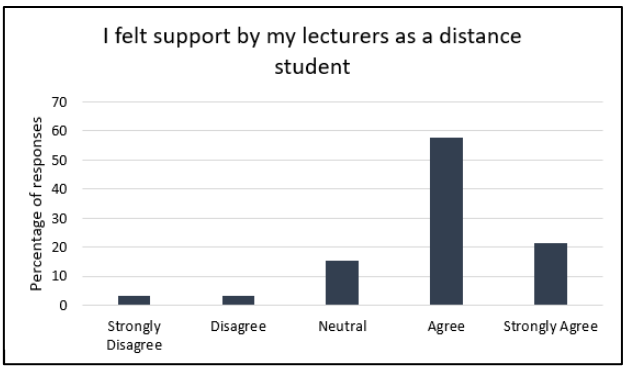


Figure 4-7 RASS Q14 - Feelings of support as a distance student (n=33)

Responses indicate that 78.8% of students agree or strongly agree they felt supported by the academics as a blended learning student. Only 6% (n=2) of students indicated that they did not feel supported by the lecturer as a distance student.

4.2.4 Questions 15-21

This section examines if lectures and resources assisted in students feeling prepared for the residential school component of the 'Foundations of Paramedic Clinical Practice' unit. Furthermore, it considers the student perception of the residential school structure including the casual academic staff, the impact of the learning environment and the format of the residential school activities and assessments. It should be noted the 'lecturers' in question 16 and 17 refer to the casual academics employed for the residential school.

Residential school preparation

Question 15 as stated in the student survey is:

Residential School Preparation

a. *The lectures provided in the Moodle site helped me to prepare for residential school (Lectures)*
b. *The learning resources (readings, forums, Blackboard Collaborate sessions) available in the Moodle site helped me to prepare for residential school. (Resources)*
c. *Overall I felt prepared to undertake clinical skills prior to attending the residential school (Overall).*

Table 4-7 RASS Q15 – Residential school preparation (n=32)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S D
Percentage Response							
Lectures			15.6	46.9	37.5	4.22	0.706
Resources			15.6	50.0	34.4	4.19	0.693
Overall		12.5	15.6	43.8	28.1	3.88	0.976

As shown in Table 4-7, 84.4% of students felt the lectures and resources helped them to prepare for the residential school. Despite indicating that lectures and resources provided were useful in preparation, 12.5% of students did not feel prepared for the residential school.

Structure of the Residential School

Question 16 as stated in the student survey is:

How did the structure of the residential school impact on your learning?

a. *Tutorial sessions allowed adequate time to practice new skills (Time on Skills)*
b. *I received an appropriate amount of assistance from lecturers to learn the required skills (Lecturer assistance)*
c. *There was enough time allocated to practise skills in a scenario based environment (Time to Practise)*
d. *The practice scenarios were realistic and relevant to my learning (Scenarios)*
e. *The scenarios helped me to consolidate my new skills (Consolidation)*

Responses for Question 16 are shown in Table 4-8.

Table 4-8 RASS Q16 – Impact of structure of the residential school (n=32)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S D
Percentage Response							
Time on skills	3.1	15.6	21.9	34.4	25.0	3.63	1.129
Lecturer Assistance		3.1	21.9	31.3	43.8	4.16	0.884
Time to practice (n=31)	3.2	12.9	19.4	38.7	25.8	3.71	1.101
Scenarios		6.3	9.4	40.6	43.8	4.22	0.870
Consolidation			12.5	34.4	53.1	4.41	0.712

Responses to this question indicate that there was high agreement that the scenarios were realistic, relevant and helped to consolidate new skills. Further, the responses show that the amount of casual academic assistance offered during skill acquisition was appropriate to facilitate learning under this structure. There was more variation in responses to the amount

of time allocated to acquire and then practise the new clinical skills. The responses in the questions regarding 'Time on skills' and 'Time to practise' showed a larger standard deviation indicating less agreement in the responses to these questions.

Casual academics at Residential School

Question 17 as stated in the student survey is:

How would you rate the lecturers that assisted with the residential school?

a. *The lecturers were helpful and interested in assisting me develop my clinical skills (Helpful & Interested)*
b. *The lecturers knew what we needed to learn at residential school (Knowledge)*
c. *The lecturers explained information in a way I could understand (Communication)*
d. *The feedback I received from the lecturers was helpful (Feedback)*
e. *The lecturers supported my learning at the residential school (Supportive)*

Table 4-9 RASS Q17 - Rating of lecturers at residential school (n=31)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S D
Percentage Response							
Helpful & Interested			12.9	19.4	67.7	4.55	0.723
Knowledge		6.5	9.7	22.6	61.3	4.39	0.919
Communication			12.9	25.8	61.3	4.48	0.724
Feedback			12.9	22.6	64.5	4.52	0.724
Supportive		3.2	6.5	19.4	71.0	4.58	0.765

As shown in Table 4-9 above, students have indicated that casual academics at residential school are rated highly in all areas with a mean above 4.35 in all responses. Only a small percentage of students felt lecturers were not as knowledgeable (6.5%) or as supportive (3.2%) as they could have been.

Residential School Learning Environment

Question 18 as stated in the student survey is:

Residential School Learning Environment

a. *Participating in residential schools is a good way to learn clinical skills (Learning Skills)*
b. *Interacting with other students at a campus was beneficial to my learning (Student Interaction)*
c. *The residential school allows me to focus my attention on learning skills without routine distractions (Focus on Learning)*
d. *The environment at residential schools makes me feel less isolated as a distance student (Reducing Isolation)*

Responses for Question 18 are shown in Table 4-10.

Table 4-10 RASS Q18 - Residential school learning environment (n=31)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S D
Percentage Response							
Learning Skills			3.2	16.1	80.6	4.77	0.497
Student Interaction			3.2	16.1	80.6	4.77	0.497
Focus on learning			6.5	22.6	71.0	4.65	0.608
Reducing Isolation			12.9	12.9	74.2	4.61	0.715

As indicated by the responses, there is a very high level of agreement in this question with the mean for all responses above 4.6. Responses indicate the residential school was an effective learning environment for blended learning students who participated in this survey.

Practical Assessment at Residential School

Question 19 as stated in the student survey is:

How would you rate the practical assessments at the residential school?

a. *I felt prepared to do the assessments on the last day of the residential school (Preparation)*
b. *The assessments at residential school were appropriate for what I had learned during the term (Assessment)*
c. *The assessments at residential school were achievable in the time frames allowed (Timeframes)*

Table 4-11 RASS Q19 - Practical assessment at residential school (n=31)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S D
Percentage Response							
Preparation	6.5		6.5	35.5	51.6	4.26	1.064
Assessment			6.5	19.4	74.2	4.68	0.599
Timeframes	6.5	3.2	12.9	25.8	51.6	4.13	1.176

As indicated in Table 4-11, over 90% of students surveyed felt the assessments were appropriate to their learning. While most responses also indicated students felt prepared (87.1%) and timeframes were achievable for the assessment (77.4%), there was a small percentage of students that disagreed with these statements.

Number of Days at Residential School

Question 20 as stated in the student survey is:

I felt the number of days allocated for the residential school for PMSC11002 were:

a. *More than was required to learn and practise skills*
b. *Not enough to learn skills*
c. *Sufficient to learn the skills and practise*

Responses for Question 20 are shown in Figure 4-8.

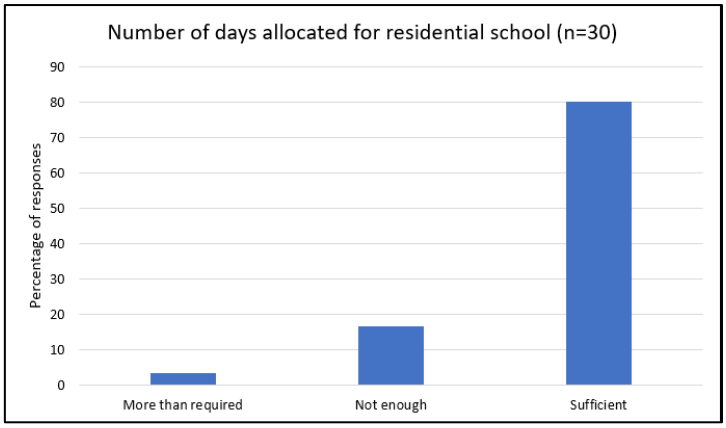


Figure 4-8 RASS Q20 - Number of days allocated for residential school

Responses to this question indicate eighty percent of the participants agreed there was sufficient time to learn and practise the new skills in the current unit structure. Only one student (3.3%) felt the number of days for the residential school exceeded what was required.

Learning Clinical Skills by Distance

Question 21 as stated in the student survey is:

Attitude towards distance learning for clinical skills

a. *Learning clinical skills is achievable as a distance student (Achievable)*
b. *Learning clinical skills as a distance student is too difficult (Too Difficult)*
c. *I would recommend distance learning for clinical skills to other students (Recommend)*

Table 4-12 RASS Q21 - Attitude toward distance learning for clinical skills (n=31)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S D
			Percentage Response				
Achievable		3.2	6.5	64.5	25.8	4.13	0.670
Too Difficult	19.4	45.2	22.6	9.7	3.2	2.32	1.013
Recommend		9.7	41.9	38.7	9.7	3.48	0.811

As shown in Table 4-12, while 90.5% of students agree or strongly agree that learning clinical skills by distance is achievable, only 64.5% disagreed that it was too difficult to learn clinical skills in this way. Less than half of the students (48.4%) would recommend learning clinical skills by distance with an additional 41.9% remaining neutral.

4.3 Qualitative data results

Qualitative data was captured from the researcher-administered student survey (RASS) open answer questions, the university-administered unit evaluation survey (UAUES) and the Moodle (LMS) forums. The Moodle forums were sparsely used during the teaching term and therefore the comments were limited. Some forum posts were not included in this research as they contained comments or questions relating to paramedic procedures, specific paramedic equipment or were conversational posts which was outside of the scope of this research.

The results shown below is the numerical presentation of the qualitative data and the source from where the data was collected. The qualitative comments will be included in Chapter 5.

As discussed in Chapter 3, the qualitative data was analysed into descriptive codes and then reanalysed into categories.

The overall number of references by category can be seen in Figure 4-9.

