

UNIVERSITY OF WINCHESTER

The experience of using role-play and simulated practice as an adjunct to paramedic placement learning

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This Thesis has been completed as a requirement for a postgraduate research degree of the University of Winchester

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Abstract

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This study examines the current experiences of paramedic students regarding the perceptions, understanding and utilisation of role-play plus simulation in a paramedic degree programme. This area is underexplored, so it is situated in the context of paramedic practice, training and education landscape in UK, Australia, Canada and the USA, and cognate professions.

The skills training in its original format remains, as does the on-the job clinical training (hospital placement and ambulance internship) as these are set regulatory requirements. Role-play and task focused simulation is used as part of syndicate learning for skills development. A mixed methodology, comprising both qualitative and quantitative approaches, including an exploratory sequential design, was used in this research. This was done in order to evaluate the student perceptions of their current placement experience and to explore the perception of combining simulation and role-playing.

The study results show that the current educational model of clinical placement is flawed. After a brief exposure to an exemplar event, students preferred the combination of simulation and role-playing over the use of either technique independently. Adoption of this technique firstly requires a set definition of terminology and consistent interpretation within the discipline.

A consolidation of the students' experience is required by enhancing the mentorship supports. Further research is needed to design and develop the combination of role-playing and simulation to enhance student learning in the simulation laboratory.

This study promotes positive social change by providing data to the educators and key decision makers of the paramedic programme on students' perceptions of the benefits of a technique that is able to support instruction and augment the students' clinical placement experience.

Keywords: [Paramedic, Clinical Placement, Role-Play and Simulation]

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Chapter 1: Introduction

1.1 Background to the study.

The Paramedic profession in Ireland has undergone a significant change in the last number of years. Along with technical and clinical practice advances within the profession itself, the educational model for paramedics has also evolved from a traditional vocational apprenticeship model engaging in on-the-job training into a professional-level tertiary education programme. Paramedic education in Ireland consisted of a multistage programme resulting in the award of a Diploma rated at level seven on the National Framework of Qualifications in Ireland (QQI, 2022) until 2019, when a level eight BSc (Hons) Paramedic Studies programme was established and set as the minimum requirement for all new entrant paramedics employed by the National Ambulance Service from September 2022.

1.1.1 Setting the Scene Paramedic: A New Profession for Ireland.

From circa 1900 to 1970, the provision of an ambulance in Ireland was the responsibility of the County Councils. The County Council provided the vehicle and a driver with a nurse recruited on demand from the local hospital. The first ambulance course in Ireland was undertaken in May 1967. The course consisted of a first-aid syllabus delivered over four weeks. The 1970 Health Act allowed for the provision of an ambulance service in the newly created Health Board Areas, whereby each area provided a dedicated ambulance driver who would have undertaken the four-week course and was accompanied by a nurse assigned to the service as demand required from the local hospital. The Health Board ambulance services operated independently of each other with varying delivery and response formats, being funded from their Board budget. In 1986, the National Ambulance Training School was established to provide training to ambulance staff on a national level, catering for the progression of pre-hospital care and the development of skills in the ambulance service as a whole. This was the first step towards the nationalisation of the service. A National Ambulance Advisory Council was established in 1994 to ensure that uniform service standards would operate throughout the country. As this Board did not hold statutory powers over the Health Boards, progress was slow. The first Emergency Medical Technician trainees commenced training in June 1997 and completed the programme seven weeks later; however, it was not until 2005, with the establishment of the Health Service Executive (HSE), that the National Ambulance Service and the National Ambulance Service College were established. The Pre-Hospital Emergency Care Council (PHECC) was set up in 2000. The PHECC is an independent statutory body with responsibility for standards, education, and training in the field of pre-hospital emergency care in Ireland.

The PHECC was established by the Minister for Health and Children by Statutory Instrument Number

109 of 2000 (PHECC Establishment Order). PHECC's responsibilities were enhanced by Statutory Instrument Number 575 of 2004 (PHECC Amendment Order) and The Health (Miscellaneous Provisions) Act 2007. The PHECC Mission Statement is "The Pre-Hospital Emergency Care Council protects the public by specifying, reviewing, maintaining, and monitoring standards of excellence for the delivery of quality pre-hospital emergency care for people in Ireland. The professional register maintained by the PHECC was activated on 5th September 2005. PHECC has issued seven editions of Clinical Practice Guidelines to date.

1.1.2 The move to a graduate profession.

A requirement of training delivery standards mandated by the PHECC is that any institution approved to deliver paramedic training must have an affiliation with a University Medical or Nursing School. The National Ambulance Training College held an alliance with University College Dublin from 1995 to 2016, and successful training programme candidates were awarded a Diploma in Emergency Medical Technology. In 2017, University College Cork was announced as the academic partner to the National Ambulance Service (NAS) after a competitive tender process. The tender called for the development of a plan to align National Ambulance Service Paramedics with a BSc (Hons) degree and for Advanced Paramedics to be aligned with a Master of Science in Specialist Paramedic Practice degree. This affiliation created the award of Diploma in Paramedic Science (two calendar years), which was terminated in favour of a three-calendar year BSc (Hons) in Paramedic Studies in September 2019 to meet the requirements of the National Ambulance Service College desire to credit students with an award that was matched to the actual workload and level of learning and teaching undertaken. In 2020, a one-calendar year MSc in Specialist Paramedic Practice for Advanced Paramedics was added, and in 2021, a Community Paramedic stream was added to the award. Additionally, a PhD pathway in Paramedic Studies was added to the prospectus in 2021. In order to understand the current landscape, it is worth noting that there is a difference between the current PHECC Education and training Standards and the requirement for employability within the National Ambulance Service. Currently, in order to reach the required Educational and Training Standards for the PHECC Award of National Qualification in Emergency Medical Technology (NQ-EMT) at the division of Paramedic, a time frame of ten weeks of theoretical instruction and two periods of internship, eighteen weeks and one year, respectively.

The NAS mandates the Three-year BSc (Hons) Paramedic Studies degree as the entry requirement for qualified paramedics seeking a permanent employment contract. The National Ambulance

Service College provides a substantial array of discipline-specific courses above and beyond that required by the regulator with the intention of creating a job-ready practitioner.

The development of the current educational programme sees the incorporation of the traditional vocational model into an academic structure. This transitional development has brought about significant enhancements. These improvements encompass a comprehensive grasp of advanced concepts spanning across various domains such as pharmacology, anatomy, physiology, professional behaviour, ethics, and research methodologies. While the core of skills training, as initially conceived, remains intact, educators have also integrated essential academic components into the curriculum to better prepare students for the evolving healthcare landscape. One noteworthy feature of the current programme is the preservation of hands-on clinical training, which includes hospital placements and ambulance internships. These practical experiences are not just integral to the curriculum but also mandated by regulatory requirements, ensuring that students receive the real-world exposure necessary for their future careers.

In addition to these components, educators have introduced innovative pedagogical techniques to enrich the learning experience. Role-playing and task-focused simulations have been seamlessly integrated into the syndicate learning approach to foster skill development. These simulations provide students with opportunities to apply their knowledge in simulated clinical scenarios, thereby bridging the gap between theory and practice.

However, it is essential to acknowledge that the role of simulation within the programme is still evolving. Currently, simulation predominantly assumes a low-fidelity format when incorporated into the curriculum. While it serves as a valuable tool for specific learning objectives, its utilisation is not consistent across all aspects of the programme.

As the programme coordinator for the degree programme, I noticed that anecdotal evidence was emerging in student feedback, which suggested some students did not have positive experiences on their placements. The feedback suggested dissatisfaction specific to a lack of structured mentorship and practical guidance in new working environments and as such identified an area for improvement in the educational delivery of the paramedic degree programme and justification for research. Furthermore, a review of the existing literature within the paramedic field and of cognate disciplines indicates that because of the demands of service delivery, the dimensions of education and training are frequently neglected in clinical placement settings. Despite being an essential educational element for clinical healthcare professionals, this research purports that there is a lack of clinical

placement and supervisory faculty in health facilities to meet the demand. The consequence of this deficit in the educational continuum is that students do not benefit fully from experienced practitioners, who themselves can be unsure as to their role in supporting the student educational journey.

Paramedic clinical education is a form of experiential learning wherein clinical skills are developed in the clinical environment. It is generally accepted as the most effective technique for novices to begin advancing clinical skills (Ryan and Higgs, 2008) and integrate skills, knowledge, and professional behaviours into practice. In addition, it encourages further student development and independence (Bryant *et al.*, 2003; Kilminster and Jolly, 2000; Spencer, 2003).

Students need to internalise the values, attitudes, and skills that form professional practice, manage complicated and confusing situations in hierarchical placement settings, and learn from a variety of educators with varied methods and styles of instruction (Higgs and Edwards, 2002; Jarski *et al.*, 1990). Students are also required to embrace being self-directed, active, independent, and goal-oriented (Kell and Deursen, 2002) while developing an identity as part of professional socialisation within the discipline (Higgs *et al.*, 2009). Clinical placement is the setting for such learning to take place.

The current pedagogical approach is to immerse a student in a clinical placement setting. Typically, a student has not been orientated in a placement area, which necessitates investing valuable time in becoming acquainted with new equipment, workflows, and an unfamiliar environment before the thrust of clinical learning can begin. Further compounding the challenge is a lack of clinical placements and supervisory faculty in facilities to meet the demands (Taylor *et al.*, 2017). The consequence of this is that educators are obliged to add additional time in a clinical placement setting for some students in order to achieve the necessary exposure. This extended time requirement further exacerbates the strain on resources and schedules.

An additional layer of complexity emerged during the Covid-19 pandemic when all student paramedic hospital placements in Ireland became unavailable. As a result, students were required to undertake their clinical training aboard operational ambulances, representing a departure from the traditional hospital-based placements. This shift necessitated regulatory approval and exemplified the adaptability and resilience of the programme in the face of unprecedented challenges.

It is well recognised that students who cannot access a suitable placement area or are not afforded sufficient time and exposure to become orientated and comfortable in a placement area will not

achieve the necessary competence. Therefore, addressing these challenges and finding innovative solutions to augment the clinical placement experience for all students remains a critical priority within the educational programme.

The hypothesis underpinning this thesis is that a combination of role-play and simulation may be considered as an adjunct to the clinical placement experience, thereby reducing the student burden of onboarding new skills in an unfamiliar and sometimes highly charged environment. Importantly, this is an environment where the priority of service must be given to the patient and where students would be better prepared for their clinical placements, having had realistic (pre-placement) clinical simulation experiences. Yet, to date, simulation within the paramedic curriculum in Ireland has embraced the use of low-fidelity simulation only, described below, and few studies have explored attitudes that students and educators may have or how they are used. Hence, the specific implication here is that there has been no opportunity to appraise these considerations and relate them to the development of future educational design or practitioner practice. This thesis aims to address this gap in knowledge.

For this thesis, it is important to define keywords and definitions that are used so that the reader comprehends the meaning and significance of these terms throughout.

Simulation: Has been defined as a situation in which a particular set of conditions is created artificially in order to study or experience something that is possible in real life; or a generic term that refers to the artificial representation of a real-world process to achieve educational goals via experimental learning (Flanagan *et al.*, 2004). Simulation is a broad concept used as an education pedagogy for a wide range of disciplines. The use of simulation to educate paramedics is frequently used internationally as a modality to teach psycho-motor skills, acquire new knowledge and gain competence in practice. A simulation approach has been used in cognate disciplines such as nursing and medicine for many years.

High-fidelity simulation: Cant and Cooper (2010:4) define high-fidelity simulation in terms of “simulation that incorporates a computerised full-body manikin that can be programmed to provide a realistic physiological response to student actions”.

Role-play: Role-play has been defined in education in a variety of ways. It has been called an experience and referred to as a pedagogy (Hidayati and Pardjono, 2018; Sogunro, 2004; Westrup

and Planander, 2013). Here, role-play can be described as an instructional technique in which students assume the role of various characters within a predefined teaching session.

Clinical Experience: Practice in an inpatient, ambulatory care or community setting where the student provides care to patients under the guidance of an instructor or preceptor.

1.2 Research Problem Propositions, Research Issues and Contributions.

The aims of this exploratory research project were:

1. To explore the experiences, concerns, and observations of the paramedic students regarding clinical placement.
2. To explore student opinions of augmenting a traditional clinical placement model with the introduction of a combined role-play and simulation experiences.

Essentially, this thesis seeks to explore the current perceptions, barriers and benefits to students and facilitators of using simulated practice learning to prepare paramedic students for clinical placement. It looks at their experiences, and the utility of simulation, role-play and combined learning designs can contribute to a paramedic education curriculum.

1.2.1 The Research Problem.

The research problem under review necessitates a critical evaluation of various independent frameworks and theories in paramedicine and cognate disciplines. Chapter Two of this thesis presents an extensive critique of the relevant bodies of literature in the areas of interplay, namely clinical placement, simulation and combined simulation and role-play.

As described above, anecdotal evidence from the student experience on the current degree programme strongly indicates that a proportion of students do not have a positive experience of clinical placement. This is supported by literature and will be discussed further in Chapter Two, where issues pertaining to effective clinical placement are reviewed. This study seeks to understand a possible dichotomy between student experience and a dedicated and highly professional workforce.

That said, there is a dearth of literature available on the paramedic clinical placement model in Ireland. Without new and current evidence, the development and implementation of a new model may not have a solid foundation; therefore, this thesis suggests that if more is known and

understood about the student experience in relation to the clinical learning environment, appropriate strategies and support can be provided to mitigate identified learner challenges.

1.2.3 Contribution to Knowledge.

This thesis acknowledges the importance of clinical placement as part of paramedic training and education. As stated, there is a substantial gap between research and practice in this field; this issue is raised throughout the thesis. This thesis contributes to the existing body of knowledge by combining seminal theories and frameworks with findings from robust methodologies described in subsequent chapters.

