



School of Education

Summer Scholarship Research Program 2019

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Project 30: Understanding young women's perceptions of their menstrual health in Australia

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Project description

Menstrual disorders are common amongst girls and young women. Over 90% of Australian adolescents experience menstrual pain at some point [1] and primary dysmenorrhea affects up to 75% of all women during their reproductive years. Menstrual pain is often normalised as something that young women must endure simply because they are female[3]. The normalisation of period pain is partly due to the fact that dysmenorrhea is so common among women, and it is these women (mothers, sisters, cousins and friends) who share their experiences with each other. As a result, many young women may not seek appropriate medical advice, but rather apply approaches that include sub-optimal doses of medication or untested forms of self-care[2]. This is problematic and may result in the identification of more serious causes of dysmenorrhea, such as endometriosis which affects about 10% of women, going undiagnosed and untreated until later in life.

Considering that dysmenorrhea impacts educational attendance in approximately 25% of adolescents, having a potentially critical yet unacknowledged impact on future academic prospects[2] and therefore life trajectories, it is crucial that more information is made available in terms of how girls and young women position this ailment as a 'gendered handicap' and the impact that it has on their social, emotional and by extension, educational well-being. Little research has been undertaken into this area of menstruation in young women. This proposed project, a development of a previously-funded quantitative collaborative study between NICM and SoE academics and Kotex Australia, will use already generated data to understand how young women socially construct both menstruation and dysmenorrhea and the socio-cultural discourses that are circulated about it, whilst also providing useful information for educational institutions and teachers to better accommodate the health and educational requirements of their students. It is proposed that this will inform a new phase of the project examining teacher and schooling responses, for which external funding will be sought.

Project Aims

This projects aims to:

- 1) Review the qualitative data from a national survey to identify the dominant discourses arising in relation to gender and the social and emotional impact of menstruation and dysmenorrhea on school-aged participants.
- 2) Develop a draft of a systematic literature review that will form the basis of a peer review paper (Gender and Education).

Project Methods

The student will, under guidance:

- 1) Review the qualitative data from only the school-age participants on a national survey of over 5000 respondents to 1) identify the dominant discourses arising in relation to gender and 2) identify discourses pertaining to the social and emotional impact of menstruation and dysmenorrhea. This may involve the use of the software program NVivo.
- 2) Use the information from 1) to inform the undertaking of a systematic literature review that pertains to understanding how girls and young women position dysmenorrhea and menstruation in light of the social construction of gender and the social and emotional impact this has on their personal and schooling lives.
- 3) Use the above information to draft the literature review for a paper for peer review in the journal Gender and Education.

Opportunity for Skill Development

The student will learn skills in literature searching and synthesis, journal article writing, qualitative data analysis.

Students are required to have the following skills/meet the following pre-requisite(s) to apply

An interest in women's/ girls' health and/or gender and the sociology of education.

Project 31: Innovations in Primary Science Teacher Education Programs in the Digital Age

Supervisor(s): Dr Jessy Abraham (Principal Supervisor)
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Project description

Teacher education programs at universities undergo frequent reviews and reforms. However, in recent decades, many reforms were prompted in the design, delivery and assessment of teacher education programs to prepare graduates who are ready to teach well in a 21st century classroom. Reforms in initial primary science teacher education are of particular interest, owing to the global decline in student enrolment in science subjects in post compulsory years including tertiary levels. The decline of interest in science courses at higher education levels and the skills crisis in science and engineering can be tracked, in part, to a lack of effective science education in primary schools. Policy makers maintain that to sustain students' interest in sciences, action must be taken from primary school years. Hence, primary teacher education providers have a central role in developing competencies among their graduates to teach science confidently in primary classrooms.

Science education programs at universities and teacher education institutions aim to provide meaningful experiences to primary pre-service teacher(PST)s in order for them to develop a positive attitude to science teaching and develop their own understandings of science as a product and a process. However, this is not an easy task since PSTs in general, are found to possess poor attitudes and beliefs about science and their capacity to be effective teachers of science (Stevens & Wenner, 1996). They also exhibit low self-efficacy beliefs about their ability to teach science after graduation (Ginns & Watters, 1996). Addressing this need, Australian primary science teacher education programs have two main basic approaches to improving the confidence and attitudes of PSTs: use of science content courses, and use of science methods courses (Goodrum, et al., 2001). Similar practices can be found in other countries.