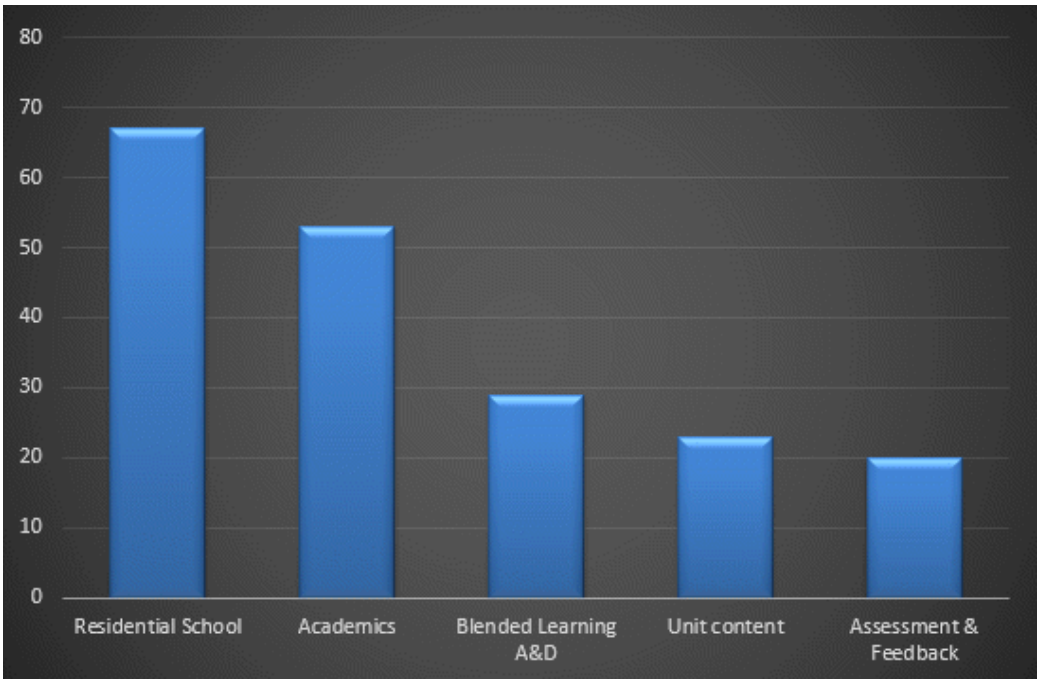


Figure 4-9 Number of qualitative references by category

Table 4-13 displays the source of references in each category.

Table 4-13 Source of qualitative references by category

Coding	UAUES	RASS	Forum Posts	Total
Residential School	41	24	2	67
Academics	30	22	1	53
Blended Learning advantages and disadvantages	0	29	0	29
Unit content	14	9	0	23
Assessment and Feedback	10	5	5	20
Total	**95**	**89**	**8**	**192**

As shown in the tables above, the highest number of references were surrounding the residential school and academics. It should be noted that the academic category includes the university continuing academics as well as the casual academics employed for the residential school. In some cases, it was not evident which group of academics the comments related to and therefore the data has been combined.

An additional category of personal reflections has not been included in the data above as it is not directly related to a specific component of the 'Foundations of Paramedic Clinical Practice' unit. However, it will be included in a general discussion area as it does provide an insight into the overall perceptions of the students in the unit.

The data collected from the UAUES was not in response to specific questions. However, the survey yielded a high number of references in some of the same categories as the RASS. The UAUES invites comments for the best aspects and the most in need of improvement aspects of the unit. The RASS comments were in relation to specific questions as previously described.

Chapter 5 will now discuss in detail the main findings of the data collection.

Chapter 5. Consideration of Results

Chapter 4 presented the demographics of the students enrolled in the 'Foundations of Paramedic Clinical Practice' unit. Quantitative data analysis and an overview of the qualitative data analysis were also presented.

This chapter will provide a discussion of the results as reported in Chapter 4. The discussion will be presented in the same broad categories as shown in Table 4-13. While these are the categories chosen from the qualitative data, the quantitative data also informs these same categories. Qualitative comments from the RASS and UAUES have been included in this chapter to emphasise the student perceptions in the discussions.

In Table 4-13 advantages and disadvantages of blended learning are categorised together. However, for the purpose of the discussion, these categories will be separated.

These categories include:

- Advantages of blended learning
- Disadvantages of blended learning
- Unit structure
- Residential school
- Assessment and feedback
- Academic teaching staff.

The final section of this chapter will look at the personal reflections of the students enrolled in the unit. While this section will not inform changes to the unit, it does capture the feelings of the students who have experienced the unit in the current blended learning approach.

It should be noted that the terminology 'distance' was used throughout the RASS. This is a term that is commonly used within the paramedic student group when describing students who do not study on-campus. Therefore the 'distance' term was used in the survey to

minimise the risk of students becoming confused with the blended learning terminology used in this thesis.

5.1 Advantages of blended learning modes of study

Studies have shown a range of advantages in distance education including blended learning modes. The flexibility offered in a distance course is seen as one of the biggest advantages. The ability to study where and when it suits the student rather than when a class is scheduled is a common theme in the literature (Bloomfield & Jones, 2013; Fresen, 2018; Harrington & Loffredo, 2010; S. Jones, 2015; Stone, O'Shea, May, Delahunty, & Partington, 2016). The need for flexibility was evident in the blended learning students who participated in the RASS. Every student indicated that the flexibility to listen to lectures and study at a time suitable to them was an advantage. As shown in the demographics of the student group, the stage of life of some students demands more flexibility for study than traditional school leavers may require.

> *Being an adult with a family, the flexibility really suits me and an unpredictable schedule. (RASS2)*

> *Because I am more flexible studying distance which means I can study when I want and work when I want. (RASS25)*

The flexibility offered in distance study to work to meet financial or family obligations has been well documented (Bailey, Ifenthaler, Gosper, Kretzschmar, & Ware, 2015; Creed et al., 2015; Iley, McInulty, Jones, Yorke, & Johnson, 2011; Stone et al., 2016; Zeldenryk & Bradey, 2013). The ability to work and the flexibility of study in the blended learning mode featured in the RASS with over 90% of students finding this was an advantage. The student comments supported this position.

> *I need to work to keep on top of financial commitments. I have really enjoyed the flexibility of distance study. (RASS14)*

I require to work full time therefore part time distance is the best opportunity for me to study. (RASS17)

Studying by distance provides me better flexibility to be able to work full time. (RASS20)

The ability to self-pace study has been identified as another advantage of distance education in previous studies (Frimming & Bordelon, 2016; Green & Whitburn, 2016). In addition to being able to work as required or desired, 96% of students who participated in the RASS indicated the ability to self-pace their learning was highly advantageous. It may be that this advantage is closely aligned to the ability to work and study, although some students with previous experience in a face-to-face environment, found the self-pacing easier in the blended learning environment.

I have previously studied on campus and found it a lot easier to study at a pace that suits me. (RASS24)

In contrast with an online mode of study, blended learning includes an element of face-to-face interaction. In the 'Foundations of Paramedic Clinical Practice' unit, the face-to-face component is a four day intensive residential school that occurs once a term. Over 85% of students who participated in RASS indicated having limited requirements to attend a university campus was an advantage of the unit. This finding could be expected in a group with high full-time employment commitments and where regular travel to a campus takes time and money to achieve (Frimming & Bordelon, 2016; Owston, 2018).

The non-traditional student group, as described in the demographics section, recognise the advantages of the blended learning format. The flexibility offered in the blended learning mode allows students the freedom to work and self-pace their study as required to meet their financial and family obligations.

While there are clear advantages for students in the blended learning mode of study, equally there are also disadvantages. Some disadvantages of online study remain in a blended learning mode and will be discussed in the following section.

5.2 Disadvantages of blended learning

The challenges of distance education have been well researched. Feelings of isolation, lack of engagement with lecturers or peers and difficulty in maintaining motivation have been identified as disadvantages in distance education (Brunet, 2011; Mahle, 2011; Verdinelli & Kutner, 2016). While blended learning, in the context of this study, has a component of face-to-face interaction with peers and academics which in theory should alleviate some of the issues, the disadvantages are still felt by a lot of students.

Over 50% of the student group who completed the RASS felt isolation, difficulty in maintaining motivation, and lack of interaction with peers and academics remained as issues in the blended learning mode of study. Most students did not comment on why they continued to feel isolated and de-motivated.

Engaging with peers has been reported to help with issues such as motivation and isolation. The ability to socialise, share ideas and to learn by watching others are all shown to impact positively on the student experience (Andrews & Tynan, 2012; Cheung & Hew, 2011; Holland et al., 2013; Simonson, Smaldino, & Zvacek, 2015). In the blended learning mode, the residential school allows students to meet and interact with peers, however the time is limited to a few days per term. The problem of limited peer interaction was identified in the RASS.

More than half of the students who completed the RASS identified the lack of peer interaction as one of the disadvantages of the blended learning mode of study. When asked if students would have preferred to be studying on-campus, the comments highlighted the perceived importance of interacting with others.

It would give me the chance to network face-to-face with other students. (RASS6)

Learning from fellow students and skills practicing is most important (RASS26)

More personal contact with instructors and peers to create a "memory" of the learning. (RASS30)

The ability to interact with academics involved in teaching a unit of study has also been shown as an important factor in students feeling supported and connected (Goldingay & Land, 2014; Green & Whitburn, 2016; Khanova, Roth, Rodgers, & McLaughlin, 2015; Owston, 2018). While the students did have the ability to contact and interact with academics in the 'Foundations of Paramedic Clinical Practice' through unit activities as well as at the residential school, the feeling of being less connected than on-campus students remains. Some RASS respondents indicated that the personal relationship between student and academics was lacking in the blended learning.

I feel that there are significant advantages of on-campus study – more personal contact with instructors… (RASS30)

I would love to maintain my current job and situation however to be able to attend on campus lectures (would) form closer relationships with lecturers in order to further my learning. (RASS32)

The minimal interaction with peers and academics also seems to impact on the blended learning students' perception of skill acquisition and maintenance. Brooks (2016) identified ongoing support is beneficial for skills development. More than 80% of RASS respondents felt the limited time to practise skills had them at a disadvantage. As discussed in Chapter 2, the blended learning students had the same time in hours as on-campus students to learn and practise the clinical skills at the residential school. Despite this, there was a perception that the on-campus mode which offered ongoing contact with lecturers and peers, had added benefits which blended learning students did not have.

Res school was an excellent learning tool. However, I think to learn things gradually over time as an internal student may be easier and people may retain knowledge better. (RASS16)

(On-campus has) more personal contact with instructors and peers to create a "memory" of the learning. I find it helps to cement the information in my brain. (RASS30)

(On-campus has) greater face-to-face time, learning from fellow students and skills practicing which is most important (RASS26)

In the paramedic course at CQUniversity, the blended learning mode of study requires students to attend residential schools for all clinical skills units. For a full-time student this would mean attending a residential school each term from the second term in the first year of the course. However, for part-time students, this may mean an extended period of up to twelve months between residential schools. The time between clinical sessions has been shown to negatively impact on the retention of skills (Brooks, 2016). The concern of skills maintenance for blended learning students was evident in the RASS with over two-thirds of students identifying this as another disadvantage of blended learning. Comments from students reiterate that they are cognisant of the possible decline in their knowledge.

I expect to spend time at the next res school re learning plenty of skills. (RASS16)

With part time study I do feel I will forget stuff as time goes on as its spread out a lot – takes own initiative to go back and remember and practice skills again (RASS17)

While the travel to a residential school is only required once during the term, for students who are geographically remote from a university campus offering a paramedic residential school, the cost of travel and accommodation can be quite high. Interestingly, only half of the students indicated that cost of travel was a disadvantage to the blended learning mode. Additionally, the prospect of being away from family to attend residential schools did not

appear to be a significant issue among the students. Only 15% of students indicated that family impacts were a disadvantage in a blended mode of study.

Despite the blended learning mode of study offering face-to-face contact with peers and academics, students still report some of the same disadvantages as do purely online students. Additionally, students reported feeling that on-campus peers have an advantage by exposure to skills and other peers over an extended period during the term. This is compounded by the blended learning students having concerns over the loss of skills in the long periods of non-contact between residential schools.