The study's findings can provide educational leaders with a foundation of knowledge to continue promoting an aspect of paramedic education and ensuring that all students have the opportunity to benefit from it. Moreover, it suggests potential improvements to existing approaches and practice. Importantly, this thesis acknowledges that including stakeholders in the initial exploratory research that informs a potential change can produce more satisfying results than achieving total assimilation without stakeholder participation. This research is founded on the values of equality and courtesy. While this is not an implementation study, it can be suggested that any attempt to implement change into a system of complex human activity, such as clinical placement for paramedic students, would benefit from considering the findings and recommendations described in later chapters.

1.2.4 The Practitioner's Contribution to Research: A Journey of Reflexivity

The combination of the practitioner's role and the researcher's practice of reflexivity has a profound influence on the course of this research work. My attitude as a practitioner naturally directs my study toward practical applications. This ensures that the study addresses real-world difficulties, hence increasing its functional significance for educators in our profession. Leveraging my practical experiences ensures that the research is closely aligned with the actual realities of the profession. This connection is essential for providing pragmatic and actionable advice and solutions. As a researcher, reflexivity enables one to critically evaluate the conformity with ethical and methodological guidelines. Because of the practical experience, this researcher is well-equipped to provide well-informed and context-specific recommendations. This influences the research by ensuring that its conclusions and recommendations are grounded in the difficulties and requirements of our field on a daily basis. The researcher's procedures enhance the validity and confidence of the study's recommendations. Questions pertaining to research bias, halo effects, experimenter effects and more are required to examine the researcher's practice of reflexivity and

will be discussed in Chapter Three. As evidenced by this researcher's experiences, the impact of practitioners on the research process is substantial. Moreover, the relationship between practitioners, reflexivity, and research, examining their interplay and significance in the broader context are interwoven throughout this thesis.

1.3 Structure of The Submission.

In Chapter One, a historical overview of the evolution of the paramedic role and associated educational pathways has been presented. This places the present position of paramedic education in Ireland in the context of its history in order for the reader to appreciate the challenges related to the emergence of the Paramedic as a registered professional and the associated development of academic and practice-based paramedic education. Awareness of the recent developments in paramedic education will contextualise correlations with other professional groups where the theory-practice relationship has been previously investigated, chiefly nursing.

Chapter Two will then present a comprehensive review of the literature that frames the domain of this study. By presenting a comprehensive and analytical review of relevant research literature, Chapter Two aims to provide a theoretical framework for the study as a whole. It thematically identifies and critically reviews specific areas considered most relevant for this research, including: clinical placement, role-play and simulation and the fundamental concepts of theory, practice and knowledge that underpin each in paramedic training.

The methodological approach used for this research is detailed in Chapter Three, where the mixed methods approach is justified as being the most appropriate for this question under review. A chronology of the work is provided alongside a description of the focus groups and surveys carried out. Finally, a detailed account of data management, including qualitative and quantitative data analysis, is included.

The findings of this research are presented in Chapter Four. This chapter documents the findings of the qualitative and quantitative methods; however, the findings from this mixed methods approach are not presented independently but are treated intrinsically within the overall narrative. Themes elicited from the data are noted in Chapter Four; however, the significance of these findings is discussed in detail later in Chapter Five for the purposes of clarity and objectivity.

The discussion in Chapter Five is situated in the context of the literature reviewed in Chapter Two and the background to the study in Chapter One. It gives an analytical account, both practically and philosophically, of paramedic training with consideration for using simulation and role-play and offers further recommendations and observations based on the findings and the overall theoretical framework identified in the literature in Chapter Two. Additionally, the discussion and recommendations described in Chapter Five show that the research makes a distinct and original contribution to the body of knowledge detailed in Chapter Two.

Finally, Chapter Five will conclude the thesis with a succinct overview of the work and the key areas that emerged.

1.4 Conclusion.

This chapter seeks to introduce the reader to the importance of paramedic clinical education. It has presented a background to the research in that it provided a historical backdrop while describing the situational and professional obstacles to a successful clinical placement which many students face and how an interventional programme utilising combined role-play and simulation might be used by educators to overcome such obstacles.

Chapter 2: Literature Review.

2.1 Introduction.

The Paramedic profession has developed greatly in the last 30 years. The development of paramedicine has occurred at different rates in various other countries and regions worldwide. The specific timeline for when paramedics became "normal" or widely accepted can vary significantly depending on local healthcare systems, regulations, and resources. In some areas, paramedics may have become a standard part of emergency care earlier or later than in others.

In the United Kingdom, the National Health Service (NHS) Act officially recognised paramedics as a part of the NHS workforce in 1979. At this time in the Republic of Ireland, there was a growing recognition for more advanced prehospital care to improve patient outcomes in emergency situations. However, the term "paramedic" was not employed in Ireland until 2006 under the establishment of the Prehospital Emergency Care Council. Chapter One has described how significant developments in the field see a departure from the paramedic being a "stretcher-bearer" to the role of an independent clinical practitioner, routinely applying emergency medical and trauma procedures in the prehospital environment. Along with some technical and clinical practice advances within the profession itself, the educational model for paramedics has also evolved from a traditional vocational apprenticeship model engaging in on-the-job training into a professional-level tertiary education program, requiring three years of pre-employment university education. A university education provides students with a wide-ranging understanding of advanced concepts in pharmacology, anatomy, physiology, professional behaviour, ethics, and research.

This thesis is timely in that it looks to educational developments in an evolving discipline: it specifically examines simulation and role-play in supporting clinical placement. The study looks to student and stakeholder experience to inform approaches to education currently in the field and identify inconsistencies that may exist between research and, indeed, teaching and practice.

The purpose of this chapter is to present a comprehensive, analytical review of the literature to provide a theoretical framework for the study. The rigorous selection process for the literature included is described below. Emergent themes contain the narrative for the chapter. As such, the thematic structure for this chapter begins with a critical review of role-play – referred to as an experience and a pedagogy (Hidayati and Pardjono, 2018; Sogunro, 2004; Westrup and Planander, 2013). Role-play can be described as an instructional technique in which students assume the role of various characters within a predefined teaching. This will be followed by an examination of

simulation in the literature, which has been defined as a situation in which a particular set of conditions is created artificially in order to study or experience something that is possible in real life or a generic term that refers to the artificial representation of a real-world process to achieve educational goals via experimental learning (Flanagan *et al.*, 2004).

Simulation is a broad concept used as an education pedagogy for a wide range of disciplines. The use of simulation to educate paramedics is frequently used internationally as a modality to teach psychomotor skills, acquire new knowledge, and gain competence in practice. For many years, a simulation approach has been used in cognate disciplines such as nursing and medicine. In discussing simulation, it is also important for the purpose of this thesis to understand the concept of high-fidelity simulation. Cant and Cooper (2010:11) defined high fidelity simulation in terms of "simulation that incorporates a computerised full-body manikin that can be programmed to provide a realistic physiological response to student actions". Finally, the main body of this chapter will focus on a body of literature pertaining to role-play, simulation, clinical placement, and the attitudes to these concepts in the context of paramedic training and education. All these concepts are reviewed in the context of clinical experience, which is understood here to mean practice in an inpatient, ambulatory care or community setting where the student provides care to patients under the guidance of an instructor or preceptor.

Because of the demands of service delivery and supervisor experience, the dimensions of education and training are frequently inconsistent or even neglected in clinical placement settings. Despite being an essential educational element for all clinical healthcare professionals, there is a lack of clinical placement and supervisory faculty in health facilities to meet demand (Taylor *et al.*, 2017). This can result in a failure to adequately prepare students transitioning from being students to becoming effective practitioners, specifically, the student does not benefit from a structured mentorship programme, to develop their integration to the community of practice while on clinical placement. The Prehospital Emergency Care Council (PHECC), which is the statutory regulatory body for the Republic of Ireland, identified in the white paper *The Future of Paramedicine* that there is a shortage of placement opportunities within the ambulance service to allow adequate training or learning time (PHECC, 2016:15). In addition, demands on healthcare facilities that are used for clinical exposure and refinement of the student paramedics' skills are increasing, and consequently, there is competition from other professions, such as nursing and medicine for resources. These professions have also experienced similar challenges (Lasater, 2007 and McGuinness, 2011) to paramedics securing sufficient quantities of appropriate placement sites with suitably qualified

faculty to facilitate and support the students' educational journeys and consolidate experiential learning as part of their university degree. Simulation and Role-Play, Combined Simulation and Role-Play may augment other teaching approaches in offering a student the opportunity to introduce and understand essential elements of paramedic community knowledge, such as understanding the environment and interprofessional working, whilst facilitating the early embrace of clinical practice in a controlled and safe setting.

Airline simulations have a long history, dating back to the early 20th century when rudimentary flight simulators were used to train pilots (Allerton, 2010). Over time, these have evolved into highly sophisticated virtual environments that accurately mimic aircraft operation, navigation, and emergency scenarios. The primary aim of these simulations is to enhance technical skills and prepare pilots for rare but critical incidents, such as engine failures or emergency landings.

On the other hand, paramedic simulations, are a well-established training modality that stems from the armed forces (Stamper *et al.*, 2008). These focus on developing medical procedures, patient communication skills, quick decision-making abilities, and teamwork in high-stress situations. They are designed to emulate a wide range of unpredictable and dynamic real-world environments, including roadside accidents and public emergencies.

Whilst simulated practice has undergone significant evolution and progression in healthcare, comparisons to the historical development of airline simulations displays that they have different objectives. The context of these two types of simulations differs significantly. Airline simulations are typically conducted in a controlled, predictable environment (the cockpit), whereas paramedic simulations must adapt to various unpredictable scenarios (Gaba, 2004). Additionally, the operational parameters between the two differ. In airline simulations, errors can be immediately identified and corrected without real-world consequences. In contrast, paramedic simulations involve complex patient interactions where decisions' impact may not be instantly apparent, and mistakes can lead to immediate real-world consequences.

Given the emphasises on their unique trajectories, it is rational to argue that it may not be helpful to and consequently have not been expanded upon in this literature review.

The current chapter will primarily review the literature pertaining to role-play, simulation and a combination of role-play and simulation and how it is currently applied.

2.2 Search Strategy.

An electronic search of the literature was undertaken for all articles written in English between January 2000 and October 2022. Foundational work was the exception to this guideline. The search window was set in order to maintain relevance and currency of available information. There is a dearth of literature pertaining to paramedic education pre-2000; even though the term and role of "paramedic" was coined in the United States in the late 1960's, paramedicine did not become an integral part of most modern healthcare systems until the late 1990s.

Databases Used for the Research:

Web of Science: Web of Science is a comprehensive and multidisciplinary database that covers a wide range of scholarly literature, including articles, conference proceedings, and citation data. It is known for its high-quality content and citation analysis tools.

EbscoHost (CINAHL Plus, ERIC, Embase, Medline): EbscoHost provides access to various specialised databases, including CINAHL (Cumulative Index to Nursing and Allied Health Literature), ERIC (Education Resources Information Centre), Embase (biomedical and pharmacological research), and Medline (biomedical and clinical sciences). These databases are essential for researchers in the fields of healthcare, education, and related disciplines.

Cochrane Library: The Cochrane Library is renowned for its systematic reviews and meta-analyses of healthcare interventions. It provides a wealth of evidence-based information, making it indispensable for researchers seeking the latest medical and healthcare-associated research.

SCOPUS: SCOPUS is a comprehensive abstract and citation database that covers a wide array of scientific disciplines. It is a valuable resource for finding scholarly articles, conference proceedings, and bibliometric data.

Science Direct: Science Direct offers access to a vast collection of scientific and technical research articles. It is particularly valuable for researchers in the fields of natural sciences, technology, and medicine.

ProQuest Database: ProQuest is a diverse database that encompasses a wide range of academic disciplines. It provides access to dissertations, theses, scholarly articles, newspapers, and more, making it a versatile resource for researchers.

Justification for Database Selection:

Comprehensive Coverage: The selection of these databases reflects a comprehensive approach to

literature search. It ensures that the research encompasses a wide array of academic disciplines, from healthcare and education to technology and the natural sciences.

Interdisciplinary Relevance: The research topic spans multiple disciplines, making it crucial to access databases that cater to various fields of study. This approach allows for a holistic exploration of the subject matter.

Quality and Rigor: Many of the selected databases, such as Web of Science, Cochrane Library, and SCOPUS, are renowned for their commitment to quality and rigour in the scholarly content they host. This ensures that the sources accessed are credible and reliable.

Specialised Focus: The databases CINAHL and ERIC are tailored explicitly to healthcare and education. They are well-suited for finding literature that may be highly relevant to this research's specialised focus.

The Breadth of Resources: The inclusion of ProQuest and Science Direct broadens the scope of available resources, providing access to various document types, including dissertations and theses, which can be valuable for a comprehensive literature review.

Reference and Grey Literature: The search strategy also includes a valuable approach of searching reference lists from relevant papers and exploring the websites and databases of simulation organisations. This helps capture both peer-reviewed and grey literature, ensuring a thorough examination of the topic.

The selection of these databases and search strategies reflects a well-rounded and comprehensive approach to conducting a literature review, enhancing the likelihood of capturing a wide range of relevant research materials from various disciplines and sources.

2.2.1 Search Terms.

This section outlines the search terms and keywords employed during the literature review. The intention is to elucidate the criteria used for identifying relevant studies and ensure terminology consistency.

