

Professional Doctorate in Health

Student Name: Joseph Castillo

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Word Count: as indicated in each box.

Unit name: Unit2/3 – Research Design and Methods

Assignment name: Research Design Challenge - Draft Research Proposal

Tutor's name: David Wainwright/Alan Buckingham

Declaration:

I certify that I have read and understood the University Regulations relating to plagiarism available at <http://www.bath.ac.uk/learningandteaching/cop/qastatements/QAX/QA53.pdf>. All the material in this assignment is my own work, except where I have indicated with appropriate references. I understand that my work will be submitted to the University's Plagiarism Detection Software service for checking.

Comments on any unusual/mitigating circumstances:

Malta Government Research Scheme

Application for Funding – Research Proposal

PLEASE NOTE: THE BOXES ON THIS FORM ARE NOT TO SCALE; THEY WILL EXPAND AS YOU TYPE

Names of Applicants

Joseph Castillo Main researcher
Dr. Carmel Caruana – MRI Physicist and Lecturer MRI at University of Malta.
Dr. Joseph Bajjada – Statistician at the Physics Faculty, University of Malta.
Ms Jacqueline Vanhear – Teacher and expert on Concept Mapping, Qualitative Studies

Title of Project (50 words max.)

Perception of Maltese Basic Grade Radiographers about the Community of MRI Practice and their Clinical Learning Environment during the BSc (Hons) Radiography Program.

Abstract (300 words max.)

MRI clinical practice is an integral part of Radiographers education. The purpose of this sequential exploratory mixed method will be to explore and describe those internal and external factors that affect radiographers' perceptions by first obtaining and analyzing qualitative data from a focus group and then follow up with a web-based questionnaire.

In the first qualitative phase of the study, questions asked to participants forming a focus group will address how internal/external variables may or may not affect the perceptions of radiographers towards MRI community and the Clinical Learning Environment. These variables extracted from previous literature and others which emerge from the discussion will be used to develop a web-based questionnaire. This will be distributed to all radiographers with 5 years experience working at Mater Dei Hospital Malta which is the only general hospital on the Island.

For the qualitative phase of the study the main research question is:
What are the factors (internal and external) that affect Radiographers Perceptions towards MRI Clinical Learning Environment (CLE)?

Based on the literature review, the research sub questions are:

1. Are there programme related factors that affect Radiographer perceptions towards CLE?
2. Are there faculty related factors that affect Radiographers' perceptions towards CLE?

3. Are the institution (MRI Unit) related factors that impact radiographers' perception towards CLE?
4. Are there individual related factors that contribute towards his/her perception of CLE?
5. What could be done to improve CLE?

For the second quantitative phase the main research question is 'How do the selected factors and other that emerge from the Focus group contribute or adversely affect the perceptions towards the CLE? The research sub questions will be formulated after the results of phase 1 Focus group.

The focus group participants will be selected using a stratified random sampling, 2 from each cohort of radiographers as they have been employed soon after graduation for the last 5 years. This would give a total of about 8 to 10 basic grade radiographers.

Aims & Objectives (200 words max.)

Aim: To explore the perception of Maltese basic grade radiographers (less than 5 years experience) about their Clinical Learning Environment during their B.Sc (Hons) Radiography program.

Objectives:

To understand the attitude of radiographers toward the current community of MRI practice

To describe the factors influencing the radiographers perceptions towards their actual clinical learning environment

To explore suggestions that may improve the clinical learning environment

To investigate the factors that from a radiographers' viewpoint affected their learning.

Background (500 words max.)

The Bologna Process is recommending European Universities, to adopt a critical stance of their undergraduate curriculum and ensure that their graduates have not only the necessary academic development but also the skills to work safely and independently as required by the registering authorities and employers. In other words Universities are being asked to ensure that graduates are 'fit to practice'.