To allow students to gain the most out of the unit, the structure should aim to embrace the advantages and minimise the disadvantages of a blended learning format. However, the unit structure must meet university standards as well as meeting the learning needs of students.

The following section will examine the student perceptions of the unit structure for the term two 2016 offering. The residential school component of the unit will be discussed in section 5.4.

5.3 Unit structure

As discussed in Chapter 2, the ‘Foundations of Paramedic Clinical Practice’ unit is comprised of pre-recorded video lectures, textbook readings, lecture slides and various industry-specific resources. These resources were supplemented with synchronous and asynchronous communication with academics and other students.

The use of video recordings in clinical areas is becoming more common. A variety of different clinical areas have used video recordings either to replace or enhance live lecture material. Evaluations have shown that in most settings, the blended learning format is either equivalent or better than a traditional live format (Brooks, 2016; Coyne et al., 2018; Hurst, 2016; Kiviniemi, 2014). The flexibility to replay video recordings as required for individual learning features regularly in the literature (Cooper & Higgins, 2015; Coyne et al., 2018;

Green & Whitburn, 2016). The response regarding the usefulness of video lectures in this research supports earlier findings. Respondents to the RASS overwhelmingly indicated the use of video lectures within the unit were the most useful resource. Comments further supported this:

> *All lectures easy to listen to and learn from- very interesting (UAUES 2)*

> *Lectures where skills were presented step by step were extremely helpful as if I didn't understand anything I was able to go back and check (RASS27)*

Students did appreciate high quality succinct video; however, they did not appear tolerant of mistakes or poor quality recordings.

> *Sometimes the videos can be quite long winded to get to the point. (UAUES17)*

> *Some of the videos doubled up and often got off topic. (UAUES8)*

> *The video recording could be improved, sometimes the voice recording was a bit rusty. (UAUES27)*

The ideal length of video varies throughout the literature, however most studies found shorter videos ranging from three minutes through to a maximum of twenty to thirty minutes suitable for a blended learning environment (Fresen, 2018; Guo, Kim, & Rubin, 2014; Khanova et al., 2015). The shorter video lecture times used in the 'Foundations of Paramedic Clinical Practice' unit appeared to be appreciated by students, with comments including:

> *The course content was in small easily absorbed loads. (UAUES23)*

> *I loved the shorter lecture times. (UAUES52)*

While 97% of students found the video content was useful to their learning, the percentage of students that found the textbook useful dropped to 54%. This is in contrast to some

studies which showed students highly valued textbooks (Buck, 2016). However, the results do support other studies which found students tend to favour video over textbook resources (Bloomfield & Jones, 2013; Buck, 2016). The inclusion of industry specific handouts and clinical practice guidelines were well received which may indicate students could see value in the resources that could be directly linked to career aspirations (Owston, 2018).

In addition to video lectures and other online resources, the literature shows that a strong online presence of academics or teaching staff can be important for student engagement and learning (Owston, 2018). Synchronous sessions through online platforms, such as Blackboard Collaborate, can help students connect with academics in real time (Khanova et al., 2015; Owston, 2018). However, Simonson et al. (2015) found timing of synchronous sessions can be difficult due to the different time zones, clashes with other universities and the need to meet family commitments. Despite over two-thirds of the students indicating the value of the synchronous session available in the unit, the use of Blackboard Collaborate was very limited and did not appear to be offered in time slots that were suitable for some students. Comments from students showed some desire to engage in the Blackboard sessions despite the minimal offerings.

> *The blackboard sessions are never on at relevant times and watching it after defeats the purpose of the session. I could just watch the lecture again instead of having someone live there to voice concerns (RASS31)*
>
> *I feel that the blackboard sessions are crucial for distance students. I feel that there should be at least two per week. (RASS30)*
>
> *Paying for this course we kind of expect more face-to-face online opportunities, some were provided but not consistently. I feel distance students are greatly disadvantaged compared to internal students who get face-to-face contact and regular hands on experience. Yes, our choice to be distance but it should be equal learning. (UAUES48)*

Another tool used primarily as a communication platform in this unit - but which has been used as a learning resource throughout the literature - is asynchronous forums. Well structured forum activity has been useful in engaging students in unit-related discussions which helps consolidate new information (de Jong et al., 2014; Owston, 2018). In contrast, Alrushiedat and Olfman (2013) found poorly structured posts or multiple reoccurring questions were viewed negatively by students and reduced the amount of engagement with these platforms. Neither students nor academics appeared to engage in any of the forums in a sustained or meaningful way in the 'Foundations of Paramedic Clinical Practice' unit. While 45% of students identified the forums as useful, data from the RASS suggests that between 15% and 22% of students never used the forums at all. Comments from students showed no engagement or problems with the format used in the forums.

> *I don't use the forums (RASS28)*

> *The forum posts take too long to get through as people ask the same question multiple times. (RASS21)*

The lack of interest and engagement in the forums was identified in research by Ghareeb, Han, Delfino, and Taylor (2016).

As discussed above, the academic to student communications through Blackboard Collaborate and Moodle forums were limited. Other communications strategies available to all students enrolled in the 'Foundations of Paramedic Clinical Practice' were telephone, email and assessment feedback. Assessment feedback will be discussed separately in section 5.5. As shown in Figure 5-1, all students were given direct telephone and email contact details for university academic teaching staff. This information was clearly displayed in the Moodle LMS page for this unit.

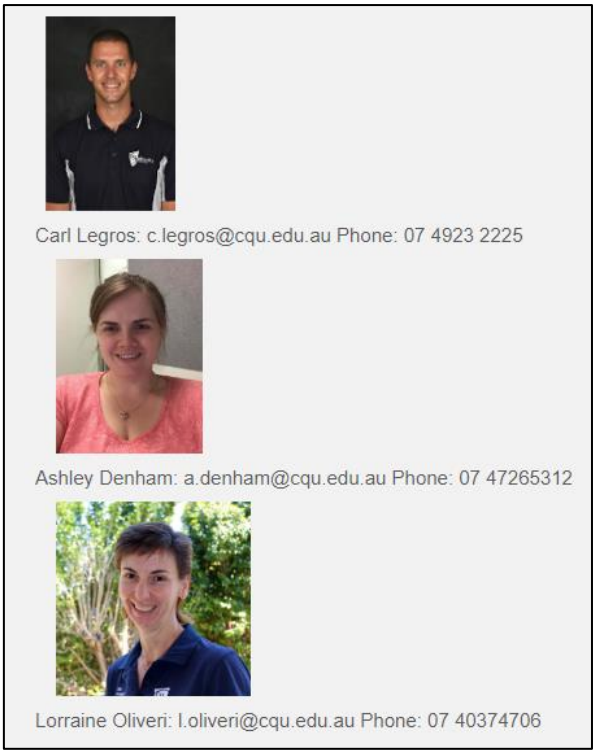


Figure 5-1 Academic teaching staff information from Moodle LMS Page

Despite having the option of speaking directly with an academic, students preferred email for communication. Respondents to the RASS found email was both timely (81.9%) and helpful (75.8%) in their learning. In contrast, nearly three-quarters of the students did not utilise telephone communication with the academics at all. The strong preference for email over telephone contact was also revealed by Gallardo-Echenique, Bullen, and Marqués-Molías (2016).

As with any unit, the lectures and resources provided for students are there to help them learn new knowledge and skills. In the 'Foundations of Paramedical Clinical Practice' unit, the lectures and resources are vital to being prepared for learning the practical skills at residential school. Hua et al. (2013) found online content can be helpful in preparing for in-class activities. Students in this project appeared to agree with this view. Over 84% of RASS respondents found the video lectures and online resources helped them to prepare for the residential school. Despite this strong agreement, student comments indicated that some

students felt they could not prepare adequately for the requirements of the residential school.

> *While I read/watched the lectures online - I underestimated the difficulty of residential school (RASS20)*

> *I did the lectures and rewatched before the Res but I felt like I didn't know what we were talking about half the time (RASS32).*

> *I did feel quite overwhelmed at res school at first, but this might be helped by better preparation (RASS17).*

While most students felt the current resources did help them to prepare for the residential school, additional resources may have been beneficial to the learning process. Using mobile applications (apps) is becoming more common in daily life. Extending the use of mobile apps to clinical education has been shown to be beneficial in the retention of knowledge, learning clinical skills and improving critical decision making (O'Connor & Andrews, 2018; Yoo & Lee, 2015). Respondents to the RASS indicated that introducing the use of mobile or computer apps, particularly in the area of scenario preparation or simulation, may have assisted their learning. Suggestions of additional technology that may have been useful included:

> *Virtual reality apps etc, more complete role plays that reflect residential assessments (RASS9).*

> *Possibly a scenario generator eg an app or webpage (RASS26)*

> *Online practicals where we performed actions on an interactive program. (RASS32)*

> *Perhaps podcasts, any apps that would help (RASS30)*

The students enrolled in the ‘Foundations of Paramedic Clinical Practice’ unit showed a clear preference for short video lectures and industry-specific handouts or clinical practice

guidelines over the mandated textbook to provide the theoretical basis for their learning. While asynchronous forums and synchronous Blackboard Collaborate sessions have been shown to be helpful in other studies (Salter & Conneely, 2015; Themelis, 2014), neither the students nor academic teaching staff engaged in either platform in a meaningful way. Despite the limited academic presence in the online environment, students felt they were prepared for the requirements of the residential school. Students did indicate further enhancements to the unit could be made with the addition of mobile apps to aid learning.

The following section will discuss the structure and learning environment at the residential school.

5.4 Residential school

As discussed in Chapter 2, residential schools are used extensively in the Bachelor of Paramedic Science for students enrolled in a blended learning mode of study. Unlike other reported intensive modes of study, which are used as a quicker way of repeating a unit of study (Kuiper, Solomonides, & Hardy, 2015), the residential school model at CQUniversity is used as the primary teaching time for practical skills. There appears to be a dearth of literature which focuses on the residential school model in higher education.

Residential schools at CQUniversity offer blended learning students the same contact time and teach the same skills as the on-campus students undertake in regular tutorials. For the ‘Foundations of Paramedic Clinical Practice’ unit, the residential school is three days of skills acquisition and practice while the final day is reserved for assessments. Casual academics are an integral component of the residential school and will be discussed in a later section.

The ‘Foundations of Paramedic Clinical Practice’ unit is the first clinical unit in the course. It is the first opportunity for students to use equipment and undertake simulated scenarios which mimic cases they may encounter as paramedics. The practical nature of the residential school appears to be highly valued with students. Comments pertaining to the residential school featured in both the UAUES and the RASS.

The practical aspect of this course was the most rewarding and informative (UAUES16)

Residential School is awesome! It is intense, challenging, and gives you the practical setting to take everything you have learned and apply it (UAUES12)

Getting hands on at res school was most beneficial out of the whole course (RASS33).

Over 96% of RASS respondents indicated the learning environment at the residential school was a good way to learn clinical skills. The comments from students reflect this finding.