Specific Terms

Paramedic	Emergency Medical Technician (EMT)	Ambulance Technician	EMS Provider
Emergency Care Practitioner	Ambulance Paramedic	Field Medic	Mobile Intensive Care Paramedic (MICP)
Paramedic Technician	Rescue Medic	Flight Paramedic	Community Paramedic

Paramedic Specialist	Advanced Life Support (ALS) Provider	Paramedic Officer	
These terms can vary by region and country, and the level of training and responsibilities associated with each title may differ. <i>(see appendix 1)</i>			
Combining simulation and role-playing	Paramedic simulation	Paramedic role-play	High-fidelity simulation
Role-play and simulation	Paramedic education	EMT education	

The Boolean search terms above were used in differing combinations to find relevant literature and refine database search results. The Boolean operators "AND", "OR" and "NOT" were employed for narrowing down and refining search results. These search term choices are intended to facilitate the identification of pertinent literature and contribute to the rigour and comprehensiveness of the literature review process.

During the literature review, the choice of search terms was guided by the following principles:

Relevance: Terms were selected based on their relevance to the research topic, ensuring they accurately represent the subject matter under investigation.

Specificity: Specific terms and keywords were chosen to target studies directly related to the research focus, reducing the likelihood of retrieving irrelevant literature.

Variation: To encompass a broad range of literature, a variety of related terms and synonyms were used when appropriate.

Scope: The search terms were adjusted to account for variations in terminology used in the field, ensuring that no important studies were excluded due to different terminology.

Comprehensiveness: An effort was made to encompass a comprehensive array of studies without introducing unnecessary complexity or redundancy.

The inclusion criteria were:

Relevance: research that focused on education using simulation and role-play independently or combined in allied healthcare, namely paramedicine and nursing, and

Publication Date: published between January 2000 and the present, with an exception for foundational work.

Source Type: articles with accessible abstracts and full text and editorials, commentaries, discussion

papers, conference abstracts, and reviews.

Language: English

The exclusion criteria were:

Irrelevance: Sources or studies not directly related to the research question or objectives are typically excluded. This included duplicates and research focusing solely on psychomotor skills or psychomotor skill assessment and studies focusing only on the exclusive achievement of clinical competencies.

Methodological Incompatibility: Literature in which the learning activity was solely computer-based or if the simulation or role-play formed part of a formal assessment (e.g., an objective structured clinical examination) was also excluded.

Language: Non-English language papers.

2.3 The Dominant Themes.

The following describes the analytical methods used to identify the themes for this review. Three main themes were identified, with sub-themes discussed in the main body of the review. By using the methods described below, the author was satisfied that this exhausted the main themes relevant to this thesis. Other minor themes exist; however, to focus on these would be beyond the scope of the research question, which looks at the experience of using role-play and simulated practice as an adjunct to paramedic placement learning.

Theme 1

The importance of Role-Play in Simulation Experiences.

While role-play featured consistently throughout the literature under review for this thesis, it became apparent, after becoming more and more familiar with the texts, that it was specifically the importance of role-play in simulation that emerged as the overarching theme. While authors spoke of role-play regarding realism and student understanding, which is discussed in the main body of this review as minor themes, they were consistent in their purporting of the importance of role-play in the simulation context. The initial analysis of the literature consisted of reading, re-reading, and notetaking, where it became evident that the importance of role-play was emerging as an identifiable main theme. Following this initial analysis, a systematic analysis approach was taken, whereby keywords and phrases related to this thematic concept were identified and grouped using ATLAS.ti which is a computer-assisted qualitative data analysis software that facilitates analysis of qualitative data for qualitative research, quantitative research, and mixed methods research

(ATLAS.ti, 2023) Developed initially by Thomas Muhr in 1993, broadly speaking, ATLAS.ti assists the qualitative researcher in identifying, recovering, theorising and reporting on the meaningful content of a range of primary research materials (Townend S, 2003). It is an extremely useful tool for any researcher who needs to make sense of interviews, surveys and other forms of human engagement. These relevant keywords and phrases featured prominently in the literature, thereby identifying the importance of role-play in simulation experiences, as this is a main theme for further discussion in this Chapter. A representative selection of these highlighted references and phrases is graphically presented in the figure below, serving as tangible examples that underscore the prevalence and centrality of this theme.

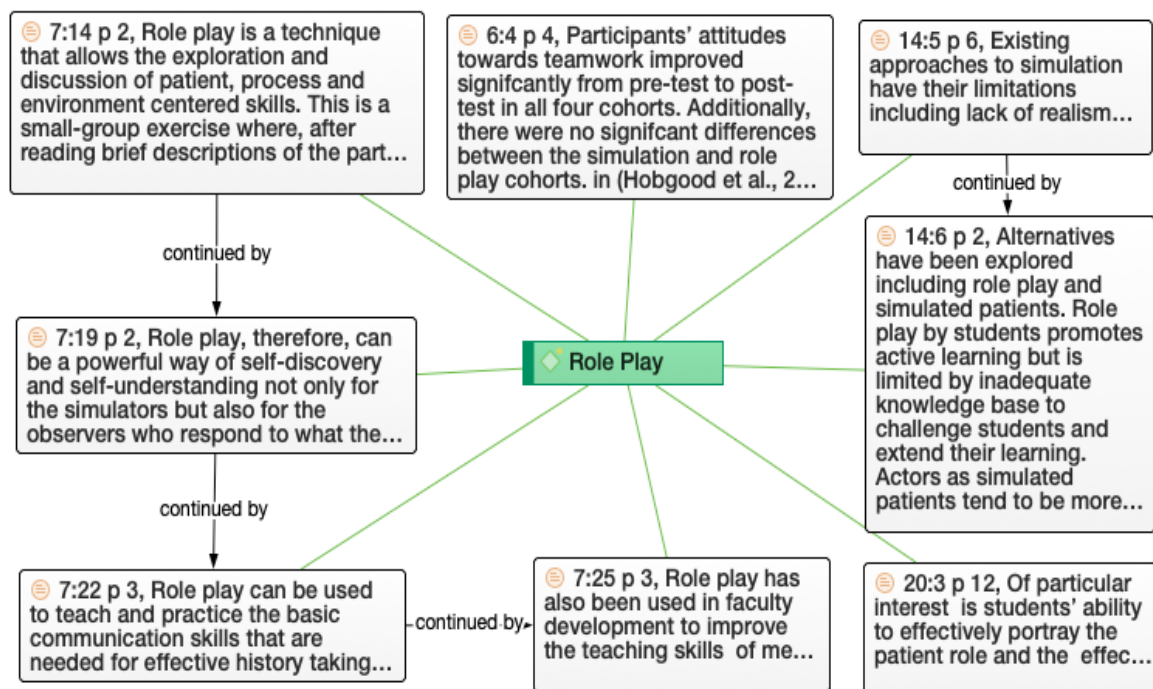
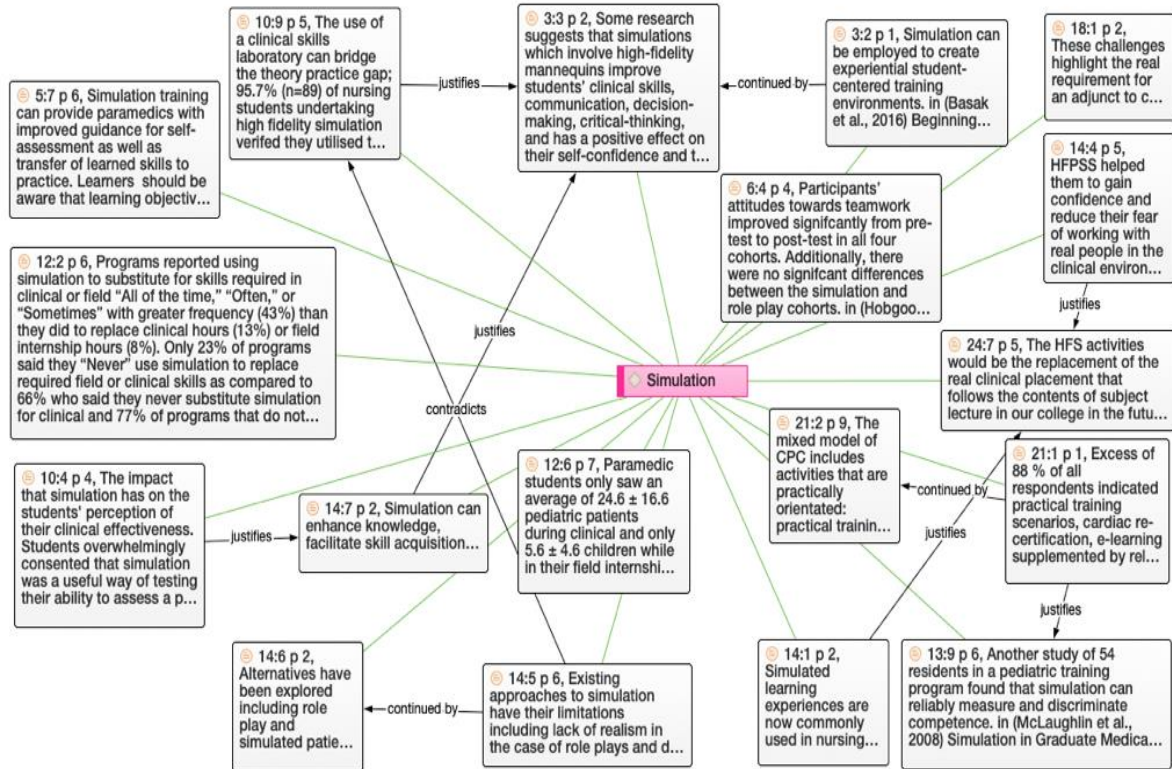


Figure 1

Theme 2.

Simulation as an effective teaching tool.

The same analytical approach was used to identify simulation as an effective teaching tool within the literature. Simulation was mentioned numerous times in the published works that were reviewed, and, initially, after becoming more familiar with the texts, it became clear that an underlying theme highlighting the significance of teaching and comprehension when utilising simulation as a teaching method was apparent. Again, in order to justify this as a main theme from the analysis of the literature, relevant keywords and phrases related to this theme have been highlighted and categorised using the ATLAS.ti software (ATLAS.ti, 2023). See fig 2.



1

Figure 2

Theme 3. The interplay between Role-play, Simulation, and Attitudes

Following the rigorous method of identifying main themes described above, the third theme that emerged from the critical body of literature reviewed for this thesis was the interplay between role-play, simulation, and attitudes. The identification of specific keywords and phrases within the literature consistently linked simulation, role-play, and attitudes when using the approach of initial familiarisation and ATLAS.ti. (see fig 3). Analysis of the literature identified an inexorable link between simulation, role-play, and attitudes. This demonstrates the significance of these pedagogical strategies in shaping not only cognitive and practical domains of learning. Ultimately, this theme provides a cohesive framework for understanding the multifaceted ways in which simulation and role-play influence attitudes and, in turn, how these attitudes impact the learning process.

¹ Note: the annotations eg.14:6 p2 refers to the code allocation labelling within ATLAS.ti

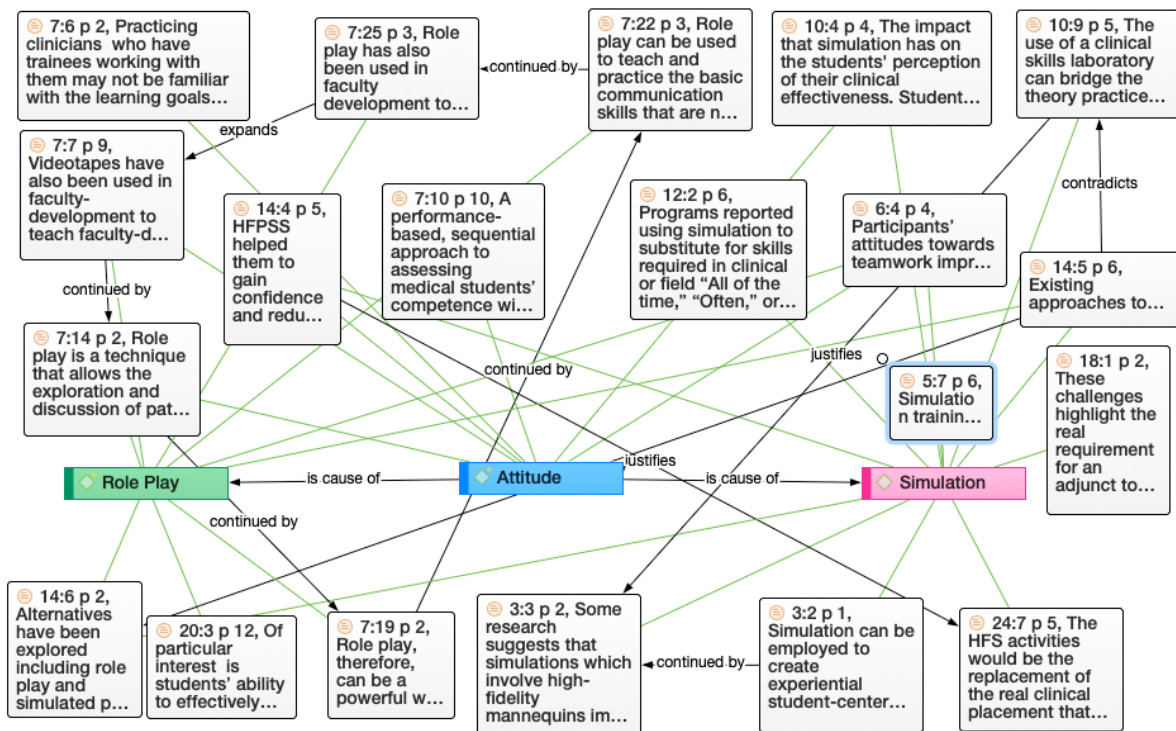


Figure 3

2.3.1 The Importance of Role-Play in Simulation Experiences.

Role-playing is a method that allows for the exploration and analysis of patient-centred, process-centred, and environment-centred skills. Students can undertake various roles designed and scripted by the educator in advance or guided "on the fly" via discrete radio transmission by faculty observing remotely. It may be a beneficial instrument used to determine patient-related and non-patient-related issues in paramedic education, such as the significance of illness, social context, collaboration, management, and negotiation (Simpson, 1985). It can also be used to develop the skills necessary to handle emotionally charged circumstances, such as despondent or angry patients, families, work colleagues and administrators (Cushing and Jones, 1995; Lane, C. and Rollnick, 2007). Role-playing, in its simplified sense, can be used to learn and practice the essential communication skills necessary to take effective history and give information, and can dramatically improve performance (Mansfield, 1991). It is broadly accepted that the skills described here are increasingly necessary in the paramedic role.