This research project will undertake a comprehensive review of recent primary pre service science teacher education literature (i.e.2000 – 2019). The innovations introduced in primary science teacher education programs in this “Digital Age” (Thomas & Brown, 2011) will be collated and categorized based on the various pedagogical models underpinning them. This review will locate current research published in international science education journals and publications. Studies from both Australian and international contexts will be reviewed. The international context will have a specific focus on teacher education systems in “high-achieving countries” (Ingvarson et al., 2014), which include countries that perform relatively well on international tests of student achievement such as Program for International Student Assessment (PISA) program (e.g. Finland, Canada, Korea, Japan, Singapore, Germany, Chile). This is because the quality of teacher professional development is often linked to students' outcomes (PISA Assessing Scientific, Reading and Mathematical Literacy A: Framework for PISA 2006, 2006).

The output of the project will be a comprehensive annotated bibliography. The theoretical and contextual basis of various innovations in primary science teacher education programs and the impact of such innovations had on PSTs' science teaching self-efficacy will be compiled and documented.

Project Aims

The aims of the research study will involve the student by:

1. locating different types of published articles on reforms in primary pre-service science teacher education programs, at national and international contexts;
2. conducting a review of the recent literature on Australian and International pre-service primary teacher education programs to identify theoretical framework of these reforms;
3. identifying the results and /or impact of such reforms on primary pre service teachers;
4. Compiling and categorising articles and publications to develop an annotated bibliography on innovations in primary science teacher education programs in the past two decades.

Project Methods

The approach that will be utilised to gather data for this research study will involve qualitative measures. Qualitative techniques will include the use of document analysis. This is a systematic procedure for reviewing and/or evaluating articles published in international and national teacher education journals which may include both printed and digital materials.

The student will undertake a comprehensive search and analysis of innovations in primary science teacher education programs in universities. They will be involved and engaged in the research and compilation of relevant sources and models to be used in the writing of a comprehensive annotated bibliography and literature review. The student will work under guidance on the development of a systematic approach to record key features from the literature to use in an annotated bibliography.

Opportunity for Skill Development

By participating in this research project, it is anticipated that the student will:

- Develop skills in project management to support the setting and meeting of priorities and timelines.
- Develop research skills and methods required to support them in further study including:
 - written communication skills with the ability to write reports;
 - verbal communication skills to confidently and effectively present clearly and persuasively; and,
 - ICT skills including the ability to complete online searches and use online library and database facilities.
- Compile and develop an annotated bibliography to inform the writing on a literature review.

Students are required to have the following skills/meet the following pre-requisite(s) to apply

To be a successful member of this project team, the student will need to have the following skills to support them:

- Ability to be highly organised, set and meet priorities and timelines in relation to the project
- Liaison and interpersonal skills with the ability to foster sound working relationships
- Highly motivated, enthusiastic and able to work within a group
- Strong written communication skills including the ability to write reports
- Strong verbal communication skills including the ability to present clearly and persuasively
- Strong ICT skills including the ability to complete online searches and use online library and database facilities

A third year student, who has highly developed ICT and research skills is encouraged to apply. The successful applicant will be supported by experienced researchers to assist them in their skill development and application for a postgraduate research degree, or to complete a research unit at undergraduate level in readiness for possible Honours or HDR study.

Students applying for this project should have an interest in science education. Some familiarity with various pedagogical models is desirable.

Project 32: Mobile Mathematics – what's hAPPening with technology?

Supervisor(s): Dr Maree Skillen (Principal Supervisor)
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Project description

New learning technologies have brought a series of additional challenges to teachers and teacher educators. Whilst some Schools have moved towards implementing 1:1 technology initiatives and BYOD programs, others are supporting classroom learning experiences through the purchase of mobile devices including iPads and tablets (Skillen, 2015, p.205). Skillen continues by stating that “through the use of mobile devices learning opportunities are becoming more interactive and can promote collaboration between learners in different ways (2015, p.205)”. Further, cognitive and affective processes are seen to be enhanced through the interactive capacities of devices and applications; and, new experiences are provided for both the teacher and student. Grant and Barbour (2013, p. 285) describe mobile learning and associated technologies broadly as ‘becoming increasingly ubiquitous in society, particularly with youth’. However, literature exploring mobile technologies and learning in teacher education contexts still views it as being “a fairly young area of research” (Skillen, 2015, p.205).