The terminologies 'fitness to practice' and 'fitness for purpose' have emerged in the United Kingdom as benchmark standards for health practitioners and their professional University educational programmes (Meerabeau, 2001, Fawcett, 2001, Flanagan et al., 2000). However, while Universities must be careful not to focus too much on the academic development which could result in graduates with inadequate skill, institutions

must not unbalance the program with too much practice skills and thereby transforming back to the diploma type programmes(Ng, 2008).

MRI education and training, together with that of Ultrasound, Nuclear Medicine, Computerized Tomography (CT Scan), General Radiography makes the B.Sc (Hons) Degree programme one of the most device intensive courses in Health Sciences at the University of Malta. In addition to the physics modules for each imaging modality, student radiographers must learn how to apply the physics theory to practice by attending lectures on clinical applications. These theoretical lectures, are supplemented by clinical placements in order to prepare the students for entry into the practice and provide a learning opportunity that aid in the transition to the professional role (Hickey, 2010)

But there is a difference between a classroom and clinical learning environment. Whilst in the classroom the learning outcome is planned and student-centred, in the clinical environment patients are present and unplanned events occur that can affect the opportunities to learn. It seems that student education in the clinical environment may take a secondary role and as Higher Education institution is shifting from a teacher-centered approach towards a student-centred approach, the challenge in the development of the clinical education component is to be both patient-centred as well as student-centred (Ernstzen et al., 2009).

It has been reported that when the Clinical learning environment is not tailored to address the students' learning needs it resulted in stress and anxiety during the transition from students to fully qualified health professionals (Linder, 2009). The stressors reported by entry level nurses included lack of confidence in skill performance, deficits in critical thinking and clinical knowledge (Linder, 2009, Hickey, 2010).

The researcher, as the Principal Radiographer in Charge of the MRI unit realized that during their undergraduate education, students did not particularly show any anxiety or stress during their MRI CLE probably because students know that upon qualifying they would not be involved in MRI practice straight away. However radiographers who are then asked to start their rotation in MRI do mention a great deal of anxiety. Research about radiographers' perception about MRI clinical learning environment has never been carried out in Malta and further research is therefore needed to understand the effectiveness of clinical learning environment from the perspective of the new graduate and help to develop a clinical learning programme best suited for Radiography Students.

Ethical Statement (300 words max.)

Since the topic of the study does not fall in the sensitive category that is no patients are involved and the subject population are all adults (over 18years) approval will be sought from the Mater Dei Hospital Research Ethical Committee and the Data Protection Commissioner. Application for research permission will be filed using the relevant forms as requested by the Institutional Research Ethical Committee.

Before phase 1 of the study is conducted an electronic informed consent will be emailed to the randomly chosen participants inviting them to participate in this study. The electronic form will:

Explain the purpose of the study, guarantee anonymity, confidentiality and the right to withdraw at any time during the study.

The participants will also be notified that following the write up and dissemination of the study all data will be destroyed. Participants will be informed that the Focus group discussions will be digitally recorded and transcribed ad verbatim. An experienced researcher would be present as a non-participant observer to document the non-verbal cues. Focus group participants will be informed that they have access to their transcription and will be allowed to review and correct it. During documentation and reporting of the focus group discussion, participants will be assigned fictitious names. Participants will be asked to acknowledge their participation via returned email.

For phase 2, another consent form with the exact wording will form part of the web based survey in which invited participants have to click a button indicating an agreement to participate in the quantitative study.

The anonymity of the participants will be protected because the server would generate a unique number after each questionnaire has been submitted. Responses will remain confidential throughout and after the study has been completed.

Methodology (2000 words max)

Research methodology refers to the procedural rules which are required to evaluate a research study and validate the knowledge gathered. The research design would then function as the research blue print (Creswell, 2009). Holloway and Walker (2000) maintain that the selection of the research methodology pose a challenge for researchers because the validity of any study depends upon it. Given this importance I shall outline and justify the methodology for this study.

Research Design

This study uses a mixed method design, which is a procedure of collecting and analyzing both qualitative and quantitative data at some stage of the research process. The reason for mixing is that in the Social Sciences neither qualitative nor quantitative are sufficient to completely capture the complex reality under investigation such as the Perceptions of Radiographers about their MRI Clinical Learning Environment. When used together both qualitative and quantitative methods complement each other and allow a complete evaluation (Bryman, 2001, Creswell, 2009).