An in-depth analysis of the literature provided by Reid-Searl *et al.* (2012) and Dalwood *et al.* (2020) suggests that the existing approaches to simulation suffer from a lack of realism in relation to role playing. The authors cited difficulty in directing the learning experience when utilising actors as simulated patients in role-play; however, these authors also reveal that students effectively portray the patient's role in developing empathy. Lane *et al.* develops this concept further when they

conclude that "Role-Play, therefore, can be a powerful way of self-discovery and self-understanding" (Lane *et al.*, 2001:298). They further contend that role-play can be used to teach basic communication skills for effective initial patient assessment with health professionals.

A body of literature within the field supports the idea that role-play can enhance knowledge while decreasing anxiety in learning and assisting in promoting clinical judgement (Becker *et al.*, 2006; Bokken *et al.*, 2009). Notwithstanding these observations, there is broad agreement in the literature that, as there is little reported on student learning outcomes, there is a need for further research into the use of role-play for healthcare education (Blum *et al.*, 2010; Cant and Cooper, 2010; Harder, 2010; Lasater, 2007; Marie Bremner DSN *et al.*, 2008; Neill and Wotton, 2011). Although only one paper selected mentioned the effectiveness of role-play with a self-conscious participant but did not elaborate beyond stating that a requirement for positive group dynamic was required for a successful role-play exercise (Lane, J. L. *et al.*, 2001), this demonstrates a need for further study in the area.

In the literature on role-play, it is apparent that there is some discrepancy and inconsistency concerning the meaning of role-play and simulation; consequently, this can cause some confusion when interpreting the resulting data. In some cases, the delineation is clear, and data may be contextualised and considered, while in other literature, it is not (Hayden *et al.*, 2014 and Jeffries, 2005). Although many authors have conducted studies in primary and allied healthcare settings, this problem is still insufficiently explored within the sphere of paramedic undergraduate education, which, hitherto, relied on the data provided by associated professions in healthcare. Consequently, this review can reveal that a more systematic and theoretical analysis is required for future research in this area. To this researcher's knowledge, no prior studies have examined or defined the unique use of role-play as an educational methodology in undergraduate paramedic education. Therefore, a critical question is whether the existing research can remain a valid indicator without acceptance of standardised terminology. Additional studies are needed to understand more completely the key tenets of role-play in paramedic education are required.

2.3.2 Simulation as an effectual teaching tool.

Having analytically examined the literature on role-play, this chapter now turns to a review of simulation. Holcomb *et al.* (2002) examined the use of simulation as a teaching or assessment tool in emergency care, where the main purpose of their research was to provide validation for the use of a human patient simulator in the field of trauma resuscitation. The study concluded that trauma team

performance was reproducible, and that a significant performance improvement was noted as being comparable to expert teams (Holcomb *et al.*, 2002) comparing three different evaluative instruments to determine which can measure various aspects of medical student learning (Rogers *et al.* 2001). The outcome of the study suggests that while written examinations measure the acquisition of knowledge, they fail to predict if students can apply knowledge to problem-solving, whereas a patient simulator can be used as an effective performance evaluation tool. While simulation is recounted as having efficacy in the teaching and learning sphere, Issenberg *et al.* (2005) suggested that it is only useful as one of many teaching tools and only when integrated into an overall curriculum, a consideration that is discussed in detail in Chapter Four and Five of this thesis. This review did not find a conclusive study suggesting using simulation as a distinct educational tool used in isolation without other teaching and learning instruments. Furthermore, Issenberg *et al.* (2005) suggest that this is a recurring theme in much of the literature and that simulation should be seen not as an isolated pedagogical approach but as one of a number of teaching tools to best educate clinical healthcare providers.

As stated earlier, this review requires attention to the concept of high-fidelity simulation. Basak *et al.* (2016) highlight research that suggests high-fidelity simulations involving manikins improve students' clinical skills, communication, decision-making, critical-thinking and positively affect their self-confidence and teamwork. In contrast to their perceptions of experiences using low-fidelity manikins, their study's findings showed that students' perceptions of simulations employing high-fidelity manikins were superior, with the most significant differential noted being that students reported more self-confidence in learning, satisfaction, and achievement of problem-solving when exposed to a high-fidelity manikin (Ackermann, 2009; Kameg *et al.*, 2010; Shrader *et al.*, 2013). A highlight of this study noted that existing research on the use of high-fidelity manikins in early periods of nursing education is very rare, despite reporting that at the time, more than forty percent of nursing education programmes reported the use of high-fidelity manikins in the training of novice students (Hayden, J., 2011). No such research with reference to undergraduate paramedic students in Ireland is currently in circulation; however, a small sample of Irish emergency medical technician trainees were asked about their first exposure to a human patient simulator with respect to its relevance, applicability, and acceptability as part of a Diploma in Military Medical Care. The trainees' responses were overwhelmingly positive for their perceived value of the simulation training, relevance, spacing, teaching resources and level of the content (Power *et al.*, 2013). The work of Basak *et al.* (2016) and Morgan (2006), claim that the implementation of a clinical skills laboratory would overcome the chasm that exists between theory and practice, citing that 95.7 percent (n=89)

of high-fidelity simulation students evaluated used the skills acquired while in clinical placement. Consequently, as with Crofts *et al.* (2007), this work points to simulation fidelity being a significant contributing factor to the quality of the experiences a student is exposed to. It can, therefore, be concluded that simulation-based training can provide students with rich learning experiences (Parr and Sweeney, 2006). Further justification for using high-fidelity simulation is purported by Sinclair and Ferguson, who describe how nursing students frequently report feeling anxious when attempting to apply their theoretical knowledge in practice (Sinclair and Ferguson, 2009). Accordingly, Cannon-Diehl (2009) explains that simulation training is a significant teaching-learning strategy to improve nursing students' clinical skills, integrate theory and practice, and overcome students' negative experiences.

Both role-play and simulation suffer inconsistency in terms of fidelity. Jeffries (2005) created a simulation framework, which was adopted in 2007 by nursing programmes in the United States of America; however, a number of years later, literature published was critical of the continuing lack of consistency in standardised terminology coming through in subsequent literature and outlined the challenge to future research along with misinterpretation of any conceptual framework in reviewing the literature to test the hypothesis and draw further research questions (Hayden *et al.*, 2014). The adoption of the framework or something similar, or indeed a modified approach, has not been widespread amongst the paramedic discipline as the prevalence and high level of anxiety are reported in the literature as present in 2019 by paramedic students (Wills and Asbury, 2019).

For the purpose of this study and the continued development of paramedic training and education, it is important to review how simulation can be employed to create experiential student-centred training environments utilising the framework developed by Jeffries in 2005 (Hayden *et al.*, 2014). It is apparent from the literature that the academe was juxtaposed in time, as a trend emerged of participants describing how high-fidelity patient simulation helped them gain confidence and reduce their fear of working with real people in the clinical environment is supported by the work of (Reid-Searl *et al.*, 2012) who explain that as students were able to practice skills with characters who seemed so real, students interacted with them as people. They were not real and therefore could never be harmed by the students' decisions and behaviour. This helped them conquer what the paper described as a "crippling under confidence" (Reid-Searl *et al.*, 2012:80). This is supported by several authors where the idea of removing students from the worry of causing harm encourages them to interpret mistakes as learning opportunities and provides students with the ability to exercise skills and interact with patients without fear of consequence (Kardong-Edgren *et al.*, 2008;

Knox *et al.*, 2015; McCaughey and Traynor, 2010; McLaughlin *et al.*, 2008) Moreover, the subsequent improvement in confidence they have identified in students is consistent with a significant body of literature on simulation (Au *et al.*, 2016; Basak *et al.*, 2016; Boyle *et al.*, 2007; Lane *et al.*, 2001) Students' perceptions regarding simulation as an alternative to clinical placement provides crucial feedback as to the efficacy of the approach (Au *et al.*, 2016). These authors revealed that the simulation activities which students engaged with as a replacement for part of an actual clinical placement were appreciated by students (Au *et al.*, 2016). Moreover, they describe how simulation contributed to the student's ability to perform when they did attend an actual clinical placement (Au *et al.*, 2016). Despite a paucity of literature available specific to paramedic practice in Ireland, it would be worthwhile to explore the experience of student paramedics to establish if applied to the undergraduate paramedic curriculum.

A cautionary note within the literature from Carey (2022) based on the systematic review conducted by Adamson (2015) contends that "High-Fidelity Simulation (HFS) is a misunderstood term. Too often, HFS is mistakenly used to refer to a particular simulation modality, namely, the full-body, high-complexity patient simulator. However, modality and fidelity are two distinct components of simulation design. Both "impact the overall effectiveness of the activity" (Carey, 2022:01). A defining feature of the book chapter on simulation is where Carey (2022) highlights that many research studies attempt to measure the influence and impact of simulation; however, they do not compare or articulate the two critical components of modality and fidelity within the simulation-based learning experience.

2.3.3 The interplay between Role-play, Simulation, and Attitudes.

Denson and Abrahamson (1969) and, subsequently, Gaba and DeAnda (1988) in Stanford developed the first model-based simulation systems. Gaba and DeAnda describe a simulation of anaesthesia to replicate the operating room environment for training and research for the physician (McLaughlin *et al.*, 2008). Despite this emergence of medium and high-fidelity human simulators in clinical health practitioner education, their use in undergraduate programmes did not feature until the late 1990s. The use of the technology gained traction and acceptance from healthcare faculty in the mid-2000s, thereby demonstrating awareness that simulation allowed students to practice skills, critical thinking, and clinical decision-making in a safe environment. The timing of this may be as a result of healthcare settings becoming increasingly risk averse (Ironsides *et al.*, 2014).

There is no distinct chronological benchmark in the literature that indicates when exactly role-play and simulation were first used in unison as a teaching methodology. Most of the available literature focuses on learning outcomes, domains of competence or student satisfaction when learning a task or skill without applying standardised terminology (Hayden *et al.*, 2014; Jeffries, 2005). The lack of a standardised terminology has inevitably led to a variation in teaching practice. It can be argued that role-play and simulation have always held a symbiotic relationship; however, when it is considered that simulation was initially developed to allow repetitive practice of a practical skill, this assertion carries less weight. What can be ascertained from the literature, although not currently quantifiable, is that role-play blended into simulation is a technique currently being used by educators in healthcare to augment actual patient experiences with constructed environments designed to replicate clinical practice settings. These active learning sessions are expected to specifically evoke or replicate important aspects of the real world. A number of authors have recognised that simulation has a profound effect on the shaping attitudes of students (Kameg *et al.*, 2010; Lane *et al.*, 2001; Sari *et al.*, 2020). Lane *et al.* (2001) helps students to understand patients as adopting the role of 'patient' and/or 'caregiver' allowed them to relate to the position and environment in which care would be provided. An implication of the study is that engagement with role-play and simulation is likely to compel students to prepare their minds for what they can face in reality and improve their attitude towards their actions when dealing with reality. The study further suggests that simulation and role-play help students to gain confidence and dispel fear, which means their attitude towards patients will develop and likely improve as they are likely to be more careful when dealing with real patients.

In further support of this hypothesis a study by McCaughey and Traynor (2010) highlights the importance of simulation on student perception of clinical effectiveness which can be a good predictor of the attitude they can show when dealing with real patient situations. While Hobgood *et al.* (2010) concluded that any introduction and use of either role-play or simulation as a methodology to the training environment can provide substantial increases in basic learner competency in core teamwork knowledge and attitudes. This suggests a mind shift for educators and institutions from the presumption that effective training is only possible with expensive initiatives or high-fidelity simulation tools.

The ability to expose students to these experiences to facilitate them achieving a requisite level of competence has become increasingly challenging due to limitations in the availability of clinical placements and actual patient exposure (PHECC, 2016). The PHECC stipulate the education and

training standard and competencies that must be assessed at the various stages of a student paramedic's progression (PHECC, 2014). These challenges highlight the real requirement for complementary methods to enhance the limited clinical exposure opportunities that students can access, with an increasingly popular and empirically driven solution being simulation (Boyle *et al.*, 2007; Williams *et al.*, 2016).

Most programmes do not use simulation to replace clinical skills or field internship requirements. Several methods are reported in the literature to suggest that simulation is at least a suitable adjunct measure that can be used to reduce the amount of time necessary to achieve competence in some learning outcomes. For example, some of the most challenging clinical competencies to acquire for student respiratory therapists (SRTs) are competencies (skills) in the paediatric population (Walsh *et al.*, 2009). In the study conducted by Walsh *et al.* (2009) fifty-four students in a paediatric training program for SRTS in Ontario the researchers found that simulation can reliably measure and discriminate competence between those who are trained with simulation and many other models such as role play and placement or internship. Moreover, (Hernandez *et al.*, 2019) state that simulation training can provide paramedics with improved guidance for self-assessment as well as transfer of learned skills to practice. They stress caution for evaluation of student performance suggesting that learners should be aware that learning objectives identified before simulation training may change post-simulation. This would suggest that simulation training is also effective in student development in terms of self-reflection.