Residential school a fantastic place to learn & make mistakes (UAUES2)

(The best aspect was) the practical component, it really assisted in my personal learning and put everything we learned into place in a way that will be hard to forget. (UAUES15)

The practical residential week was fantastic! I learnt more that week than in all of my study to date (UAUES17)

Residential School is awesome! It is intense, challenging, and gives you the practical setting to take everything you have learned and apply it (UAUES12)

Despite the popularity of the residential school among the RASS respondents and the belief that learning clinical skills is achievable in the blended learning mode, surprisingly less than half would recommend this mode to other people. The reluctance to recommend the blended learning may stem from an awareness that it depends on individual circumstances and ability to be successful in this mode.

It honestly depends on the person and how they learn and their personal situation. (RASS19).

It would not be for every student. Will depend on maturity, learning style and life commitments. (RASS28).

I had some prior knowledge of clinical skills so I think it's achievable. However, it could be difficult for someone who has no knowledge. (RASS30).

As discussed earlier, most students did not feel the requirement to attend residential school was perceived as a disadvantage of the blended learning mode. Zeldenryk and Bradey (2013) posit for some students there is a preference for residential school rather than regular attendance at a class. In the RASS students identified there were benefits to attending the residential school. The residential school allowed blended learning students to dedicate their time to learning without routine daily distractions and to have facilitated interaction with other students studying the same course. The social interaction and learning from peers has been shown to be beneficial in a number of studies (Andrews & Tynan, 2012; Cheung & Hew, 2011; Frimming & Bordelon, 2016; Holland et al., 2013; Owston, 2018). Student comments supported the results of the RASS and previous studies.

Residential school also proved to be a great opportunity for networking with other students within the same degree (UAUES54)

I found the res school very useful and a great way to meet class mates (UAUES9).

It was really helpful seeing others do it and helping to get it right step by step, that type of explanation of trouble shooting why is not working eg. is not really in the lectures (RASS17)

While students appeared to value the interaction, there were some concerns regarding the number of students attending the residential school and the impact that had on practical activities.

Smaller number of students per res school- get more hands on experience and time to put knowledge into play (UAUES58).

It seemed like there were a few too many students. I would like to see a smaller number to allow for increased time with the instructors practicing. It felt like it was more about sticking to a rotation rather than ensuring the skills are understood, learned, and can be recalled properly (RASS30).

As highlighted in Chapter 2, the residential school practical component included sessions on equipment and skills used in the paramedic field. To add context to the learning, the knowledge and skills were used in a number of scenarios that replicated standard patient care cases experienced by paramedics. Respondents of the RASS showed strong agreement the scenarios were realistic and relevant, aiding the students to consolidate their learning. Owston (2018) asserts student learning can be enhanced if there is a direct connection between the learning and the future career. Student comments support this finding.

While residential school was particularly tough, I learned a lot, particularly on how to use the equipment and some insight on what like to be a paramedic (UAUES55).

The long days killed but I guess that's what we should prepare for in our new jobs. (RASS31)

The residential school model is not widely used in higher education paramedic courses. Therefore, there is a lack of empirical literature to assess the optimum length of a residential school block. As discussed previously, the length of the residential school mirrors the contact hours allocated for on-campus students. However, all of the contact hours are compacted into consecutive days. White (2011) posits students in clinical disciplines can be impacted by the amount of information and skills required to be learned and reproduced in the classroom environment. When this learning is compacted into intensive blocks the ability to process the

information and commit to memory may be impacted (White, 2011). Respondents to the RASS indicated the length of time allocated to learn and practise skills at the residential school was adequate. While 80% of RASS respondents felt the current four day format was adequate, comments from other sources indicated some additional time may facilitate more consolidation of learning.

> *The practical component (res school) was great! However, I think it would be of more benefit if it was increased to 5 days. This would allow for the information to really consolidate in our brains and set the processes firmly in place (UAUES34).*

> *The hands on practicals are fantastic (res school). I wish they were one day longer to really consolidate our practice as res school students only really get 4 days of hands on practice the whole term (UAUES22).*

> *Having 4 days of intense learning is hard to swallow. Even though it is not new content, I would appreciate the opportunity to have some time to arrange the material in my brain, so I could relax knowing what is expected of myself in the assessment (UAUES24)*

In some instances, the desire to have more days may have been influenced by the number of students at the residential school in a location.

> *Sufficient (time) if there were a few less students. It would be good to with reduce student numbers or add another day (RASS30).*

The students attending the residential school for the 'Foundations of Paramedic Clinical Practice' unit valued the opportunity to learn and practise clinical skills in the intensive block of four days. While the number of students at each residential school may impact on the amount of "hands on" time, most students felt the learning requirements of the school were achievable in the current format. Students valued the time interacting and learning with peers.

5.5 Assessment and Feedback

As discussed in an earlier chapter, this unit contained two quizzes comprising a single assessment piece and two practical assessments. The quizzes were completed online through the Moodle LMS. The practical assessments for blended learning students were undertaken on the last day of the residential school.

The use of online quizzes as an assessment tool is common in the literature. Online quizzes have been used to help with motivation, engagement and to formally or informally test knowledge of unit content (DePaolo & Wilkinson, 2014; Lowe, 2015; Salas-Morera, Arauzo-Azofra, & García-Hernández, 2012).

The online quizzes in the 'Foundations of Paramedic Clinical Practice' unit were designed to test theoretical knowledge of content taught during the term. While the RASS didn't explore student perceptions of the theoretical assessment, respondents to the UAUES did include comments regarding the online quizzes.

The quiz was timed and contained a combination of short answer and long answer questions rather than multiple choice questions. The format and timing did appear to cause concern with some students.

> *The quiz format was an absolute shock - would have liked a bit of warning (UAUES24)*
>
> *Quiz number 1 time frame could have been a little bit longer as I didn't get a chance to finish (UAUES25)*
>
> *(Needs) A bit more information about the structure of the quizzes (UAUES41)*

One particularly insightful student commented:

> *Issue: The online quiz assessments were a good tool for assessment, but if you used them to test your knowledge (which is how the course coordinator recommended you*

use them) then it's a bit late to realise you don't know as much as you need to, to pass.

Solution / Recommendation: Weekly progress quizzes (non-assessable) similar to what was done in (another unit) would be of significant benefit. (UAUES34)

The practical assessments were undertaken on the final day of the residential school. Students were required to undertake scenario-based assessments or objective structured clinical examination (OSCE) to show competency in clinical skills taught during the residential school. One assessment piece required the student to perform as a leader in a two person team and the second required them to perform without the support of a second person. While there were a couple of comments regarding the practical assessments in the UAUES, respondents to the RASS showed strong agreement that the practical assessments were both appropriate to their learnings and achievable in the timeframes allocated for assessment. Comments from the UAUES included:

If the assessment is a single officer assessment, then possibly practice a little more with doing it on our own instead of always using two officers (UAUES3).

I found that there was nothing I could really do to prepare for the on campus assessments. The lectures only begun to make sense properly when on campus (UAUES10).

I really enjoyed the on campus assessments (UAUES26).

Feedback on assessment has been identified as an important part of the learning process. Feedback has been shown to impact, positively or negatively, on motivation and improving on skills or knowledge (Dawson et al., 2019; Henderson, Ryan, & Phillips, 2019). Duffy (2013) suggests that feedback should be constructive in nature and delivered in a couple of ways such as written and verbal.

Students in the ‘Foundations of Paramedic Clinical Practice’ unit received feedback through assessment marking and verbally during scenario practice.

Respondents of the RASS identified that feedback on assessment received from academics was viewed as being helpful to their learning. However, some students identified issues with the way feedback was given.

> *Feedback not constructive at all. Feedback given seemed short and snappy rather than helpful (UAUES2).*

> *Assessment feedback came back as quite abrupt. Rather than being constructive "next time's" or elaboration on what could have been done better, the feedback seemed short. "did we even learn this" is not constructive or supportive (RASS27).*

Henderson et al. (2019) found students wanted feedback specific to them rather than general broad comments. The desire for more personalised feedback appears to be supported in this research project.

> *Even though I was happy with my results, more feedback would have been helpful in regard to the practical assessment at the res school eg. what specific things could have been done better etc. Comments were too general (RASS17).*

> *Feedback for one of the scenario assessments is confusing, so would suggest more helpful advice on how to be better and not just "needs direction" (UAUES24)*

Feedback in the ‘Foundations of Paramedic Clinical Practice’ unit is given by academics and by the casual academics employed for the residential school. While the residential school is the first time students can do practical skills, it is also the first time they get to interact face-to-face with the academics involved in the teaching. The student’s perceptions of the academics, both university and casual academics, will be discussed in the next section.

5.6 Academic teaching staff

The academic teaching staff for the ‘Foundations of Paramedic Clinical Practice’ unit consisted of three full-time continuing academics who were supported by a team of casual academics. As previously discussed, the role of the casual academics was limited to teaching and assessing clinical skills during the residential school. It should be noted in the comments below, the terms tutor, instructor, mentor and lecturer are used by students to describe casual academic teaching staff.

The casual academics were not involved in the marking of the online quizzes or teaching of the theoretical component of the unit. As previously described, the casual academics were generally current employees of the Queensland Ambulance Service undertaking the additional role of casual academic on days off or during recreational leave.

The use of casual or sessional teaching staff within the higher education environment is becoming standard practice with some literature claiming anywhere between 20 to 80% of university teaching staff are now casual (Crawford & Germov, 2015; Klopper & Power, 2014). The use of industry practitioners to teach in higher education courses where they have expertise is not a new practice (Eagan, Jaeger, & Grantham, 2015; Knott, Crane, Heslop, & Glass, 2015). Gentelli (2015) found using industry practitioners as casual staff helped students to make study and career connections. Respondents to the RASS clearly indicated the students rated the casual academic teaching staff highly with a mean of responses of greater than 4.3/5 in all surveyed areas.

The value of the industry/study connection was shown in student comments in this project.

> *You learn a lot from some awesome mentors who have significant on the job experience (UAUES41).*
>
> *Having all lecturers from Ambulance services gave me the confidence to trust in them, that what we are learning is very relevant (UAUES24).*

While it is clear from results of this study that RASS respondents valued the casual academics at the residential school, a significant number of student comments show that there were issues with using industry practitioners as teaching staff.

> *At times some of the tutors were not on the same page in terms of ways the university is teaching the unit. I found, there were some differing opinions regarding certain topics that seem to be traits picked up from working in the force (UAUES9).*

> *During residential school, some instructors were teaching outside the scope of the curriculum and causing serious confusion with students. We were told on some occasions not to follow the set guidelines of the course because they were not practical in the real world (UAUES50).*

Bouchoucha, Wikander, and Wilkin (2013) assert inconsistency in the teaching and assessment could negatively impact student outcomes and stress levels. This position appears to be supported in this research with multiple comments reflecting concern.

> *A bit more standardisation when it comes to the practical component. While one aspect of this course is that everyone has their own little peculiarities when it comes to the practical side of paramedics. when it comes to assessment and teaching everyone should be on the same level with what is being taught and what is relevant to the assessment (UAUES15).*

> *At residential school it would be a great help if all the trainers were on the same path in understanding what the criteria for passing the assessments are (UAUES45).*

> *It's highly frustrating to go into one room and be taught something and go to do it again with a different tutor and be told we are missing things or not doing it correctly (UAUES47).*

Some lecturers were teaching procedures different and outside of the scope of what was being taught on Moodle, causing a lot of confusion of what was required of us (RASS13).