As research on the use of mobile devices and Apps continues to grow, some are focused on how it is utilised and integrated into mathematics; and, others are examining a range of impacts. Drijvers (2012) identified that for over two decades the potential of digital technologies for mathematics has been highlighted by stakeholders as having many possibilities. However, its integration into learning still confronts teachers, educators and researchers with many questions. Handal, El-Khoury, Campbell and Cavanagh (2013) support this by stating that “the advent of mobile learning technologies into teaching and learning has brought both new possibilities and challenges to teachers”. Larkin (2013), like other researchers, identifies that “Despite the rapid expansion of the use of apps in the educational domain, there is a lack of empirical studies as to their effectiveness in supporting learning, particularly in relation to mathematics”. This lack of available research also extends to the uses of Apps by teacher educators in pre-service teacher education programs. Whilst rapid developments in technology has changed how we teach and how students learn, we must acknowledge that teachers need to be familiar and prepared to support traditional methods of teaching mathematics. This support may include the integration of appropriate and effective uses of technology and Apps.

This project will examine both national and international literature published over a 10-year period. Searches and analysis will target the key learning area (KLA) of mathematics for primary, secondary, and pre-service teacher education students. The target areas for the literature searches will encompass four themes, namely:

1. developments and terminology used by researchers and educators when referring to aspects of mobile technologies and mathematics;
2. an exploration of emerging practices for learning and teaching;
3. possible challenges, limitations and implications for using mobile technology and Apps in mathematics; and,
4. identifying gaps within the literature.

The output of this project will be an annotated bibliography that documents a list of citations to books, articles, and other publications about Mobile Mathematics – what's hAPPening with technology?

Project Aims

The aims of the research study will involve the student by:

1. locating different types of articles and publications about mobile learning, devices and APPs used in mathematics;
2. identifying models used for learning with mobile technology; and, the evaluation of Apps used with mathematics classes;
3. conducting a review of the literature for mobile technology and Apps used in mathematics to provide a theoretical and contextual basis for the selected research study; and,
4. compiling and categorising articles and publications to develop an annotated bibliography about what is happening in the development and use of mobile technology and Apps within mathematics.

Project Methods

Methods Used to Conduct the Research

The approach that will be utilised to gather data for this research study will involve qualitative measures. Qualitative techniques will include the use of document analysis. This is a systematic procedure for reviewing and/or evaluating documents and resources which may include both printed and electronic (computer-based and Internet-transmitted) materials.

Student Engagement in the Process

The student will undertake a comprehensive search and analysis of the use of mobile technology and Apps in mathematics over the past decade. The searches will also consider the impact on mathematics education for integrating mobile devices into the learning and teaching process for students.

They will be involved and engaged in the research and compilation of relevant sources and models to be used in the writing of a comprehensive annotated bibliography and literature review. The student will work under guidance on the development of a systematic approach to record key features from the literature to use in an annotated bibliography.

Opportunity for Skill Development

By participating in this research project, it is anticipated that the student will:

- Develop skills in project management to support the setting and meeting of priorities and timelines.
- Develop research skills and methods required to support them in further study including:
 - written communication skills with the ability to write reports;
 - verbal communication skills to confidently and effectively present clearly and persuasively; and,
 - ICT skills including the ability to complete online searches and use online library and database facilities.
- Develop and refine their research skills to support the selection of publications.
- Compile and develop an annotated bibliography to inform the writing of a literature review.
- Develop skills to contribute to the writing of an annotated bibliography, literature review, reports and/or articles for publication.
- Be involved with the proof reading and preparation of journal articles for publication.

Students are required to have the following skills/meet the following pre-requisite(s) to apply

To be a successful member of this project team, the student will need to have the following skills to support them:

- Commitment to high ethical, personal and professional standards in all aspects of work
- Ability to be highly organised, set and meet priorities and timelines in relation to the project
- Liaison and interpersonal skills with the ability to foster sound working relationships
- Highly motivated, enthusiastic and able to work within a group
- Strong written communication skills including the ability to write reports
- Strong verbal communication skills including the ability to present clearly and persuasively
- Strong ICT skills including the ability to complete online searches and use online library and database facilities

A third year student, or a competent 2nd or 1st year student, who has highly developed ICT and research skills is encouraged to apply. The successful applicant will be supported by experienced researchers to assist them in their skill development and application for a postgraduate research degree, or to complete a research unit at undergraduate level in readiness for possible Honours or HDR study.