While studies show that simulation participants who were better at assessing their own learning were able to retain more information post-simulation and were ultimately better equipped to transfer what they learned into clinical practice in the field (Lane, C. and Rollnick, 2007). In a study seeking to describe and compare the effects of standardised patient simulation and role-play in the acquisition and retention of interprofessional communication in elderly care competence among nursing students was conducted by Cortés-Rodríguez *et al.* (2022). The research shows that participants' attitudes towards teamwork improved significantly from the pre-test to the post-test when either role-play or simulation was adopted. Additionally, there were no significant differences between the simulation and role play group concerning the perceptions of the participants' attitude to practical skills and relationships with patients (Cortés-Rodríguez *et al.*, 2022).

There is compelling emerging evidence to suggest that simulation positively impacts on students' confidence to function in the clinical placement setting, with 84.9 percent (n=79) agreeing in a study on the role of simulation in nurse education conducted by McCaughey and Traynor, (2010). While

Reid-Searl, Happell, Vieth and Eaton, (2012) report that High Fidelity Patient Simulators helped students gain confidence and reduce their fear of working with real people in the clinical environment. This may, in part, be testimony to the fact that simulation is perceived by students to be a 'safe space' in which to practice while attaining mastery (Hernandez *et al.*, 2019). Additionally, a review of paramedic clinical records (McKenna *et al.*, 2015) found that paramedic students only saw between 24.6 ± 16.6 paediatric patients during clinical placement and only 5.6 ± 4.6 children while in their field internship. This suggests that simulation exposed the students to more patients which is likely to give them an opportunity to develop confidence, knowledge and better training skills. Although the research indicates that educational institutions should use simulation to achieve balance, it is reported by McKenna *et al.* (2015) that thirty one percent of the programmes that participated in this study have idle or underused simulation equipment. The most cited reason was a lack of training for support staff and educators alike. It is further noted that support staff for simulation was available in forty-four percent of the programmes. Manufacturers are the primary trainers for programmes using advanced manikins (eighty seven percent), and nineteen percent of faculty have no training specific to those manikins. Many respondents (seventy eight percent) believed they should use more simulation. Therefore, one can draw a hypothesis that although simulation resources are available in paramedic programmes, faculty training and other program resources appear to influence their use.

A study that specifically examined the role and outcomes of simulation in pre-licensure clinical nursing education was conducted throughout the United States of America in 2014. The NCSBN National Simulation Study (Hayden *et al.*, 2014) is the most extensive, most comprehensive study to date that explores whether simulated clinical experiences can be substituted effectively for traditional clinical placement experiences in the undergraduate nursing programme. This large-scale study took place over two years, following the students fully throughout their entire undergraduate programme and involved ten different teaching institutions from geographically diverse areas. A total of 666 students fully completed the study. The simulated clinical experiences were constructed using the NLN/Jeffries (Jeffries, 2005) simulation framework and involved medium or high-fidelity manikins, standardised patients, and role-playing. The authors of the study stress that this must be under the conditions used similar to those mentioned in the study. These conditions require faculty members specifically qualified in simulation pedagogy, a sufficient number of faculty members to assist student learners, subject matter specialists performing theory-based debriefing, and equipment and infrastructure for creating a realistic environment. This research provides significant evidence that up to fifty percent of conventional clinical practice placements can be easily

substituted where simulation is used in core nursing courses (Hayden *et al.*, 2014). While this work is undoubtedly the most comprehensive study supporting the thesis that role-play and simulation teaching methodologies can be employed symbiotically and in support of a reduced requirement for clinical placement and field internship time, the authors have initiated discourse in the field by defining simulation as a pedagogy rather than as a pedagogical tool. The study measured students' knowledge, competency, and critical thinking, as well as their perceptions of how well their learning needs were met. There were no significant differences in end-of-program knowledge, clinical competency, or overall readiness for practice between study groups. Pre-licensure pass rates were statistically equivalent, and managers awarded similar ratings to all new graduates for critical thinking, clinical competency, and overall readiness for practice (Hayden *et al.*, 2014).

One final aspect and benefit of simulation and role-play is patient safety. There is a body of literature that discusses how some healthcare institutions and educators are beginning to place a greater emphasis on utilising methodologies such as role play and simulation in order to mitigate risk while focusing on the importance of early acquisition of complex skills before actual procedural practice (Knox *et al.*, 2015; McCaughey and Traynor, 2010; McLaughlin *et al.*, 2008). This key concept will be developed further in Chapters Four and Five.

2.4 Conclusion.

This chapter has described how unique challenges exist when conducting research in the prehospital setting. Moreover, international research capacity and research culture in paramedicine are still in their infancy when compared to cognate professions. Historically, paramedicine has relied on legacy knowledge of research evidence generated by other health professions. The undergraduate paramedic curriculum should be responsive and fluid enough to adapt to changing evidence and technology while maintaining a solid foundation that supports the development of best practices in patient care on a continuous basis.

The relatively late and sluggish acceptance by healthcare teaching institutions prompts a significant question: will it continue to be acceptable to commence a clinical placement or field internship without first displaying an acceptable level of competence via a deliberately constructed set of simulation and role-play exercises? While there is currently little ethical discussion in the literature, it is predictable that this singular dimension alone will ultimately be used by educators and regulatory bodies in healthcare to further verify, justify and adopt simulation and role-play as an integral part of the paramedic curriculum.

Au *et al.* (2016) explored students' perceptions regarding simulation instead of clinical placement. The findings displayed that the simulation activities instead of part of the actual clinical placement were appreciated by students who indicated that it contributed to their personal resourceful ability when they attended a clinical placement. (Knox *et al.*, 2015; McCaughey and Traynor, 2010; McLaughlin *et al.*, 2008) all show the aspect and benefit of simulation and role-play in patient safety. The NCSBN National Simulation Study conducted by Hayden, J. K. *et al.* (2014) is the most substantive piece of work thus far conducted in support of increased simulation exposure for undergraduate nursing students. Yet simulation equipment remains mostly silent while faculty remain supportive but untrained in simulation techniques required or the ability to leverage the technology. A possible explanation for these positions may be the lack of adequate evidence-based research that can be used to inform curriculum designers and regulatory bodies of the benefits that may be achieved.

The consequence is that it is crucial to consider that although there has been some paramedic simulation and role-play research carried out, much of the literature comes from cognate professions, namely nursing, anaesthetics, and emergency medicine. Besides, the more significant part of the literature on paramedic simulation tends to focus on simulation or role-play taken in isolation. These studies tend to focus on questions such as how well the paramedic performs during a simulation exercise, whether they perform a skill or technique correctly or appropriately, and whether they save the life of the simulated patient.

It is important to recognise the curricular and operational differences between paramedicine and other cognate professions, primarily nursing, so as to appreciate the needs and expectations of the education that is provided to ensure a competent paramedic. A paramedic is expected to operate as an independent practitioner with sole responsibility for patient care from the emergency site to the emergency department. While a significant paper could be generated on the topic, it is sufficient to note that paramedics generally operate independently in the dynamic prehospital environment without the full resources of a healthcare facility. Thus, the focus of the curricula must ultimately meet the needs and expectations of the student paramedic as they integrate and transition to operational practice.

Both paramedics and nurses have a lot of skills in common; however, they operate at different stages of the patient care journey. As a result, paramedics receive more practical training and are empowered to operate (usually under a restricted clinical governance protocol) at the level of a

medical doctor in a prehospital emergency. With this in mind, the lessons learned, and guidance suggested by the literature must be approached with this caveat in mind.

There appears to be very little research on the affective aspects of simulation with paramedic students; in other words, how paramedics feel about this kind of experiential learning. This is crucial to understand, consider and remediate if we are to learn anything from the cognate profession's valuable experience with the development and deployment of appropriately designed simulation-based education. Compounding the challenge is a deficit of literature in relation to the effectiveness of the learning experience on the acquisition of attitudinal objectives following exposure to simulation, role-play, or a combination of both. This is a crucially underreported dimension as the affective aspect influences student performance and, therefore, engagement and effectiveness of the simulation activity.

A number of questions describing or analysing the effectiveness of combining high-fidelity simulation with role-playing in either the affective or psychomotor domains for paramedic students remain unaddressed. Few of the studies reviewed in this chapter ask the student paramedic and tutor about their experience of the simulation event beyond whether they liked it or not. Little opportunity has been afforded to the student or tutor to explore attitudes they may have to simulation, with no opportunity at all to then consider the possible implications of these themes and relate them to future educational design or practitioner practice. Perhaps this is because most evidence on peoples' experience of simulation tends to use simple Likert scale questionnaires without the participants being able to expand on their feelings and thoughts. This tends to produce evidence that states that a participant either likes or dislikes simulation and how much they like or dislike simulation according to numerical indicators.

Review of the current published literature still shows a clear need for further evidence on the subject of the paramedic student experience of simulation and role-play both individually and combined while also analysing the students' attitudes pre- and post-exposure.

In carrying out the literature review for this research, focusing as much as the literature would allow on the experience of undergraduate paramedic students, it was noted that a lot of evidence seemed to be cited in support of the same repeated points and themes considered in this paper when considering the experience of cognate professions. A significant argument that seems to pervade all the published research is the insistence that a greater quantity and quality of literature is needed to move simulation forward. Terminology is a sticking point, with academics unable to agree on a framework for the application of simulation and role-play in different modalities, with the resulting

research output challenging to evaluate as a result (Larue *et al.*, 2015). Paramedic research is becoming more abundant, although there are still significant issues such as agreement on terminology, agreement on a framework for application of simulation and role-play and the utilisation of simulation and role-play as an evaluative tool for clinical competence yet to be investigated within the paramedic discipline. What is clear is that, on reviewing the current literature, there appear to be several gaps in the evaluation of paramedic education, paramedic simulation and student and tutor experience of simulation in particular. This would suggest a considerable gap in the understanding of the impact of simulation and a combined simulation and role-play approach towards paramedic practice that could be explored by future research focusing on the unique demands and needs of the paramedic student undertaking an undergraduate degree whereby simulation is embedded and adequately supported in the current curriculum.

In this chapter the literature review set out to explore the existing knowledge and relationship of simulation and combined simulation and role-play as it is established by cognate disciplines in an effort to establish its utility as a potential adjunct to clinical placement.

The next step of the enquiry requires a methodologic approach to explore and confirm the domestic academe and then establish the perception to mainstream use within the paramedic curriculum in Ireland. Engaging with a sequential exploratory approach, as outlined in Chapter Three, enables insight to develop a set of statements about teaching and learning grounded in clinical educators' and students' perceptions of their roles so that a pathway for stakeholder engagement can be developed.

Chapter 3: Research Methodology.

3.1 Introduction.

This thesis seeks to explore the experiences, concerns, and observations of the paramedic students regarding clinical placement. This study examines the perceptions, obstacles, and benefits of using simulated learning for paramedic students. It focuses on preparing them for clinical placement, their experiences, and the effectiveness of simulation, role-play, and combined learning designs within the paramedic education curriculum. As such it was key to match an appropriate robust methodology considering the research setting and participants as described in Chapter Two.

The aims of this exploratory research project are to explore augmenting a traditional model of clinical placement with the introduction of a combined role-play and simulation experiences.

One objective of this exploratory research is to investigate ways to enhance the traditional model of clinical placement. By investigating these interactive and immersive learning strategies, the project aims to enrich the educational experience of paramedic students. It is hoped that this innovative approach will not only augment their learning but also better equip them for their future clinical placements and professional roles.

The current chapter identifies and describes key considerations when choosing an appropriate methodology for this study. Initially, it focuses on the paradigm and choice of research method, considering the study setting and participants. Epistemological, ontological, and philosophical questions are discussed in the context of this research design. As this study utilises a mixed methodological approach, a detailed description of both qualitative and quantitative measures is given. Importantly, given the researcher's positionality in this study, as described in Chapter One, personal reflection is included in this methodology and described below. Of note, researcher positionality and reflexivity are woven throughout the thesis.

Prior to initiating any research, selections need to be made in terms of philosophy and theory when designing a research study. Since they serve as the framework for all subsequent practical decisions relating to the research project's design, these philosophical and theoretical choices are crucial to any project and will ultimately determine the project's quality (Blaikie, 2007; Thorne, 2016).

3.2 Reflexivity, Study Paradigm, and Research Method Selection.

The accepted ontology and epistemology in this study assume that knowledge is emergent and dynamic rather than static. It is universally understood that in order for research to be relevant, researchers should employ methodologies that conceptually explain what is actually occurring in the

substantive context. A social world of meanings is the ontology used in this study, whereby the researcher must assume that the world under inquiry is one where people exist and have their own opinions, perceptions, and narratives (Crotty, 1998).

Constructionism is the epistemological stance adopted for the study. Constructionism is described as "the view that all knowledge and, consequently, all meaningful reality as such, is contingent upon human practices, being constructed in and out of the interaction between human beings and their world and developing and communicating within an essentially social context" (Crotty, 1998:53). Thus, meaning is created rather than discovered. Justification in the use of constructionism as the study's chosen epistemological approach sits with this researcher's goal of ascertaining the students' perceptions and points of view. Constructionism is the view that all knowledge and meaning is constructed by human beings through our interactions and experiences in the world. According to constructionism, there are no objective truths or meanings that exist independently of our minds. Instead, knowledge and truth are created, not discovered, through social processes and interpretations (Papert and Harel, 1991). Constructionism stands in contrast to objectivist epistemologies that see truth and meaning as fixed entities that exist apart from human influence. Overall, constructionism emphasizes the subjective, interpretive, contextual and social nature of knowledge creation.

The focus group interviews provide further evidence that the creation of meaning is communicated within a fundamentally social framework. Lastly, constructionists hold that there is no correct or legitimate interpretation. This is illustrated in the thesis conclusion, which offers some insights into the way we now approach paramedic education.