There were a couple instances where the lecturers weren't all on the same page. A couple times one lecturer would say to do one thing, and another would say not to do that (RASS28).

I feel my grades dropped in this course because I was constantly being told different things. I know I need to know these things but it's also my first residential school and is daunting and the confusion along with the stress didn't help (RASS31).

The concerns regarding teaching quality do not appear to extend to the full-time academic staff. It should be noted the names of the university academics have been removed to protect their identities.

All the lecturers were fantastic!! (University academic) was an AMAZING teacher! They explained everything so well in practicals and always went the extra mile to help us understand processes and always corrected us right from the beginning to ensure mistakes weren't carried on (UAUES19).

Props to (University academic) for the great approach to learning (UAUES6).

(University academic) was a very good lecturer and always made people comfortable in practicals and was always willing to explain thing when someone didn't understand something (UAUES37).

Despite the issues described, respondents to the RASS mostly seemed to feel supported in their learning. While most comments support this result, there were a few comments that may indicate some dissenting views.

There wasn't really much support needed. I watch the lectures, do what I need to do then attend res school and get the support there (RASS33).

I just did not feel supported at the school (RASS31)

Apart from having all the content available from week 1, there wasn't that much 'support' provided apart from 3 or 4 sessions. Other than that, there was very little. We felt distant, made greater with 80-90% of content being from previous years study (RASS9).

The support was outstanding from all lecturers and assessors (UAUES1)

The sections above have discussed the different components of the 'Foundations of Paramedic Clinical Practice' unit. The next section will discuss the personal reflections from students of the unit overall.

5.7 Personal reflections

As previously highlighted, the 'Foundations of Paramedic Clinical Practice' is the first practical clinical skills-based unit in the Bachelor of Paramedic Science undergraduate course. This is the first time students have been exposed to and have had the opportunity to use specialised paramedic equipment. It is also the first time students have been required to undertake scenarios with peers and watched by peers.

Aside from the identified issues discussed in previous sections, a large number of students commented on a very positive learning experience in the 'Foundations of Paramedic Clinical Practice' unit.

The Course was amazing! So far my favourite part of uni. I loved the res school, the personable lectures and structure of content seemed very well put together. (UAUES6)

The course was a fantastic learning experience. It had many different parts that made it a complex yet enjoyable course to endeavour (UAUES9).

I really cannot speak highly enough about the quality of the CQU Paramedic degree and the staff that are a part of it. It has really been a great course so far (UAUES14).

Was so happy with this subject, an all round great learning experience (UAUES36).

Res school really is a lot of fun and you definitely do have to know your stuff (Forum1).

Students that have chosen to study the 'Foundations of Paramedic Clinical Practice' unit in a blended learning approach have highlighted the advantages and disadvantages of this study mode. The students have indicated the valued learning resources and identified weaknesses in the delivery mode. Students have also voiced that despite holding the industry paramedics in high esteem, there are inconsistencies in this teaching approach that impact student satisfaction and learning. The variety of feelings expressed by the students throughout the data has been captured in the word cloud in Figure 5-2 below.

Figure 5-2 Feelings of students enrolled in unit.

This chapter provided a discussion on the results from the data analysis. Areas of strength and weakness were highlighted. The next chapter will provide recommendations and a conclusion to this research thesis.

Chapter 6. Recommendations and Conclusion

Chapter 5 gave consideration to the results of the data collection. Categories were identified from the data collection and the discussions were presented using these descriptors.

Chapter 6 highlights the strengths and weakness as identified by the student group. Recommendations for possible improvements and areas for further research will be presented prior to concluding remarks.

The recommendations will be presented in the same categories as the consideration of results.

It should be noted that the recommendations below are based on the student feedback as well as themes and recommendations from the literature. However, there is no current evidence that the recommendations, if implemented in part or in full, would be successful in improving student perceptions of the blended learning 'Foundations of Paramedic Clinical Practice' unit. Further in-depth research would need to be undertaken to validate the successfulness of any recommendation.

6.1 Advantages of blended learning

The advantages of distance education, in this instance blended learning, has been well documented in the literature. The flexibility to study at a time and in a place that suits the student while allowing the ability to work and to meet family commitments has shown to be an important factor in the decision to undertake distance study (Iley et al., 2011; Stone et al., 2016). The ability to access university courses through a distance offering, in some cases, is the only way some students can attain higher education qualifications (Goldingay & Land, 2014). The advantages described in the literature have been supported by the results of this research. Without the flexibility of the blended learning mode of study, which only requires attendance at the university for four days in the term, some of the students may not be able to study the paramedic course at all. Most universities offer only an on-campus mode of

study for paramedic courses which would have excluded the majority of the blended learning cohort in this study.

RECOMMENDATION

It is recommended that CQUniversity continues to offer the paramedic course in a flexible blended learning mode. This would enable students who are unable to attend a university campus due to geographical location, family or financial commitments, or who have a learning preference for non-campus based education the flexibility to pursue a higher education course in the paramedic discipline.

6.2 Disadvantages of blended learning

As with advantages of distance study, challenges associated with studying by distance has been well documented in the literature. Feelings of isolation, limited engagement with teaching staff or other students and a lack of motivation when learning at a distance from a university campus have all been identified as disadvantages in distance education (Brunet, 2011; Verdinelli & Kutner, 2016). Blended learning, in this case attending a residential school, does go some way to lessening the impact of the difficulties by incorporating some contact time with the university, other blended learning peers and academic teaching staff including industry-based casual staff. The residential school alone does not completely resolve the challenges identified. Students in this research continued to feel the impact of limited ongoing contact with peers and academic teaching staff. Despite the same contact time as on-campus students, the perception of inequity between the groups remains. There is a feeling that the ongoing contact experienced by on-campus students assists with clinical skills acquisition and, importantly, knowledge retention.

RECOMMENDATION

It is recommended that CQUniversity investigates the following to see if they may be relevant to the paramedic discipline:

- Implementing communication platforms that could be used to encourage peer to peer and peer to academic interaction outside of the residential school.
- An additional non-compulsory day be added to the start of all residential schools and utilised as a refresher day for skills learned in previous units of study. This would allow students to reconnect and practise skills and patient assessment procedures that they may have forgotten. While this recommendation would not help the students in the 'Foundations of Paramedic Clinical Practice' as this is the first of the clinical units, it may go some way to easing the anxiety around the lack of practice with skills gained in this unit before needing to acquire additional skills in the next residential school. Adding an additional day to the residential schools would limit any additional costs to the student. While there would be extra accommodation and food required if the student is travelling, it would not require any additional flights or other major transportation costs.
- Increasing teaching academic's visible presence in the online environment. This would help to decrease the impact of distance and improve perceptions of support and connectiveness with the university and the unit of study.
- Increasing the use of synchronous and asynchronous tools in a structured format. For example, weekly online drop in sessions or regularly posting to LMS forums, throughout the study term may be beneficial to the student learning journey.

As discussed in Chapter 2.5 the design of the paramedic course and individual units within the undergraduate degree have been closely aligned to Kolb's experiential theory. The experiential learning theory has four essential elements that are required to be completed in a cyclic process to support student learning. The components are concrete experience, reflective observation, abstract conceptualisation and active experimentation. The remaining recommendations will be considered with a view of how it would impact on Kolb's experiential learning cycle.

6.3 Unit structure

The ‘Foundations of Paramedical Clinical Practice’ unit offers the theoretical concrete experience in the form of short pre-recorded videos in place of standard on-campus lectures, textbook readings, lecture slides and industry-specific written resources.

Current research supports the use of video recordings to teach clinical skills. Results have shown, in a blended learning format, clinical skills acquisition using pre-recorded video is equivalent or better than using live lectures (Brooks, 2016; Hurst, 2016). Students in this research expressed the opinion that the video recordings were the most useful resources available to them. Additionally, the use of industry-specific resources which showed a connection from the learning to the real world practice of a paramedic, were highly valued. Despite previous studies showing textbooks to be more favoured than other resources, students did not value this medium (Buck, 2016).

The ‘Foundations of Paramedical Clinical Practice’ unit offers the theoretical reflective observation and abstract conceptualisation in the form of asynchronous forum posts and synchronous activities on the Blackboard Collaborate platform. Additionally, direct communication with the academic staff can assist in answering questions to allow appropriate reflection on actions or assessment.

In regard to communication with the university-based academic teaching team, students did not utilise the direct contact route of telephone calls, preferring instead to use the asynchronous route of emails. Despite LMS forum platforms having been identified in previous studies as a good communication or learning resource, students involved in this research did not embrace this tool (Alrushiedat & Olfman, 2013).

RECOMMENDATION

It is recommended that CQUniversity considers the following recommendations to maintain or improve the theoretical concrete experience, reflective observation and abstract conceptualisation components of the experiential learning cycle:

- Retain the use of short video lectures to allow students the flexibility of watching and reviewing lecture material as required. Consideration should be given to the platform used to access the videos to ensure they can be accessed on a mobile device such as a mobile phone or iPad. This would enhance the ability to access videos at a time and place that suits the student but where they may not necessarily have access to a computer. Further consideration should be given to the platform to ensure functionality that would allow students the ability to download videos onto a computer or mobile device, to watch at a time or location where they may not have internet connection or where the bandwidth available is too low to support video formats.
- Continue with the use of industry-specific resources to allow the real world connection to be maintained throughout the learning journey. Additionally, this will allow students to be familiar with the resources prior to commencing a clinical placement or graduate position within a state-based ambulance service.
- Review the required textbook to ensure appropriateness of content for the 'Foundations of Paramedic Clinical Practice' unit. If it is deemed to be the best resource available, efforts need to be made to increase the integration of the theoretical knowledge into the practical component of the unit so that students can make the connection to everyday paramedic responsibilities.
- Encourage teaching academic staff to revisit the use of the communication platforms as teaching tools. While the integrated LMS forums provide an avenue of asynchronous interactions, other mobile platforms may provide access to students where they are regularly present. Platforms such as Twitter, Facebook, LinkedIn or Microsoft teams are becoming a common communication method for many people.

Utilising the more modern communication methods may make contacting and interacting with other peers and academic teaching staff easier and would not require a computer log-in to check for interactions.

The benefit of using public platforms would need to be carefully considered in the university environment as it may limit the ability to monitor student interactions for appropriateness of interaction with others. It may also impact on the ability to undertake future research or evaluations which involve student engagement and interactions.

Regardless of the preferred platform academic staff should retain a visible presence. Posting regularly to the chosen platform could help to keep students engaged with the learning materials as well as encouraging reflective interaction between students and/or academic staff.

- Academic staff consider increasing the number of synchronous opportunities for students. Suggested activities could include paramedic case discussions where students could experiment applying new knowledge from lectures to theoretical patient scenarios. This would allow active discussions on appropriate patient care treatment options, reflection on choices of treatment and reconceptualising current knowledge through interactions with others.
- CQUniversity investigates a mobile application (app) that could support scenario practice. This may assist in the preparations for attending the residential school by allowing students to transform theoretical knowledge into virtual practice in a safe environment. This may make the connection between individual clinical skills to holistic patient care easier to grasp. Possibilities include interacting as paramedics in virtual worlds or the extended use of virtual or augmented reality applications to enhance skill acquisition and retention.