In mixed methods researchers adopt a pragmatic approach asserting that truth is that what works. A major assertion is that combining qualitative and quantitative methods brings the strengths of each approach against the limitations of the other (McDowell and MacLean, 1998). Researchers therefore choose those approaches, to provide best understanding of their research problem.

While designing a mixed method approach three issues should be considered. These are the ordering of the methods, that is are the methods going to be carried out sequentially or concurrently? Researchers then need to consider the dominance of a particular method over another. Is a particular data set going to be treated as secondary because of limited

resources? (Brannen, 2005) The other issue refers to integration that is at which phase the mixing of methods will occur and whether any allowance is made to allow for modification. This decision is generally taken during the analysis phase (Brannen, 2005).

This study will use a sequential exploratory mixed method design. In the first phase a qualitative focus group approach will be used to analyze the verbal responses and develop an understanding from the participants' viewpoints and experiences. The emergent concepts, together with others identified in the literature will be used to develop a web-based questionnaire designed at <http://www.surveymonkey.com>, so that findings could be generalized to a larger radiography community.

The aim of the quantitative phase will be to evaluate those factors/variables that contributed or hindered the radiographers' clinical learning. The data will be subjected to statistical analysis using SPSS or descriptive analysis using Excel spreadsheet.

With reference to the research design, the dominant method is given to the qualitative method because this represents the major aspect of data collection, directly influence the quantitative study and as far as the literature review suggests this approach has never been investigated before in MRI. In addition it will be the most time consuming.

Variables

The research question 'what factors affect the perceptions of radiographers towards MRI clinical learning environment and the community in practice?' predetermines a set of variables. The dependent variable will be the groups of Radiographers that over the past five years joined the Medical Imaging Department at Mater Dei Hospital. Malta, having one general hospital presents a unique situation where radiographers are employed as cohorts after they have qualified with a BSc Radiography from the University of Malta. So they would have been exposed to the same lectures and visited the same MRI unit for their clinical experience.

Another cohort that will be invited to participate is the final year students who by the time of the study would be in the transition phase from completing their studies to joining the radiography workforce.

The factors/variables that affect radiographers' perception will be treated as the independent variable because they affect the outcome. The identified factors through analysis of the literature are the following:

Program Characteristics: academic workload, Academic level of MRI physics, constructive alignment, pedagogy, clinical reasoning, problem solving and tutoring.

Faculty related factors: relations with clinical supervisor, relations with faculty,

Institution related factors: relations with staff, knowledge of MRI technology,

Student related factors: self discipline, time management, personal goals

Factors external to program: family commitments, finances, colleagues, friends

Demographic characteristics such as gender, age, status, other academic degrees, and other certification courses, will be surveyed in the quantitative phase as these variables will provide a description of the group characteristics.

Target Population and Sample

The target population in this study will be the radiographers who are now in the basic grade and the final year B.Sc(Hons) Radiography students. For the purpose of the qualitative phase of the study a purposeful sample will be utilized. Purposeful sample means intentionally selecting individuals to understand the central phenomenon and who will best answer the research question (Bryman, 2001). Stratified sampling will be used to select 8 to 10 participants, approximately two from each cohort, to set up one focus group. For the purpose of the quantitative phase, since the cohorts are rather small, each containing 20 to 25 radiographers, all radiographers and students will be invited to participate. This would result in a population of approximately 85 radiographers.

Data Collection Qualitative component Phase 1

A focus group design will be used to explore the radiographers' perceptions about their MRI clinical learning environment. Focus group involves organized discussion with a selected group of individuals to gain information about their opinions and experiences of a topic and is particularly suited for obtaining several perspectives about a common topic. The purpose of using a focus group is to obtain information of qualitative nature from a predetermined and limited number of individuals.

Focus group interviews are essential in the evaluation process of a programme, either during the implementation phase, immediately after completion or months after to gather perceptions of the outcome of that programme.