Bogdan and Biklen (1998:22) describe the term paradigm in the context of educational research as "a loose collection of logically related assumptions, concepts, or propositions that orient thinking and research". This collection is essentially the lens or viewpoint through which social research is conducted and then examined. Widely recognised philosophical connotations with the term are attributed to philosopher Thomas Kuhn (1962). Still, the ancient Greek origin of the term paradigm meaning simply "example" or "pattern", goes a long way to explaining and simplifying this common research term. Gringeri, Barusch, and Cambron (2013) argue that identifying the research paradigm is essential because paradigms impact the research process, the tools used, and the analysis. The term "paradigm" has been described as consisting of ontology, epistemology, and methodology.

For any research, philosophical and theoretical choices are essential, as they underpin all further practical decisions regarding the design of the study, and thus, they will ultimately determine the quality of the project (Blaikie, 2007; Thorne, 2016). A research paradigm is a worldview that guides researchers in their work, and each paradigm assumes an ontological, epistemological, and methodological perspective (Guba and Lincoln 1998).

A clear discourse of the research paradigm that supports the work aids readers in understanding the philosophical foundations and assumptions that underpin the research. Hesse-Biber S. N. and Leavy, (2011) noted that:

"Paradigms or worldviews are neither right nor wrong; one way of seeing is another way of not seeing. However, paradigms are powerful ways of looking at that reality, and they are windows giving us information about the social world and often frame the particular questions we seek to answer." Hesse-Biber S. N. and Leavy, (2011:38)

Thus, we see reflexivity, articulation of the relationship between researchers and participants, explicit framing of the work in theory, and a conscious and integrated use of a research paradigm as critical to the epistemological underpinnings of research. Section 3.3 discusses how the researcher-participant relationship is fluid, not one-sided while section 3.6 describes trustworthiness and rigour.

Social research is not rooted in one single theoretical perspective; therefore, various philosophical suppositions can be adopted depending on the phenomenon being investigated (Orlikowski and Baroudi, 1991). Because our social world is so complicated, an approach that considers the unique qualities of human subjective experience is required. As I wished to explore clinical educators' and students' experiences, I decided to use an overarching interpretivist research paradigm, a research paradigm being a philosophical and theoretical framework, constructed such as to develop an understanding of the social world (Kuhn, 1962). According to Schwandt (1998), the goal of interpretivist research is understanding the complex world of lived experience from the point of view of those who live it. The interpretivist paradigm requires a focus on understanding the clinical educators' and students' experiences and perceptions in a specific local context, acknowledging that all data, whether qualitative or quantitative, were human interpretations of the truth.

Meanwhile, the interpretivist research paradigm is contrastingly framed in terms of subjectivity and the significance of personal human experience (Guba and Lincoln, 1998). Thus, under an interpretivist paradigm, researchers will make use of their own experiences and knowledge when interpreting data (Punch, 2005). Hence, this paradigm is inherently linked to qualitative research methods concerned with descriptive and textual as opposed to numerical data (Mackenzie and

Knipe, 2006). Data and information associated with qualitative research are collected using research instruments such as focus groups. It is noteworthy, however, that there is a growing consensus among education researchers that the field is best served by adopting both a quantitative and qualitative or 'mixed methods' research approach. For example, information collected during a focus group research session might be cross-referenced with the results of a poll or survey conducted with focus group subjects before or after the session.

Verstehen ('to understand') has its genesis in the writings of notable scholars such as Maximilian Weber (1866-1930), who was also heavily influenced by a number of other prominent social theorists of the time, including Harriet Martineau (1802-1876) and Wilhem Dilthey (1833-1911), who argued that in order to improve and augment our knowledge that it must seek to understand the point of view of the people we study rather than try to explain human behaviours by means of cause and effect. From this lens, the understanding of human behaviours and the implicit intention demands a degree of understanding of emotional intelligence with our subjects. In contrast, objective explanation, according to von Wright (1993) does not. While Weber, Martineau, and Dilthey paved the way for the interpretive approach to social inquiry, scholars and theorists who came after them have continued to debate and challenge their ideas, taking the interpretive movement into interesting new dimensions. Among the most important debates is about what the researcher's role is in the process of inquiry and how that affects the kind of knowledge they can create.

In terms of epistemology, or how we learn about the social world, Snape and Spencer (2003) identify three domains. Firstly, there is the essence of the relationship between the researcher and the participants. Natural science research regards the phenomenon under investigation to be independent of the researcher, who is objective and unbiased, whereas many social scientists would argue that the relationship between themselves and the social world is interactive (Holloway and Freshwater 2007). Within this research study, there was an underpinning assumption that the researcher and participants do influence each other. Secondly, theories about the nature of 'truth' vary and in this study, there is an acceptance that if a participant confirms a statement, then it can be regarded as a faithful representation of their socially constructed reality. As objective, value-free research is considered impossible in this project; I will declare and be as transparent as possible about my personal beliefs, values, and assumptions as they apply to this study. Thirdly, the methods of natural science are not appropriate for this study as the social world is not ruled by universal rules, and so needs to be mediated through my analysis and interpretation and through the

particular meanings given by the participants (Bryman, 2008). This research approach then attempts to produce ideographic knowledge, which, according to Swinton and Mowatt (2006), means that as no two people experience the same event in precisely the same way, multiple truths are possible. In contrast, nomothetic knowledge is acquired through the scientific method and meets the definitions of falsifiability, reproducibility, and generalisability (Swinton and Mowatt, 2006). The methodological approach for this thesis is a result of personal reflection on these considerations while a rationale is given below.

The choice of a research methodology needs to be guided by a research paradigm which has a theory of the nature of reality, ontology, and a theory of how knowledge about reality can be gained, epistemology (Myers, 2009). Paramedic practice is multi-disciplinary; therefore, the identification of an appropriate research approach is not a simple task. There is no uniform agreement about the ontological and epistemological basis of social science (Guba and Lincoln, 1998).

3.3 Design considerations.

The first step of this academic enquiry was to explore clinical educators' and students' experiences, views, and interpretations of the paramedic students' clinical placement experience. The purpose of this was to use this insight to develop a set of statements about teaching and learning, grounded in clinical educators' and students' perceptions of their roles. A research method that would capture the rich discourse provided by the objective reality of the study participants while mitigating identified challenges and limitations to the study was required (Cohen *et al.*, 2018; Teherani *et al.*, 2015). Focus groups were selected as the primary research method (Breen, 2006) for phase one of a triangulation, using an exploratory/sequential process that in phase two additional data using an online survey was considered. The subsequent narrative will endeavour to explain the rationale and justification for the various elements of the research design.

We are constantly evolving in our understanding of self and the world. I have confirmed this during the evolution of the research design, the ethical approval process, and the subsequent data collection. The researcher-participant relationship is fluid, not one-sided. Each one is constantly influencing the other through interaction (Vanner, 2015). I find myself in an emerging specialist field as a paramedic and novice academic (Batt, 2016; Williams *et al.*, 2010). My discipline's existing status, (see Appendix One), is that professional direction is determined by medical and nursing scholars who accept paramedicine's natural progression. Academically, paramedicine's professional

recognition is at an early stage (Batt, 2016; Munro, O'Meara, and Kenny, 2016), necessitating all of academia's support and guidance as a path is forged in educational and assessment methodologies that are refined explicitly for paramedic education while learning from the academy (Bowles, Van Beek and Anderson, 2017).

Three concurrent processes are unfolding in this study: laying the groundwork for academic rigor, conducting research to bolster professional knowledge and practice in an emerging profession, and shaping future practitioners (Cavanagh *et al.*, 2023). Given the emergent nature of paramedicine and my positionality, I consider that I can contribute and play a pivotal role in steering its professional trajectory. This task involves maintaining a delicate balance as an impartial observer, uninfluenced by other professions and ensuring that my presence does not skew the research through participant-researcher interactions or misinterpretation of data (Wilson *et al.*, 2022). Consequently, I am deeply considering reflexivity, method design, and analysis to minimise bias.

When considering the research design, various methods of capturing qualitative data were explored. The challenge is to weigh the pros and cons of all available methodologies. Consequently, selecting the option that has the best chance of reaching the desired population and achieving the research objectives to develop a set of statements about teaching and learning, grounded in clinical educators' and students' perceptions of their roles. Surveys, interviews and focus groups were predominant in my consideration. Surveys allow for a standardised method and are reasonably easy to administer (Cohen *et al.*, 2018). They offer the opportunity for many to participate and are easily tabulated and subjected to statistical analysis (Creswell, 2014). They are, however, prone to error, require a separate data entry phase and are subject to misinterpretation depending on how the questions are crafted and asked. They are often limiting in attempting to establish the underlying beliefs of the participant and are routinely considered time-consuming when compared to less formal methods (Given, 2008). Interviews have an advantage over surveys insofar as they allow for clarification while also allowing for a line of discussion to be tailored for an individual offering a more personalised approach. However, in contrast, one downside of interviews that I was keen to mitigate is that the researcher's positionality may bias the results. Section 3.7 of this chapter details the various bias theories and effects, and equipped with this knowledge, what was done to negate them. Responses may be less honest and thoughtful. Shy participants may feel inhibited and may not participate (Bowling, 2002).

Focus groups have become an increasingly common form of data collection in health studies research (Morgan, 1997). According to Krueger and Casey (2000), the focus group approach is a useful and efficient tool through which the researcher is involved in the processes in which the group collectively builds an understanding of the topic. The technique is often used to explore themes not well known (Bender and Ewbank, 1994). Several scholars have thoroughly studied this technique's analytical and functional applications; however, their application to researching paramedic educational topics is currently low. The results obtained from the focus group are particularly effective in supplying information about how people think, feel, or act regarding a specific topic. Focus groups may also be used to elicit opinions on known topics, further developing an understanding of participant's perspectives on the topics (O. Nyumba *et al.*, 2018).

A defining feature of focus group use is group interaction to produce qualitative data, whereby an essential part of this interaction is the sharing and comparing (Stewart *et al.*, 2007). This feature will play a critical role as one element of the inquiry involves understanding the collective narrative within the data to construct an instrument for practical use in the main study. Another challenge I seek to address is a paucity of knowledge about the perceptions, acceptance, and value of combining role-play and simulation within the paramedic practicum. Powell and Single (1996) argue that focus groups are instrumental when current knowledge about a phenomenon is inadequate and expansion is essential; thus, selecting a focus group methodology appears to be suitably justified. As Krueger and Casey (2000) reported, focus groups are less daunting to many respondents, and this atmosphere is beneficial for participants to explore perceptions, concepts, perspectives, and feelings.

Furthermore, interactions between participants may generate crucial details (Morgan, 1997), leading to even more spontaneous and rich responses. The primary difference between focus groups and other qualitative interviews is that participants are encouraged to interact and develop different perspectives within the discussion. As the research examines the experiences of teaching and learning in a clinical placement setting, focus group discussions provide a means to encourage and utilise the interaction between peers within the educator and student groups. Further, the focus group method fits this study because it is the participants lived experiences in the placement setting that are of interest. This approach is appropriate for paramedic research as the study is concerned with lived experiences (Vishnevsky and Beanlands, 2004)

3.4 Method: Sequential exploratory approach.

Tashakkori and Teddlie (2010) identify three different approaches to mixed methodology: these being concurrent, sequential and conversion. This study undertakes the sequential approach where the qualitative phase is followed by the quantitative phase (Creswell and Plano Clarke, 2018) where the qualitative findings are used to contextualise the quantitative data (Creswell and Plano Clarke, 2018; Knafl and Breitmayer, 1991). Qualitative data can also enhance and enrich the findings and (Taylor, 2005) help generate new knowledge (Stange, 2006). As this two-phase approach has been identified as particularly useful for a researcher interested in developing a new instrument (Creswell and Plano Clarke, 2018) the concurrent and conversion approaches were consequently unsuitable. The exploratory sequential technique, as described by Edmonds and Kennedy (Edmonds and Kennedy, 2017), is a progressive strategy that is applied whenever qualitative (QUAL) data is added to quantitative (QUANT) results. Therefore, quantitative data sequentially analyses and explains the QUAL results. The exploratory sequential technique, as opposed to the explanatory sequential technique, explores a concept before validating it, giving the QUAL approach more flexibility in the discovery of fresh concepts. The purpose of combining consecutive qualitative data and quantitative data into one study is to provide a deeper understanding and insight into the research themes that would not have been acquired by analysing and evaluating data separately. The results of survey instruments serve to understand the results of quantitative data. In comparison to other methods, the exploratory sequential technique delivers more robust validity, as described by Heesen *et al.* (2019).

In this thesis, the qualitative data are analysed, in part, in order to develop conceptual domains or dimensions that may be employed in the survey's quantitative phase (Curry and Nunez-Smith, 2016). The term "building" describes this form of method-level integration (Onwuegbuzie and Leech, 2005). Building is said to occur when the output of one data-gathering method informs the data-collection strategy of another (Fetters *et al.*, 2013).

The exploratory sequential design is especially helpful in circumstances when researchers wish to examine a phenomenon with a small number of participants thoroughly but also want to generalise these findings to a wider population (Plano Clark and Ivankova, 2016). Although exploratory sequential designs for instruments have received a lot of attention in the literature (Plano Clark and Ivankova, 2016), the methodology for programme creation has received less attention. The development of interventions and programmes can, however, include exploratory approaches, such as the exploratory sequential design, according to Nastasi *et al.* (2007) and Panda *et al.* (2015).

3.5 Data capture and analysis.

Following the submission of the initial research proposal, this is discussed in greater detail in section 3.9, to the University of Winchester ethics committee and subsequently to the gatekeepers at the National Ambulance Service and University College Cork, whereby approval to conduct the study was granted. This led to a study information poster being posted on the National Ambulance Service College (NASC) notice boards and circulated by email to the NASC educators throughout the country. The NASC gatekeeper who supported the research then selected and sent an introductory email to each potential participant, informing them of the study and how they may participate if they wished. Consent forms were provided to the participants and signed by participants before the focus group interviews, allowing time for any questions.