6.4 Residential school

The residential school component of the ‘Foundations of Paramedic Clinical Practice’ unit is a four day intensive undertaken at a CQUniversity location in Cairns, Townsville or Rockhampton. The activities at the residential school are practical in nature and skills based directly aligned to everyday paramedic practice. The experiential learning that occurs in these residential is paramount to the success of the unit.

Students overwhelmingly found the residential school to be beneficial in their learning journey. The ability to connect with peers while putting theoretical learning into practice across a range of new skills in a safe environment was appreciated by students.

While the group of students in this research enjoyed the blended learning mode of study, including the residential school, they would hesitate before recommending it to others. Students could identify that it would not be a study mode that would suit everybody and was dependent on maturity and circumstances of the individual.

Concerns were raised surrounding the number of students attending each residential school and the impact this was having on learning and practising skills. While most students felt the current time at residential school was adequate, there was a feeling that extending the number of days or decreasing the quantity of students attending would have increased the value of the school.

RECOMMENDATION

It is recommended that CQUniversity:

- Maintain the current residential school structure for integrated learning and development of clinical skills in the ‘Foundations of Paramedic Clinical Practice’ unit, where the academic supports students through practicals using Kolb’s four stage learning cycle.

- Ensure the quality of learning is not impacted by the number of students attending residential schools. A review of the attendance at each residential school should be completed or alternatively the ratio of student to academic per tutorial session should be re-examined. The ability to transform theoretical knowledge into practical skills through hands on experience could be impacted if there is a limited time allocated to scenario practice or access to academics is reduced due to number of students.
- Review the time spent on skills and patient assessment to investigate if another day of residential school is warranted. Ensuring students have the opportunity to learn and participate in all activities is essential to gaining foundations skills that will be used throughout the undergraduate course and into the future workforce.

6.5 Assessment and feedback

The appropriateness of assessment pieces and the associated feedback received from assessment submissions are an integral part of the experiential learning cycle. The assessments should be designed to gauge if the required and knowledge has been obtained. While this research did not examine assessment outcomes as such, the student perceptions of the assessments pieces were an important to ascertain if the assessment approach was seen as appropriate from the student perception.

Assessments in the ‘Foundations of Paramedic Clinical Practice’ unit were comprised of online quizzes through the Moodle LMS and practical assessments completed at the residential school (blended learning mode) or in the final week of the study term (on-campus mode).

While quizzes are a common assessment tool (DePaolo & Wilkinson, 2014), the format used in term two 2016 appeared to be unexpected by the students. The unfamiliar structure and the amount of time allowed to complete the task were flagged as problematic by the students. The practical assessment requiring a dual person response was familiar to all

students as it had been practised several times prior to the final assessment and did not appear to cause concern. The single person scenario, however, did cause some concern as it was not routinely part of the scenario sessions.

Feedback on assessments forms an important part of the experiential learning cycle and can be a positive or negative influence on student performance and motivation (Dawson et al., 2019; Henderson et al., 2019). Students voiced concerns over the quality and quantity of feedback given for both the online quizzes and practical sessions, requesting a more personalised and constructive approach.

RECOMMENDATION

It is recommended that CQUniversity:

- Provide formal training for both university and casual academics to ensure students are receiving feedback in a constructive and structured format that is aimed at improving performance and knowledge without destruction of motivation or confidence.
- Introduce online quiz structure during the term as formative quizzes. This would decrease anxiety around unfamiliar assessment requirements. Additionally, it would allow exposure to the types of questions that may be encountered during the summative assessment with enough time to raise any concerns with academic staff before it impacts on unit grades.
- Consider that if single person practical assessments remain as part of the summative assessment suite in future offerings of the ‘Foundations of Paramedic Clinical Practice’ unit, time is allocated in the residential school tutorials specifically to practise this approach. Single person approaches to patient assessment and treatment requires additional time management skills and planning that is not required in a dual person response.

The remaining recommendations, while not directly related to the use of the experiential learning cycle are related to the academic staff who delivered the content and led the practical skill acquisition. The actions of the academic staff directly impact all components of the student learning experience.

6.6 Academic teaching staff

Academic teaching staff in the 'Foundations of Paramedic Clinical Practice' unit are comprised of three university employed academics and a team of casual academics sourced from industry, primarily the Queensland Ambulance Service. Casual academics, given the very limited scope of the role, do not have access to Moodle LMS or other university platforms.

The casual academics provided students an opportunity to connect with practitioners currently working in the field, allowing them to make the study/career connection (Gentelli, 2015). While the students appreciated making the real world connection, the use of the casual academics in a residential school tutorial and assessment role, came with a number of frustrations and concerns. Students felt that casual academics were not aware of the university teachings and tended to use industry practice and personal preference rather than the guidelines and theoretical knowledge students were required to use. The inconsistencies with the teaching style and tutorial content included by some of the casual academics raised concerns from students around the impact on their learning and grades achieved in the unit.

RECOMMENDATION

It is recommended that CQUniversity:

- Develop and deliver a formal training package for casual academics to ensure the quality of teaching is meeting higher education standards. Casual academics are not required to have any previous experience in higher education teaching, and in some cases, casual academics may not have attended a university to receive their own

education. These casual academics have long-term experience in the paramedic field and are an invaluable resource, however they may lack knowledge on university standards and assessment requirements.

- Approve Moodle LMS access to all casual academic teaching staff prior to interacting with the student cohort. Currently there is no ability for casual staff to access any resources from the university system, therefore the casual academics must rely on industry knowledge. Allowing access to Moodle LMS would allow casual academics to access unit teachings and resources prior to attending the residential school and may go some way to decreasing the inconsistencies in the student's learning experience.
- Review the time allocated to the morning briefings of casual academics. While briefing and debriefing sessions were undertaken, the time dedicated to this activity may need to be revised to minimise the inconsistencies between casual academics.

6.7 Areas for further research

The findings of this research as discussed throughout the chapters provide a platform for further investigation.

This research explored the perceptions of a small sample of participants from one term of study. Further research would be appropriate to determine if the experiences of this sample group were indicative of the experiences of other student cohorts across different clinical units and other year levels of the paramedic undergraduate course.

This research did not examine the unit outcomes of the study sample. To further validate the appropriateness of the blended learning approach to paramedic education, research to examine if there were any significant differences in grades achieved by on-campus students in comparison to the blended learning cohort could be undertaken.

This research did not examine the perceptions or experiences of the industry paramedics employed as casual academics. Further research in this area would give another

perspective and may identify further strengths and weakness in the current approach used by CQUniversity.

While the design of the residential schools was based on Kolb's experiential learning cycle, the participants, both students and academic staff, were not asked specifically their perceptions of the value of the four cycle approach to their learning. This is a potential area for further investigation.

Additional related research could investigate whether establishing self-help or peer support communities within the blended learning cohort of students could alter the perceptions of isolation and demotivation that have been experienced by students undertaking distance study.

Further exploration of comments regarding the student's expectations and perceived value for money when learning from a distance could be another avenue for additional research.

6.8 Concluding remarks

This research has explored the perceptions of a group of blended learning students undertaking a paramedic unit of study that included a range of basic clinical skills and assessments. The blended learning mode of study for paramedicine is not commonly found in Australian universities. Most universities tend to offer a more traditional pedagogical approach of on-campus lectures and tutorials. As stated in Chapter 2, there is limited literature on the perceptions of students undertaking paramedicine undergraduate courses in higher education. There is even less literature that examines the perceptions of students choosing to study in a blended learning mode where the design of the unit is based on Kolb's experiential learning theory.

This research has shown students who chose to study in a blended learning environment, which uses residential schools to deliver practical tutorial sessions, perceive the experience positively overall. Further, it has been shown the practice of using industry paramedics as

casual academics is appreciated by students, however there can be issues with consistency of teaching practice which needs addressing.

This research has given the blended learning student group a voice in which to share positive and negative perceptions in their first clinical skills unit of study. It is deemed this thesis can form the foundation for further research into the pedagogy used to teach paramedicine or other health-related fields in blended learning approaches of study.

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Appendices

Appendix A – Ethics

Secretary, Human Research

Ethics Committee Ph: 07 4923

2603

Fax: 07 4923 2600

Email: ethics@cqu.edu.au

Ms Lorraine Oliveri
School if Medical and
Applied Science Carins
Campus

27 July 2015

Dear Ms Oliveri

HUMAN RESEARCH ETHICS COMMITTEE ETHICAL APPROVAL

PROJECT: H15/07-164 *PARAMEDIC STUDENT OUTCOMES: A COMPARATIVE STUDY OF THE IMPACT OF TWO DIFFERENT APPROACHES TO BLENDED LEARNING IN UNDERGRADUATE PARAMEDIC COURSES.*

The Human Research Ethics Committee is an approved institutional ethics committee constituted in accord with guidelines formulated by the National Health and Medical Research Council (NHMRC) and governed by policies and procedures consistent with principles as contained in publications such as the joint Universities Australia and NHMRC *Australian Code for the Responsible Conduct of Research.* This is available at http://www.nhmrc.gov.au/publications/synopses/_files/r39.pdf.

On 27 July 2015, the Chair of the Human Research Ethics Committee considered your application under the Low Risk Review Process. This letter confirms that your project has been granted approval under this process, pending ratification by the full committee at its August 2015 meeting.

The period of ethics approval will be from 27 July 2015 to 30 December 2016. The approval number is H15/07-164; please quote this number in

all dealings with the Committee. HREC wishes you well with the undertaking of the project and looks forward to receiving the final report.

The standard conditions of approval for this research project are that:

(a) you conduct the research project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments required to be made to the proposal by the Human Research Ethics Committee;

(b) you advise the Human Research Ethics Committee (email ethics@cqu.edu.au) immediately if any complaints are made, or expressions of concern are raised, or any other issue in relation to the project which may warrant review of ethics approval of the project. *(A written report detailing the adverse occurrence or unforeseen event must be submitted to the Committee Chair within one working day after the event.)*

(c) you make submission to the Human Research Ethics Committee for approval of any proposed variations or modifications to the approved project before making any such changes;

(d) you provide the Human Research Ethics Committee with a written "Annual Report" on each anniversary date of approval (for projects of greater than 12 months) and "Final Report" by no later than one (1) month after the approval expiry date; *(Forms may be downloaded from the Office of Research Moodle site - http://moodle.cqu.edu.au/mod/book/view.php?id=334905&chapterid=17791.)*

(e) you accept that the Human Research Ethics Committee reserves the right to conduct scheduled or random inspections to confirm that the project is being conducted in accordance to its approval. Inspections may include asking questions of the research team, inspecting all consent documents and records and being guided through any physical experiments associated with the project

(f) if the research project is discontinued, you advise the Committee in writing within five (5) working days of the discontinuation;

(g) A copy of the Statement of Findings is provided to the Human Research Ethics Committee when it is forwarded to participants.

Please note that failure to comply with the conditions of approval and

the *National Statement on Ethical Conduct in Human Research* may

result in withdrawal of approval for the project.