Students applying for this project should have an interest in science and mathematics education, with an emphasis on pedagogical strategies and resources to support engaging teaching and learning practices.

Project 33: More than a grammar class: An exploration of the role of linguistics in education

Supervisor(s): Lyn Tieu (Principal Supervisor)
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Project description

Language is ubiquitous in human society, and much scholarly inquiry has centered on understanding the nature of the linguistic knowledge that all humans share. Modern linguistics comprises the scientific study of language – from sound systems, to structure and meaning, to the ways in which language can vary along geographic and socioeconomic dimensions. Linguists are scientists who objectively study how human language is produced, understood, processed, and acquired by learners; they make hypotheses about how language works, test their hypotheses against empirical data, and then revise their theories of human language. The study of linguistics has multiple benefits, both scientific and social. For example, linguistics provides an affordable teaching tool for introducing students to scientific inquiry; by working with linguistic data sets (which may even be made up of students' own observations about their native language), students learn the skills of hypothesis testing and data analysis. Training in linguistics also combats linguistic stereotypes; by viewing different languages (and dialects) as equally valid objects of study, students become aware of existing prejudices against people who use nonstandard dialects.

Despite the advantages that the study of linguistics affords us, however, many students do not stumble upon linguistics until university, and often do so entirely by chance. Hudson (2010) calls for linguists to collaborate with K-12 teachers, to introduce linguistics as early as possible. Similarly, Honda (1994) and Honda, O’Neil & Pippin (2010) view linguistics as a way to introduce (even very young) students to scientific inquiry. To our knowledge, there exist rather few attempts to incorporate the study of linguistics into primary or secondary educational curricula. Loosen (2014), for example, documents her experiences teaching a semester-long elective course on linguistics to high school students in the USA.

This project aims to establish an overview of existing attempts to incorporate linguistics into primary and secondary educational curricula, as documented in existing academic literature as well as through other media (e.g., websites and social media). The hope is to produce a review article that summarises the state of the art with respect to linguistics in education, and to potentially create an online resource for those interested in teaching linguistics to school students.

Project Aims

This project aims to produce an overview of existing attempts to incorporate linguistics into primary and secondary educational curricula, through:

- Literature review of scientific articles discussing the relationship between linguistics and education and/or the role of linguistics in education;
- Literature review of published articles documenting attempts to incorporate linguistics into primary/secondary educational curricula;
- Searches of online media (e.g., websites, social media, academic Twitter) for documented attempts to incorporate linguistics into primary/secondary educational curricula (for example, the Twitter account @InMfl “Linguistics in MFL Project”)

The aim is to produce a review article that summarises the state of the art with respect to linguistics in education, and to potentially create an online resource for those interested in teaching linguistics to school students.

Project Methods

This project is a subpart of a larger research study exploring effective ways of incorporating linguistics into the K-12 educational curriculum. This first step will involve conducting a systematic and comprehensive literature review. With the guidance of the supervisors, the student will conduct online searches (e.g., using library resources, online research databases, social media) to find: (i) previous studies that address the role of linguistics in education or the relationship between linguistics and education, and (ii) previous attempts to incorporate linguistics into the K-12 educational curriculum. The results will then be written up as a review article (the student will have the option to participate in the writing of the article if s/he so desires).

Opportunity for Skill Development

Through selected readings, regular discussions with the supervisors, and hands-on experience conducting a systematic and thorough academic literature review, the student will gain a basic understanding of the relevant aspects of linguistic theory, an understanding of the relationship between linguistics and education, and an understanding of how to design a research study that builds on previous literature. Both supervisors will provide the student with training and guidance in conducting an academic literature review and writing a review article, and will oversee the project to ensure that all work is completed within the anticipated timeframe.

Students are required to have the following skills/meet the following pre-requisite(s) to apply

We anticipate that the project will be of interest to students enrolled in Linguistics, Education, Psychology, or a related discipline. Past research experience may be beneficial but is not required; the supervisors will work closely with the student to develop and refine the student's research knowledge and skills.