The format of the data taken during the research was rough transcript notes taken during the focus group interviews, audio recordings of the interviews and signed participant consent forms. The physically collected data was converted to electronic format after each focus group session and all original written documents (notes) were shredded. The physical data was stored in a locked cabinet while the process of digitising the data was undertaken. Data was converted to an anonymous form after fourteen days and completed within twenty-eight days as this allowed a participant time to reflect following a focus group and withdraw. While onsite, the recording was immediately transferred to an encrypted laptop and wiped from the recording device. The focus group sessions were then transcribed, and all identifying information was removed. Once complete, the audio recording was deleted, and only the anonymised transcript remains. This is stored on the University of Winchester OneDrive system (Microsoft Corporation, 2021).

Thematic analysis was employed as the analytic technique for coding this data using the software, Atlas.ti (Muhr, 2021). Created as a research project of the Technical University Berlin by Thomas Muhr in 1993 Atlas.ti is a powerful toolkit for qualitative data analysis, particularly for large sections of text, visual and audio data. This software helps the analyst during the data analysis phase, in which texts are analysed and interpreted using codes and annotations. It also offers a detailed overview of the research project within its graphical interface, enabling quick search and retrieval functionality. The software also has a network-building function that visually links selected documents, memos, and codes using diagrams. In the past, researchers analysed their data by hand, using, for example, cut-and-paste and colour-coding techniques or using software such as Microsoft

Excel (Microsoft Corporation, 2021) to keep track of data. This software was employed for all stages of data management and analysis.

Thematic Analysis.

During the process of selecting the most appropriate method for analysing focus group data, the decision to use Thematic Analysis (TA) as the chosen method emerges from a comparison of alternative approaches. This choice is supported by a number of compelling arguments in the text produced by Braun and Clarke in 2013 *Successful Qualitative Research: A Practical Guide for Beginners*. Braun and Clarke have continued to make substantial contributions to the development and refinement of their approach to TA. Their extensive body of work consists of numerous articles, book chapters, and several books, all of which have played a vital role in elucidating and expanding the understanding of their TA methodology. Several of these significant contributions are highlighted in the following citations: Braun and Clarke in 2006, 2013, and 2022, as well as Braun *et al.* in 2016 and Terry *et al.* in 2017. These publications have played a significant role in defining the territory of TA and its broader applications in qualitative research.

There are distinctive advantages of TA in relation to the research objectives of this study:

Flexibility and Adaptability: When compared to other methods, TA's exceptional adaptability stands out (Braun and Clarke, 2006). While methods such as Grounded Theory and Phenomenological Analysis provide depth in examining lived experiences, TA surpasses them by accommodating a wide range of research questions. Its inductive methodology permits the extraction of descriptive insights and the pursuit of theory development, making it the most adaptable method for this study (Braun and Clarke, 2013).

In-Depth Exploration: Focus group data is inherently composed of multiple components, reflecting the diverse perspectives and insights of participants (Gundumogula, 2020). This necessitates an approach that can capture the entire spectrum of participant experiences. Although Narrative Analysis excels at deciphering narrative elements, Thematic Analysis distinguishes itself by enabling an in-depth examination of these experiences. It excels at uncovering layers of meaning, ensuring that the data's rich nuances are not overlooked (Hackett and Strickland, 2019).

Systematic Approach: Thematic Analysis provides a structured and systematic method that aligns well with the rigorous approach of Grounded Theory (Nowell *et al.*, 2017). However, in contrast to Grounded Theory, TA provides a more accessible and straightforward method for researchers of all levels of expertise. It provides a well-defined set of steps, ensuring the method's transparency and the validity and dependability of the results (Tracy, 2010).

Theory Development: While Grounded Theory is renowned for its capacity to develop theories, TA is equally capable of doing so. Its inductive nature encourages the organic emergence of themes and concepts from the data, thereby providing empirical support for the findings. TA's capacity for theory development is congruent with the research objectives and provides a more straightforward approach than other methods.

The choice of Thematic Analysis was ultimately shaped by its adaptability to a variety of research objectives and its ability to explore the intricate facets of focus group data. While other methods excel in certain areas, such as theory development or narrative analysis, TA strikes the optimal balance to meet the requirements of this study. It is the best option due to its adaptability, systematic approach, and emphasis on data-driven findings, ensuring that the data analysis is both exhaustive and grounded in the data's rich insights (Braun and Clarke, 2006, 2013, 2022).

This method, which is commonly used by qualitative researchers, allowed the identification, analysis and reporting of specific patterns or themes in the data set (Braun and Clarke, 2006; Gibson and Brown, 2009). The three key aims of TA are examining commonalities, examining differences, and examining relationships (Gibson and Brown, 2009; Harding, 2013).

Braun and Clarke (2006) identify thematic analysis as a foundational method for qualitative analysis and suggest that it provides core skills that are transferrable when conducting other forms of qualitative analysis. It is a flexible method for identifying and reporting patterns or themes within data because it can be applied across a range of theoretical approaches.

The analytic process described is one of six phases: (1) dataset familiarisation; (2) data coding; (3) initial theme generation; (4) theme development and review; (5) theme refining, defining and naming; and (6) writing up. The authors stress in their book *Thematic Analysis: A Practical Guide* that the process is not the method. The process applies the method to work with and make sense of data but is embedded in and surrounded by a bigger set of values, assumptions, and practices, which collectively make up the method.

The phases of thematic analysis, as described by Braun and Clarke (2006), allow for a systematic way of seeing as well as processing qualitative information using "coding". The six phases of the thematic analysis as used in this research are described in the following (Braun and Clarke, 2022:35).

The six phases are as follows:

1. Familiarising yourself with the data: This involved immersion in the data, reading and re-reading it to gain a deep understanding of its content.
2. Generating initial codes: In this phase, segments of data with descriptive codes that capture the essence of the information were identified and labelled. "Coding interesting features of the data in a systematic fashion across the entire data set, collecting data relevant to each code"(Braun and Clarke, 2022:127). While translating and transcribing, features were coded as a small phrase or keyword representing a specific idea. Memos were written down to keep track of the condensed information.
3. Searching for themes: Patterns were revealed here, you look for patterns and connections between codes to identify potential themes that represent important aspects of the data. "Collating codes into potential themes, gathering all data relevant to each potential theme" (Braun and Clarke, 2022:127). The data were read and re-read, and the cycle was repeated several times to narrow down the number of codes and categorise them into identifiable themes. The codes were then analysed and grouped into central themes. (See Chapter Four).
4. Reviewing themes: This involved reviewing and refining the identified themes, ensuring they accurately reflect the data and are coherent and meaningful (Clarke and Braun, 2013). The complete focus group interview data were re-read to validate the codes, then the in-built tools in ATLAS.ti were used to see patterns within the data, and these were used to draw thematic maps.
5. Defining and naming themes: In this phase, further development and definition of the themes were undertaken, ensuring that there were clear descriptions and appropriate names for each theme. The final analysis; selection of vivid, compelling extract examples, the final analysis of selected extracts, relating to the analysis to their search question and literature, producing a scholarly report of the analysis (Braun and Clarke, 2022). Statements/features representing the data were extracted to showcase the resulting outcomes, both as statements in the form of ideas and feelings, and visual representations are drawn using interconnections between codes.
6. Writing it up: The final phase involved organising and presenting the findings coherently and meaningfully, using appropriate quotations and examples to support the themes identified. This is supported by the use of the outputs from the code/theme book generated by ATLAS.ti (Muhr, 2021).

It is important to note that these phases are not strictly linear, and researchers may move back and forth between them as they engage in an iterative process of analysis (Braun and Clarke 2022).

3.6 Trustworthiness and rigour.

Several definitions and criteria of trustworthiness and rigour exist in the literature. The best-known criteria are credibility, transferability, dependability, and confirmability, as defined by Lincoln and Guba (2006). Creswell (2013) further establishes the criterion as Triangulation; Self-description/reflexivity; Audit trail; Member checking; Prolonged engagement; Peer debriefing, and Thick description, and recommends that at least two strategies should be employed to ensure the trustworthiness of qualitative findings. Rigour and trustworthiness can be collective terms for this. In quantitative analysis, credibility is the equivalent of internal validation and is concerned with the element of truth-value (Lincoln and Guba, 2006). I considered prolonged engagement, persistent observation, triangulation, and member check in designing a strategy to ensure credibility. Initially, I gravitated towards triangulation as triangulation aligns multiple perspectives and leads to a more comprehensive understanding of the phenomenon of interest. Creswell (2013) cites triangulation as a widely used method to ensure credibility and conformability of qualitative studies. Long and Johnson (2000) explain that triangulation involves using at least two related data sources, data collection methods or researchers to reduce inherent bias associated with a single source, method, or researcher. Hammersley and Atkinson (2007:184) further posit that triangulation should not be viewed as a method for determining the authenticity of evidence and marking it as "true" or "false," but instead as a tool for determining the validity of inferences drawn from different data sources. As this requires using other data sources, investigators, and methods of data collection, it was not practicable to employ fully within the various logistical limitations of the pilot study collection phase; however, I was able to use triangulation in the analysis of the data (Guba and Lincoln, 1998).

Prolonged engagement was deemed impracticable as this requires a lasting presence during observation of extended interviews or long-lasting engagement in the field with participants investing sufficient time to familiarise themselves with the setting and context, to test for misinformation, to build trust, and to get to know the data to get rich data (Guba and Lincoln, 1998; Long and Johnson, 2000; Sim and Sharp, 1998).

Member check requires feeding back data, interpretations, and conclusions to members of the original groups. It strengthens the data, mainly because the researcher and respondents look at the data with different eyes; however, time constraints would not allow for this option (Guba and Lincoln, 1998; Long and Johnson, 2000; Sim and Sharp, 1998).

The overarching criterion used was persistent observation as, by definition, it allowed for "Identifying those characteristics and elements that are most relevant to the problem or issue under study, on which you will focus in detail" (Korstjens and Moser, 2017:124).

While sections 3.7 and 3.3 of this chapter identify and appraise the various considerations associated with bias and power dynamics given the researcher positionality, a bolstering strategy of self-description/reflexivity was also employed and deemed crucial for this study. I did this because, in qualitative analysis, self-description and self-reflection are critical for acknowledging and reducing researcher prejudice, a frequent critique. Hammersley and Atkinson (1995); and Long and Johnson (2000) all argue that qualitative researchers should use self-reflection to discuss their role in the analysis and how personal values and previous training have affected the research results. Hammersley and Atkinson (1995) further highlight that one must consider and make clear any personal prejudices. They also endorse the use of a reflective journal and field note capture. Shenton (2004) agrees, maintaining that self-description boosts scientific results' reliability and consistency. Through critical reflection, field notes have provided the foundation for analytical writing and conceptual reasoning of this assignment.

Data completeness was mainly associated with collecting different viewpoints from various participants to portray as accurate a representation of phenomena as possible. Each of the three data collection methods had distinct benefits that, when combined, maximise the capacity for in-depth understanding and completeness of the situations and their meaning.

Bias can be defined as any pattern or deviation from the truth in data collection, data analysis, interpretation, or dissemination, and it has the potential to lead to erroneous findings. Both deliberate and unwitting acts of bias are possible in any given scenario. It is important to emphasise the fact that every study has its own unique limitations and confounding variables. There is no way to eliminate the confounding impact totally. Therefore, it is important for every researcher to be aware of any and all potential sources of bias and to take any and all measures that can be taken to limit divergence from the truth. If there is still room for divergence, authors should acknowledge it in their findings by identifying the conditions that they were mindful of when conducting their study.

The Hawthorne effect.

In evaluating and identifying limitations and confounding effects for this thesis the Hawthorne effect, so coined in 1958 by Henry A. Landsberger, was considered. Current literature suggests that the Hawthorne effect refers to the context of data collection and, more specifically, the evaluation

of manual timelines in the simulation literature analysed for this work. It is, however, necessary to recognise that the Hawthorne effect can affect not just task timings but also other facets of human behaviour, such as performance and the sequence in which activities are completed while attempting to determine whether the effect is present. The simulation and/or simulation and role-play activity was illustrative in nature. Therefore, the study did not entail observing a student's performance, process, or competence.

Even though it may be impossible to foresee how a participant's awareness of a study will alter their behaviour, a researcher should make it a goal to be aware of this phenomenon and adjust their methods accordingly. Even though there is no one method that is widely acknowledged for achieving this, being conversant with the study and paying proper attention to it can help reduce the possibility of the data being affected by the effect (Sujatha *et al.*, 2019).

Three ways to mitigate the Hawthorne effect are suggested in the literature by (Sujatha *et al.*, 2019) were employed in the study:

- Develop a rapport with participants being observed so they feel comfortable working at a normal pace.
- Assure participants that the purpose of the study is to improve the process, not pass judgment on worker performance. (Every opportunity to do this was taken, with potential and actual participants purposefully recruited on the basis that this thesis had the ultimate goal of informing the discipline).
- Gather data indirectly through automatic data capture. (MS Forms was set up to data capture anonymously).

The John Henry effect.

The term "John Henry effect" refers to a type of experimental bias that might occur when conducting social experiments because of the reactive behaviour of the control group (Saretsky, 1975). It has been hypothesised that in a social experiment with a control group, if members of the control group are aware of their status as members of the control group and are able to compare their performance with that of the treatment group, members of the control group may actively work harder to overcome the "disadvantage" of being in the control group.

The construct of the research project undertaken was such that the participants were never informed, nor was any information shared outside of the researcher and the supporting simulation coordinator or role-player as to which exemplar experience, they had undertaken. The scheduling of

each session was independent and geographically separated such that contamination or the existence of John Henryism was unlikely.

The Pygmalion effect.

The Pygmalion effect (Rosenthal and Jacobson, 1938), also known as the Rosenthal and Jacobson effect, denotes a psychological phenomenon wherein high expectations induce improvements in performance and are also considered for this thesis. Rosenthal concluded that students could be affected by relatively minor factors such as a projected attitude and mood. I have made a conscious effort throughout the execution of this research to maintain a neutral stance towards both potential and active participants.