You are required to advise the Secretary in writing within five (5) working days if this project does not proceed for any reason. In the event that you require an extension of ethics approval for this project, please make written application in advance of the end- date of this approval. The research cannot continue beyond the end date of approval unless the Committee has granted an extension of ethics approval. Extensions of approval cannot be granted retrospectively. Should you need an extension but not apply for this before the end-date of the approval then a full new application for approval must be submitted to the Secretary for the Committee to consider.

The Human Research Ethics Committee wishes to support researchers in achieving positive research outcomes. If you have issues where the Human Research Ethics Committee may be of assistance or have any queries in relation to this approval please do not hesitate to contact the Secretary, Sue Evans or myself.

Yours sincerely,

A/Prof Tania Signal
Chair, Human Research Ethics Committee

Cc: Mr Anthony Weber, Mr Paul Oliveri (co-researchers) Project file

Approved

Secretary, Human Research

Ethics Committee Ph: 07 4923

2603

Fax: 07 4923 2600

Email: ethics@cqu.edu.au

School if Medical and Applied

Science Carins Campus

12 October 2016

Dear Ms Oliveri

HUMAN RESEARCH ETHICS COMMITTEE ETHICAL APPROVAL MODIFICATION TO PROJECT: H15/07-164 *PARAMEDIC STUDENT OUTCOMES: A COMPARATIVE STUDY OF THE IMPACT OF TWO DIFFERENT APPROACHES TO BLENDED LEARNING IN UNDERGRADUATE PARAMEDIC COURSES.*

The Human Research Ethics Committee is an approved institutional ethics committee constituted in accord with guidelines formulated by the National Health and Medical Research Council (NHMRC) and governed by policies and procedures consistent with principles as contained in publications such as the joint Universities Australia and NHMRC *Australian Code for the Responsible Conduct of Research.* This is available at http://www.nhmrc.gov.au/publications/synopses/_files/r39.pdf.

On 27 July 2015, the Chair of the Human Research Ethics Committee considered your application under the Low Risk Review Process. This letter confirms that your project has been granted approval under this process, pending ratification by the full committee at its August 2015 meeting. On 17 February 2016, the Chair approved your request to collect additional demographic data from university databases. On 10 October 2016, the Chair approved the use of Easiconnect data and to have your supervisors included as co- researchers.

The period of ethics approval will be from 27 July 2015 to 30 December 2016. The approval number is H15/07-164; please quote this number in all dealings with the Committee. HREC wishes you well with the

undertaking of the project and looks forward to receiving the final report.

The standard conditions of approval for this research project are that:

(a) you conduct the research project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments required to be made to the proposal by the Human Research Ethics Committee;

(b) you advise the Human Research Ethics Committee (email ethics@cqu.edu.au) immediately if any complaints are made, or expressions of concern are raised, or any other issue in relation to the project which may warrant review of ethics approval of the project. *(A written report detailing the adverse occurrence or unforeseen event must be submitted to the Committee Chair within one working day after the event.)*

(c) you make submission to the Human Research Ethics Committee for approval of any proposed variations or modifications to the approved project before making any such changes;

(d) you provide the Human Research Ethics Committee with a written "Annual Report" on each anniversary date of approval (for projects of greater than 12 months) and "Final Report" by no later than one (1) month after the approval expiry date; *(Forms may be downloaded from the Office of Research Moodle site - http://moodle.cqu.edu.au/mod/book/view.php?id=334905&chapterid=17791.)*

(e) you accept that the Human Research Ethics Committee reserves the right to conduct scheduled or random inspections to confirm that the project is being conducted in accordance to its approval. Inspections may include asking questions of the research team, inspecting all consent documents and records and being guided through any physical experiments associated with the project

(f) if the research project is discontinued, you advise the Committee in writing within five (5) working days of the discontinuation;

(g) A copy of the Statement of Findings is provided to the Human Research Ethics Committee when it is forwarded to participants.

Please note that failure to comply with the conditions of approval and the

National Statement on Ethical Conduct in Human Research may result in

withdrawal of approval for the project.

You are required to advise the Secretary in writing within five (5) working days if this project does not proceed for any reason. In the event that you require an extension of ethics approval for this project, please make written application in advance of the end-date of this approval.
The research cannot continue beyond the end date of approval unless the

Committee has granted an extension of ethics approval. Extensions of approval cannot be granted retrospectively. Should you need an extension but not apply for this before the end-date of the approval then a full new application for approval must be submitted to the Secretary for the Committee to consider.

The Human Research Ethics Committee wishes to support researchers in achieving positive research outcomes. If you have issues where the Human Research Ethics Committee may be of assistance or have any queries in relation to this approval please do not hesitate to contact the Secretary, Sue Evans or myself.

Yours sincerely,

A/Prof Tania Signal
Chair, Human Research Ethics Committee

Cc: Mr Anthony Weber, Mr Paul Oliveri (co-researchers), Dr Julie Flemming and Dr Linda Pfeiffer (co- supervisors) Project file

Approved

Secretary, Human Research

Ethics Committee Ph: 07 4923

2603

Fax: 07 4923 2600

Email: ethics@cqu.edu.au

Ms Lorraine Oliveri
School if Medical and
Applied Science Carins
Campus

17 February 2016

Dear Ms Oliveri

HUMAN RESEARCH ETHICS COMMITTEE ETHICAL APPROVAL

MODIFICATION TO PROJECT: H15/07-164 *PARAMEDIC STUDENT*

OUTCOMES: A COMPARATIVE STUDY OF THE IMPACT OF TWO

DIFFERENT APPROACHES TO BLENDED LEARNING IN

UNDERGRADUATE PARAMEDIC COURSES.

The Human Research Ethics Committee is an approved institutional ethics committee constituted in accord with guidelines formulated by the National Health and Medical Research Council (NHMRC) and governed by policies and procedures consistent with principles as contained in publications such as the joint Universities Australia and NHMRC *Australian Code for the Responsible Conduct of Research.* This is available at http://www.nhmrc.gov.au/publications/synopses/_files/r39.pdf.

On 27 July 2015, the Chair of the Human Research Ethics Committee considered your application under the Low Risk Review Process. This letter confirms that your project has been granted approval under this process, pending ratification by the full committee at its August 2015 meeting. On 17 February 2016, the Chair approved your request to collect additional demographic data from university databases.

The period of ethics approval will be from 27 July 2015 to 30 December

2016. The approval number is H15/07-164; please quote this number in all dealings with the Committee. HREC wishes you well with the undertaking of the project and looks forward to receiving the final report.

The standard conditions of approval for this research project are that:

(a) you conduct the research project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments required to be made to the proposal by the Human Research Ethics Committee;

(b) you advise the Human Research Ethics Committee (email ethics@cqu.edu.au) immediately if any complaints are made, or expressions of concern are raised, or any other issue in relation to the project which may warrant review of ethics approval of the project. *(A written report detailing the adverse occurrence or unforeseen event must be submitted to the Committee Chair within one working day after the event.)*

(c) you make submission to the Human Research Ethics Committee for approval of any proposed variations or modifications to the approved project before making any such changes;

(d) you provide the Human Research Ethics Committee with a written "Annual Report" on each anniversary date of approval (for projects of greater than 12 months) and "Final Report" by no later than one (1) month after the approval expiry date; *(Forms may be downloaded from the Office of Research Moodle site - http://moodle.cqu.edu.au/mod/book/view.php?id=334905&chapterid=17791.)*

(e) you accept that the Human Research Ethics Committee reserves the right to conduct scheduled or random inspections to confirm that the project is being conducted in accordance to its approval. Inspections may include asking questions of the research team, inspecting all consent documents and records and being guided through any physical experiments associated with the project

(f) if the research project is discontinued, you advise the Committee in writing within five (5) working days of the discontinuation;

(g) A copy of the Statement of Findings is provided to the Human Research Ethics Committee when it is forwarded to participants.

Please note that failure to comply with the conditions of approval and the *National Statement on Ethical Conduct in Human Research* may result in withdrawal of approval for the project.

You are required to advise the Secretary in writing within five (5) working days if this project does not proceed for any reason. In the event that you require an extension of ethics approval for this project, please make written application in advance of the end- date of this approval. The research cannot continue beyond the end date of approval unless the Committee has granted an extension of ethics approval. Extensions of approval cannot be granted retrospectively. Should you need an extension but not apply for this before the end-date of the approval then a full new application for approval must be submitted to the Secretary for the Committee to consider.

The Human Research Ethics Committee wishes to support researchers in achieving positive research outcomes. If you have issues where the Human Research Ethics Committee may be of assistance or have any queries in relation to this approval please do not hesitate to contact the Secretary, Sue Evans or myself.

Yours sincerely,

A/Prof Tania Signal
Chair, Human Research Ethics Committee

Cc: Mr Anthony Weber, Mr Paul Oliveri (co-researchers) Project file

Approved

Appendix B – Ethics online survey

Secretary, Human Research

Ethics Committee Ph: 07 4923

2603

Fax: 07 4923 2600

Email: ethics@cqu.edu.au

Dr Julie Fleming and Ms Lorraine Oliveri

Building 33

CQUniversity Rockhampton North

26 October 2016

Dear Dr Fleming and Ms Oliveri

HUMAN RESEARCH ETHICS COMMITTEE ETHICAL APPROVAL PROJECT:

H16/10-273 *PARAMEDIC CLINICAL SKILLS EDUCATION - AN EVALUATIVE*

MIXED METHODS CASE STUDY OF A DISTANCE EDUCATION PEDAGOGY

IN PRE-EMPLOYMENT UNDERGRADUATE PARAMEDIC SCIENCE

STUDENTS

The Human Research Ethics Committee is an approved institutional ethics committee constituted in accord with guidelines formulated by the National Health and Medical Research Council (NHMRC) and governed by policies and procedures consistent with principles as contained in publications such as the joint Universities Australia and NHMRC *Australian Code for the Responsible Conduct of Research.* This is available at http://www.nhmrc.gov.au/publications/synopses/_files/r39.pdf.

On 25 October 2016, the Chair of the Human Research Ethics Committee considered your application under the Low Risk Review Process. This letter confirms that your project has been granted approval under this process, pending ratification by the full committee at its December 2016 meeting.

The period of ethics approval will be from 25 October 2016 to 5 June 2017. The approval number is H16/108-273; please quote this number in all dealings with the Committee. HREC wishes you well with the undertaking of the project and looks forward to receiving the final report.

The standard conditions of approval for this research project are that:

(a) you conduct the research project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments required to be made to the proposal by the Human Research Ethics Committee;

(b) you advise the Human Research Ethics Committee (email ethics@cqu.edu.au) immediately if any complaints are made, or expressions of concern are raised, or any other issue in relation to the project which may warrant review of ethics approval of the project. *(A written report detailing the adverse occurrence or unforeseen event must be submitted to the Committee Chair within one working day after the event.)*

(c) you make submission to the Human Research Ethics Committee for approval of any proposed variations or modifications to the approved project before making any such changes;

(d) you provide the Human Research Ethics Committee with a written "Annual Report" on each anniversary date of approval (for projects of greater than 12 months) and "Final Report" by no later than one (1) month after the approval expiry date; *(Forms may be downloaded from the Office of Research Moodle site - http://moodle.cqu.edu.au/mod/book/view.php?id=334905&chapterid=17791 .)*

(e) you accept that the Human Research Ethics Committee reserves the right to conduct scheduled or random inspections to confirm that the project is being conducted in accordance to its approval. Inspections may include asking questions of the research team, inspecting all consent documents and records and being guided through any physical experiments associated with the project

(f) if the research project is discontinued, you advise the Committee in writing within five (5) working days of the discontinuation;

(g) A copy of the Statement of Findings is provided to the Human Research Ethics Committee when it is forwarded to participants.