The focus group schedule would include approx 10 questions. Some questions in the beginning would serve as warm up questions. The remainder of the questions would discuss the factors mentioned above in bold. Other questions will be used to explore participants' opinion how the clinical learning environment could be improved.

Examples of Warm up questions:

What are your feelings about being a radiographer at Mater Dei Hospital?

How do you feel about radiography in general?

Examples of specific questions:

Thinking about the CLE how do you feel about MRI learning experience?

How would you feel now if you were asked to join the team?

What is your perception about the MRI Community?

How do you think MRI clinical experience could be improved?

The transcribed discussions will be coded and analyzed using software for qualitative data analysis downloaded from the University of Bath Server. The steps in the qualitative analysis will include reading the transcripts several times to explore and identify emergent themes. These themes will then be organized into logical patterns and categories and integrated with the results of the quantitative data to provide a vivid portrait of radiographer's perceptions of the clinical learning environment and MRI theoretical education.

To determine the credibility of the qualitative data, the findings are validated by the participants, ask for an external audit of the qualitative study and provide a rich detailed

description when reporting the findings (Creswell, 2009). Although reflective essays are not a component used in B.Sc(hons) in Malta I intent to ask the Radiography Course Coordinator, Dr Paul Bezzina whether current radiography students could be involved in the study by writing a reflective essay on the MRI Clinical Learning experience. The essays will be used as a method of triangulation and thus enhance the quality of the study.

Data Collection Quantitative component – Phase 2:

The quantitative study will focus on those factors/variables that according to the focus group affect the perception of radiographers of MRI clinical Learning environment. The method for collecting the quantitative data will be the web based self-completion structured questionnaire in which respondents answer questions by completing the questionnaire themselves without the help of an interviewer or researcher. The lack of interviewer in the administration of the questionnaire necessitates that the research instrument has to be especially easy to follow and questions have to be particularly easy to answer. The self-completion questionnaire is particularly useful when the sample is geographically widely dispersed. In such a situation a mail questionnaire will be much cheaper because the time and travel cost of the interviewers is eliminated. In this case, the researcher is opting to use a web designed questionnaire, where participants are invited to participate through an email which directs them to a URL provided by the survey company - surveymonkey.com. Although slightly more expensive than postage, an advantage of web based survey is that participants responses can be easily transformed into numeric data using Microsoft excel software and mailed to co-researchers as PDF. The Data can also be exported to SPSS format.

The self completed web based questionnaire would contain questions in different format such as multiple choices, dichotomous using Yes or No, and 5 point rating scales. Lecturers at the Institute of Health Care who are experienced with this type of method will be asked to assess the content validity. The survey instrument would consist of six sections.

The first section focus on the B.Sc(Hons) Radiography programme in general and will include likert questions to assess the participant experiences of it. The likert questions rate from strongly agree to strongly disagree and will provide data on how the program affected their perception of MRI

The second section will measure the participants' comfortable level when he/she attended the MRI clinical learning environment. A likert scale question from very comfortable to very uncomfortable will provide data on institutional related factors.

The third section is focused on the participants' experience of their relationship with the clinical supervisor and MRI lecturer. Likert scale ranging from very positive to very negative will provide data on the faculty related factors.

The fourth section is a more of a self reflection and attempts to find out about the perceived adequacy of their MRI training and find out whether radiographers are

motivated or not in finding other ways to enhance or improve their MRI experience. Dichotomous and Multiple choice questions will be used.

The fifth section will attempt to explore if there are external factors that could have affected their perception towards MRI.

Demographic questions will make up the sixth section of the web-based questionnaire.

The survey instrument will be pilot tested on a group of foreign radiographers who in the last two years visited Malta as part of the ERASMUS educational scheme, spent time in the MRI unit as their Clinical Placement and kept in touch with the researcher.

Advantages and limitations of this study

Advantages: Since the design adopts a sequential approach from phase 1 to phase 2 it could be done by few researchers, keeping the costs down.

Since all participants work in the same hospital as the researcher, the costs for travelling are negligible.

Limitations:

In the quantitative phase there is a potential risk of low response. This will be minimized by indicating the importance of the study as well as using reminders.

There is a potential for bias in the qualitative interpretation, because the main researcher is the manager of the MRI unit. However, the researcher does not form part of the B.Sc lecturers.

The sequential design means that it would take longer to complete than using concurrent design.

It requires expertise in statistics and nonparticipant observation.

The study assessed one hospital environment and perceptions of a specific group therefore generalizations are limited only to the local context.

Significance of the Study

This study may prove significant in contributing to an underdeveloped area in Maltese Health related educational research. Although exploratory the knowledge and understanding from the participants' viewpoint provides additional insight on Radiography education.

Knowing the factors that may contribute to or affect clinical learning, the findings of this study may assist the Radiography Course Coordinator in developing a program with effective learner support in the clinical environment. In addition, the findings will be integrated in a larger situational case study involving other health professionals.

Project Plan/Timescale (200 words max.) *You may add a Gantt chart as an appendix, this will not be included in the word count, but should not exceed one page of A4*

The study design uses a sequential approach using a qualitative phase 1 and quantitative phase 2. The interim between each phase is used to analyze the data as phase 2 cannot

proceed without phase 1. Therefore a detailed research plan is necessary in order to allocate enough time for each task.

The project has been divided into a number of workpackages and then each is further divided into elements with specific tasks. Only the main plan is submitted here but a detailed plan can be accessed as a concept map through this link:

<http://cmapspublic.ihmc.us/rid=1H392JSV2-D26S5T-ZGP/Research%20Challenge.cmap>

Funding Secured July 2010

Workpackage 1 – Establish communication and project outcomes

Ethical board submission

Workpackage 2 – Gather information

Literature Review

Gather information about Survey Instruments

Read 1st Draft of literature Review (CJC 2days)

Workpackage 3 – validate

Project Partners meeting to report on progress

Plan phase 1

Workpackage 4 - Conduct Focus Group

Workpackage 5 – analysis

Qualitative Data Analysis

Workpackage 6 – Validate

Project Partners meeting to report on progress

Design Phase 2 Survey Instrument

Workpackage 7 – Phase 2 Preparation

Test pilot questionnaire

Workpackage 8 – Data Collection

Workpackage 9- analysis

Data analysis using SPSS

Discuss results with research partners

Workpackage 10 – Writing

Workpackage 11 - Disseminate

Outline Costings

The project partners are:

CJC,JB, and JV. They will all be subcontracted thus a consortium agreement is not necessary.

JC – Principal Researcher = Student Doctoral fees Phase 1 and 2 at UoBath = 7000Euros

CJC – Project academic advisor Consultancy fee = 4080Euros

JB – Project statistician 12 Consultancy Fee = 4080Euros

JV – Qualitative Consultancy Fee = 4080Euros

The consultancy fees are worked out at 20Euros per hour. Co-researchers agreed to offer 2 hours per week.

Contingency Plan: All data to be saved (backup) on a secure server. This requires buying of an website and bandwidth for the duration of the study approximately two years

@35Euros per year = 70 Euros

Venue Hire = 75 Euros per day. Max 4 sessions 300Euros

Meals during Focus Group Session = 25Euros per participant, to include researcher and observer. 1200Euros

Literature Review, books, stationary and printing allocate 2000Euros

Dissemination Costings allocate 5,000Euros to cover travelling expenses, conference registration at 2 congresses from European Congress of Radiology, EuroMed Congress for Radiographers, International Society of Magnetic Resonance in Medicine or European Society of Magnetic Resonance in Medicine and Biology.

Total Costings: 27,810 Euros

Dissemination Strategy (200 words max.)

The first priority is to return the study results to the participants

Upon completion the key findings of the final project will be disseminated with the professional community as follows:

Publication in peer reviewed journals

Presentation in Conferences and Seminars

University of Malta Journal/Website

University of Bath Journal/Web site

The findings will also be presented to the Department for Health.

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