Please note that failure to comply with the conditions of approval and the

National Statement on Ethical Conduct in Human Research may result in

withdrawal of approval for the project.

You are required to advise the Secretary in writing within five (5) working days if this project does not proceed for any reason. In the event that you require an extension of ethics approval for this project, please make written application in advance of the end-date of this approval.
The research cannot continue beyond the end date of approval unless the Committee has granted an extension of ethics approval. Extensions of approval cannot be granted retrospectively. Should you need an extension but not apply for this before the end-date of the approval then a full new application for approval must be submitted to the Secretary for the Committee to consider.

The Human Research Ethics Committee wishes to support researchers in achieving positive research outcomes. If you have issues where the Human Research Ethics Committee may be of assistance or have any queries in relation to this approval please do not hesitate to contact the Secretary, Sue Evans or myself.

Yours sincerely,

A/Prof Tania Signal
Chair, Human Research Ethics Committee

Cc: Dr Linda Pfeiffer (co-supervisor) Project file

Approved

Appendix C – Student Survey and Information Sheet

Information Sheet for Survey Participants (Students)

As a distance student, I would like to invite you to participate in a survey to help evaluate the distance model of teaching paramedic clinical skills. I am undertaking this survey as part of a Master of Education (Research) project. As a distance student that has just undertaken the PMSC11002 Foundations of Paramedic Clinical Practice unit in Term 2 2016, your opinions of how the distance students are prepared for residential school and taught are important to include in any evaluation done. The survey should take no more than 15 minutes of your time and the information you provide will help to build a student perspective of the unit and how it is delivered.

Research Project	Paramedic Clinical Skills Education – An evaluative mixed methods case study of a distance education pedagogy in pre-employment undergraduate paramedic science students.
Aim of the research	The aim of this research is to evaluate the effectiveness of a distance education pedagogy used to teach pre-employment undergraduate paramedic science students. The performance and perceptions of a distance cohort of the first year paramedic clinical skills unit offered by CQUniversity will be explored.
Survey	This survey will involve Likert rating scale questions with an area for open comments.
Confidentiality	This is an anonymous survey - there is no personal information collected in the survey.

Participation is voluntary	Participation in this research survey is completely voluntary. You can withdraw from this survey without any penalty by simply closing the browser.
Questions	The survey questions are to gauge your opinions on a number of areas within the course including the resources, residential school and the lecturers.
Use of information	The data collected from this survey will be included in a Master of Education (Research) thesis. Information may also be used in journal articles and conference presentations in the future. As the survey is anonymous there will no identification of any participants.
Storage of information	The survey results will be kept in accordance with university policy for 5 years. All digital data will be kept on a password protected computer or database within CQUniversity. Only the researchers involved in this project will have access to the data.
Approval	This survey has been approved by the Human Research Ethics Committee of CQUniversity (Approval No. H16/09-273)
Contact details	If you have any questions regarding the survey or the research, please email the contact below: Lorraine Oliveri – Email: l.oliveri@cqu.edu.au Tel: 07 40374 706
Complaints	Should you have any complaints concerning this survey, please contact the Research Ethics Officer at: Email: ethics@cqu.edu.au Tel: 07 4923 2603

Thank you for considering this survey request. I would value all feedback and opinions you would like to share.

Kind regards

Lorraine Oliveri

Masters of Education (Research) student
Paramedic Science Lecturer
CQUniversity Australia

Overview

I would like to invite you to participate in a survey to help evaluate the distance model of teaching paramedic clinical skills we use at CQUniversity. As a distance student that has just undertaken the PMSC11002 Foundations of Paramedic Clinical Practice unit in Term 2 2016, your opinions of how the distance students are prepared for residential school and taught are important to include in any evaluation done. The survey should take no more than 15 minutes of your time and the information you provide will help to build a student perspective of the unit and how it is delivered.

This survey is being undertaken as part of a Masters of Education (Research) project.

All of your answers are completely anonymous and will have no impact on past or future unit grades. Participation in this research survey is completely voluntary. You can withdraw from this survey without any penalty by simply closing the browser.

Thank you for taking the time to fill in this survey.

Regards
Lorraine

General Information

This section relates to your general information.

1. Are you

- ◯ Male
- ◯ Female
- ◯ I do not identify as male or female

2. What is your age group

- ◯ Under 20
- ◯ 20 - 24
- ◯ 25 - 29
- ◯ 30 - 34
- ◯ 35 - 39
- ◯ 40 - 44
- ◯ 45 - 49
- ◯ 50 - 54
- ◯ 55 +

3. In term 2 2016 were you studying

- ◯ Full time (3 - 4 units)
- ◯ Part time (1 - 2 units)

Views on distance learning

The following questions relate to studying by distance.

4. I feel the advantages of studying by distance are (Please mark all that are relevant to your situation)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am able to listen to lectures and study at a time that suits me	○	○	○	○	○
I am able to pace my learning to suit me	○	○	○	○	○
I am able to work and study	○	○	○	○	○
I only have to visit a campus for a few days each term to do residential school	○	○	○	○	○
I have contact with multiple practicing paramedics as tutors for residential schools	○	○	○	○	○

Other (please specify)

5. I feel the disadvantages of studying by distance are (Please mark all that are relevant):

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Feeling isolated	○	○	○	○	○
Difficult to maintain motivation	○	○	○	○	○
Limited contact with other students	○	○	○	○	○
Limited contact with course lecturers	○	○	○	○	○
Limited time to practice skills	○	○	○	○	○
Extended time between residential schools makes it hard to remember skills	○	○	○	○	○
Time away from family to attend residential schools	○	○	○	○	○
Cost of attending residential schools	○	○	○	○	○
No disadvantages	○	○	○	○	○

Other (please specify)

6. The amount of time I spent studying (online and offline) PMSC11002 Foundations of Paramedic Clinical Practice was

- ◯ Less than 5 hours per week
- ◯ Between 5 - 10 hours per week
- ◯ Between 10 - 15 hours per week
- ◯ Between 15 - 20 hours per week
- ◯ More than 20 hours per week

Other (please specify)

7. How much time did you spend on average in paid employment while you were studying in term 2.

- ◯ I did not undertake paid employment during term 2
- ◯ Less than 5 hours per week
- ◯ 6 - 10 hours per week
- ◯ 11 - 15 hours per week
- ◯ 16 - 20 hours per week
- ◯ 21 - 25 hours per week
- ◯ 26 - 30 hours per week
- ◯ More than 30 hours per week

Other (please specify)

8. If given the opportunity, I would have preferred to study on campus

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
○	○	○	○	○

Why do you feel this way

Learning Preferences

This section is regarding how you learn.

9. I feel the best way for me to learn new information is by

- ◯ Listening to audio recordings of lectures
- ◯ Watching video recordings or live Blackboard sessions
- ◯ Doing a skill or procedure
- ◯ Reading textbooks and handouts
- ◯ Writing notes during lectures or writing summaries on readings
- ◯ A combination of ways

Other (please specify)

10. I found the following learning resources useful when studying PMSC11002.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Video Lectures	◯	◯	◯	◯	◯
Recommended textbook readings	◯	◯	◯	◯	◯
Written resources eg. fact sheets and handouts, Ambulance clinical practice documents	◯	◯	◯	◯	◯
Live sessions with a lecturer eg. Blackboard collaborate sessions	◯	◯	◯	◯	◯
Forum posts	◯	◯	◯	◯	◯

Comments

11. Are there any other types of resources you feel would have helped your learning?

Learning Support

This section is your views on the support from your course lecturers as a distance student

12. I feel responses to my questions from my lecturers was received in a timely manner.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
Email questions	○	○	○	○	○	○
Forum posts	○	○	○	○	○	○
Telephone calls	○	○	○	○	○	○
Assessment marking	○	○	○	○	○	○

Comments

13. I feel the responses from my lecturers were helpful to my learning.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
Emails	○	○	○	○	○	○
Forum Posts	○	○	○	○	○	○
Assessment feedback	○	○	○	○	○	○
Telephone calls	○	○	○	○	○	○
Blackboard Collaborate Sessions	○	○	○	○	○	○

Comments

14. I felt supported by my lecturers as a distance student.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
○	○	○	○	○

Comments

Preparation for Residential School

This sections relates to your preparation for attending residential school.

15. Residential School Preparation

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The lectures provided in the moodle site helped me to prepare for residential school.	○	○	○	○	○
The learning resources (readings, forums, Blackboard Collaborate sessions) available in the moodle site helped me to prepare for residential school.	○	○	○	○	○
Overall I felt prepared to undertake clinical skills prior to attending the residential school	○	○	○	○	○

Comments regarding preparation for residential school.

Impact of Residential School schedule on learning.

This section is to evaluate your views on how the residential school structure impacted your learning.

16. How did the structure of the residential school impact on your learning.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tutorial sessions allowed adequate time to practice new clinical skills	○	○	○	○	○
I received an appropriate amount of assistance from lecturers to learn to required skills	○	○	○	○	○
There was enough time allocated to practice skills in a scenario based environment	○	○	○	○	○
The practice scenarios were realistic and relevant to my learning	○	○	○	○	○
The scenarios helped me to consolidate my new skills	○	○	○	○	○

Comments

Views on the PMSC11002 Residential School

This section relates to your experiences at residential school.

17. How would you rate the lecturers that assisted with the residential school.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The lecturers were helpful and interested in assisting me develop my clinical skills	○	○	○	○	○
The lecturers knew what we needed to learn at residential school.	○	○	○	○	○
The lecturers explained information in a way I could understand	○	○	○	○	○
The feedback I received from the lecturers was helpful.	○	○	○	○	○
The lecturers supported my learning at the residential school.	○	○	○	○	○

Comment

18. Residential School learning environment

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Participating in residential schools is a good way to learn clinical skills.	○	○	○	○	○
Interacting with other students at a campus was beneficial to my learning.	○	○	○	○	○
The residential school allows me to focus my attention on learning skills without routine distractions.	○	○	○	○	○
The environment at residential school makes me feel less isolated as a distance student.	○	○	○	○	○

Comments

19. How would you rate the practical assessments at the residential school?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I felt prepared to do the assessments on the last day of the residential school.	○	○	○	○	○
The assessments at residential school were appropriate for what I had learned during the term.	○	○	○	○	○
The assessments at residential school were achievable in the time frames allowed	○	○	○	○	○

Comments

20. I felt the number of days allocated for the residential school for PMSC11002 were

- ○ More than was required to learn and practice skills
- ○ Not enough to learn to skills
- ○ Sufficient to learn the skills and practice

Comments

Overall view of PMSC11002 as a distance student.

21. Attitude toward distance learning for clinical skills

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Learning clinical skills is achievable as a distance student.	○	○	○	○	○
Learning clinical skills as a distance student is too difficult.	○	○	○	○	○
I would recommend distance learning for clinical skills to other students.	○	○	○	○	○

Comments