3.7 Positional and Power Considerations.

I have recognised and declared my positionality as part of the research study process and this consideration features throughout the thesis. Previous sections in this current chapter refer to reflexivity, bias, and trustworthiness (see sections 3.3 and 3.6). I understand that positionality is an integral part of the undertaking, exploring, and interpreting the research design and output. I have maintained a posture of open disclosure and identified personal beliefs and influence on my research. Being aware and attentive enables mitigation and, where possible, elimination of the bias (Cohen *et al.*, 2018; Creswell, 2014).

Previously, I believed that a researcher treats data and information as unbiased facts. I have learned that this has created considerable discussion and literature addressing this problem (Herr and Anderson, 2012; Nadin and Cassell, 2006). Enduring truth made from a single study, it appears, is a fleeting fantasy. Although there are several definable aspects of positionality, for this study, I will concentrate on the two most pervasive problems that have surfaced during my journey; namely, Bias and Power (Creswell, 2014; Lipson, 1984; Merriam *et al.*, 2001). Positionality is a critical understanding of a scholar's background and current (socially constructed and perceived) position in the world's academic knowledge production, particularly in qualitative research in the social sciences (Bourke, 2014). Participants, too, hold a position with reservations about knowledge and positioning that have persisted throughout the practice of conducting research (Riach, 2009). As a potential change agent, my positionality affords me a unique viewpoint. Hardy *et al.* (2001) define reflexivity as understanding how research is performed and how the process of conducting research shapes the outcome. There are a variety of variables that affect the research process, resulting in a subjective interpretation of the data. To identify and comprehend the impact of these elements, one must

assume a reflective stance (Nadin and Cassell, 2006). It may be argued that determining positionality is dynamic, as one must participate in continuous reflexivity during the research process. Thus, positionality is subjective (Chavez, 2008). Also, "Positionality is thus determined by where one stands in relation to 'the other'" (Merriam *et al.*, 2001:411). Who am I in the context of researching issues of educational methodology? Some assumptions that I can make concerning access and positionality relate to the concept of insider/outsider. As the research will be conducted (primarily) with my undergraduate students, will I, as a student gathering data for a thesis, share a common bond of 'student' – one who also struggles against the academic requirement to achieve success? I realise I will sometimes share experiences, opinions, and perspectives with my participants, and at other times I will not. It is not that I sometimes see myself as an outsider instead of an insider. Not all populations or experiences are homogeneous; therefore, differences can be anticipated (Dwyer and Buckle, 2009). The work of Thomson and Gunterb (2011) points out that the insider/outsider relationship is multi-layered and fluid. Whereas Delmont (2002) posits that insiders, on the other hand, while familiar with local micro-politics in ways that outsiders could never be, can often suffer from a lack of distance and perspective on everyday taken-for-granted events, conventions, and discipline-specific doctrine.

One of the acknowledged challenges of conducting insider research is ensuring that the research design is robust and straightforward in the data collection method chosen. As an insider researcher, I understand the importance of reducing bias criticism (Mercer, 2007). One criticism is that inherent subjectivity is associated with the researcher being positioned within the organisation and having knowledge about the organisation, which can be perceived as 'contaminating' (Mercer, 2007). However, this view is challenged by those who believe there is no real pure objective observation of practice in the context of higher education, regardless of whether an outsider conducts the research or not (Sikes and Potts, 2008). Merton (1972) justifies insider research by arguing the limitations inherent in external research are that an outsider has a structurally imposed incapacity to comprehend alien groups, statuses, cultures, and societies. Unlike the Insider, the Outsider has neither been socialised in the group nor has engaged in the experiences that make up their life and, therefore, cannot have the direct, intuitive sensitivity that alone makes empathetic understanding possible (Muhammad *et al.*, 2014).

The researcher's position and identity in relation to those participating in the research are relevant and ever-present aspects (Cassell, Cunliffe, and Grandy, 2018; Dwyer and Buckle, 2009) as I contend that I am predominantly an insider researcher for my study research. I need to acknowledge and

recognise the challenges of participant coercion. Ensure tacit patterns and regularities are not taken for granted while acknowledging the personal desire for positive outcomes. To this end, I kept a reflective field journal throughout my pilot study research (Hardy, Phillips and Clegg, 2001); this has allowed me to develop an awareness and respond appropriately to the potential conflicts of being an academic and researcher within the same context. When identifying as an insider, reflecting on and highlighting the effects on the nature of the data collected, insider connections can be considered a strength. Active reflexive and critical examination of the relationship between the participants and I should identify the potential problems of being an 'insider'. This approach has enabled the framing of challenges encountered and allowed me to problematise the impact on my research environment.

Muhammad *et al.* (2014) suggest that academic researchers represent centres of power, privilege, and status within their formal institutions, as well as within the production of scientific knowledge itself. Researchers also may have power and privilege from their class, education, racial/ethnic backgrounds, or other identity positions. Furthermore, Given (2008) declares that a shared identity may create tensions for a researcher because he or she can become aware of sensitive material that other community members do not want to disclose publicly. Such material requires careful attention to ethics and a constant awareness of the need to establish clear boundaries to avoid harm to the researcher and research participants.

3.8 The study.

This study combines the strengths of quantitative and qualitative research, melding concepts and opinions and comparing findings with data collected at varying phases of the experience (Alhojailan, 2012; Griffin and Ragin, 1994).

Overview of research (Triangulation: exploratory / sequential process)

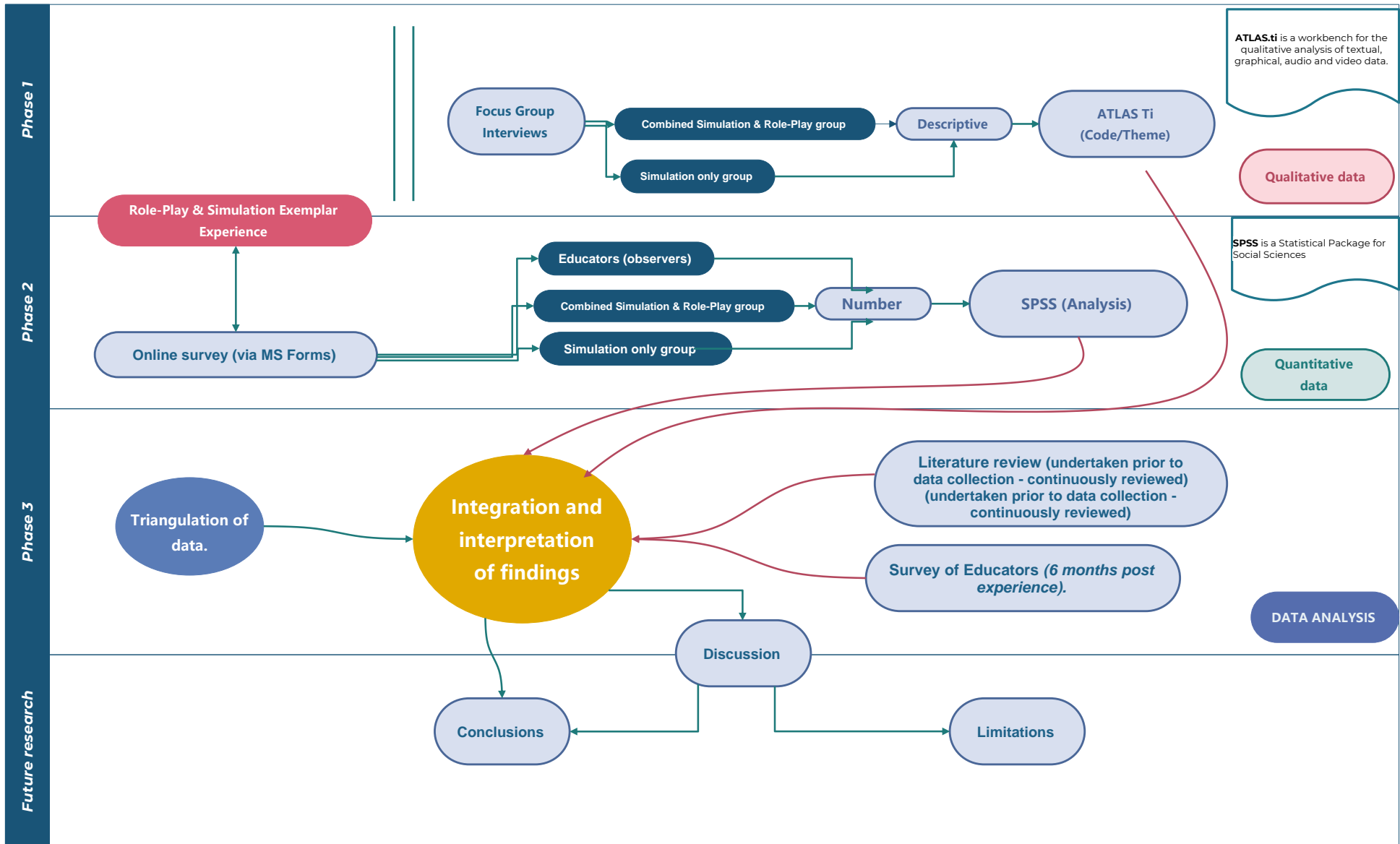


Figure 4- Overview of research

3.8.1 Study participants.

As an educator, I am partly motivated by the convenience of researching in my workplace as I hold a level of tacit knowledge. However, the primary motivator is my research's contribution to benefit my students, institution, and profession. This thesis suggests that proving a positive hypothesis may enhance the professional profile of paramedicine in Ireland and contribute to organisational change. A sampling technique must be devised when exploring any social phenomenon affecting a large amount of people or topics for practical reasons. As such for the purpose of this research, sampling choices were made, specifically where paramedic students are the chosen participant group. Selecting current paramedic students (at the time of data collection) allows for recent recall of events and experience whilst on placement, which is a key factor in this research. This sampling selection ensured a richness of data that contributes to the rigour of the study. In qualitative research, sampling does not strive to ensure statistical representation or random selection but rather to ensure that the chosen sample is representative of a larger population in terms of symbolic representation (Ritchie and Lewis, 2003). For a variety of reasons, qualitative samples can be small in size. To begin, there comes a point in qualitative research where fresh data is unlikely to be generated; this is significant since, unlike quantitative data, issues only need to be identified once (Ritchie and Lewis, 2003). Moreover, since incidence and prevalence are inconsequential, the sample size is not required to offer statistically reliable information (Ritchie and Lewis, 2003). Finally, because the data required is rich in detail, a “thick description”, this can be obtained with small sample numbers and good data collection methods (Ritchie and Lewis, 2003).

Purposive sampling was chosen for the focus group research due to its ability to yield highly relevant and insightful data. This non-random sampling technique involves the deliberate selection of participants based on their ability to provide valuable contributions to the study (Flick, 2014). I selected the participants for their specific knowledge, experience, and characteristics that are within the focus of my research topic.

One of the key advantages of using purposive sampling in focus group research is the depth of information it can provide. Participants are selected because of their unique insights or experiences related to the research question. This means they can offer detailed and nuanced responses, providing the researcher with rich, qualitative data that might not be obtained through other sampling methods (Creswell, 2014).

Purposive sampling is also valued for its efficiency. When a study requires expert opinions or insights from a specific subgroup, purposive sampling can be a time and resource-saving strategy. By targeting individuals who are most likely to provide valuable information, researchers can more effectively gather data that directly contributes to their study.

Another significant benefit of purposive sampling is its ability to explore specific perspectives or experiences. For example, as this researcher is studying the students' perceptions of clinical placement, purposive sampling allows for the specific selection of participants for the focus group. This ensures that the perspectives of those most directly impacted by the clinical placement are included in the research (Creswell and Plano Clarke, 2018).

The qualitative phenomenological-based approach described above is chosen to best elicit the perceptions and understanding of clinical educators' and students' roles as part of the research design (Pope, 2001). The phenomenological perspective encompasses a diversity of viewpoints, from pure explanation to those influenced by perception (Davidsen, 2013). Focus group interview is the chosen method for recording the participants' experiences, perceptions, and interpretations in the clinical education process (Krueger and Casey, 2015). Participants are students recruited from the BSc (Hons) Paramedic Studies programme and educators who contribute to the delivery of the programme. Potential participants are invited to take part in either a simulation experience or a combined simulation and role-play experience. Educators are invited to provide an observational commentary on the student experience.

A participant is required to be a paramedic student or a paramedic educator with the National Ambulance Service and over 18 years of age. Nonclinical staff members were excluded. The sample chosen are current students and have the experiences fresh in memory – the educators are in constant contact with the students and regularly discuss the various placement opportunities. This group theoretically offers the most recent account of the placement environment and experiences available.

Inclusion Criteria:
Participants will be employees of the National Ambulance Service (NAS).
All participants will be over 18 years of age.
Members of the NAS Education and Competency Assurance Team

Student Paramedics – currently undertaking the BSc (Hons) Paramedic Studies degree programme. * ²
Exclusion Criteria:
Under 18
Administrative Personnel

Table 1 - Criteria

Focus groups were comprised of students selected on a voluntary basis from each NASC campus – Tullamore, Dublin and Ballinasloe.

The participants responding to the online survey for this research are represented by three distinct groups:

1. Students who will undertake a simulation experience.
2. Students who will undertake a combined simulation and role-play experience.
3. Educators who will provide an observational commentary on the student experience of the simulation and the combined role-play and simulation exemplar.

3.8.2 Phase 1.

In phase 1 (see phase diagram figure 1), a focus group interview is the chosen method for recording the experiences, perceptions, and interpretations of the participants in the clinical education process (Krueger and Casey, 2015). The primary differences between focus groups and other types of qualitative interviews are that participants are encouraged to interact with each other and to develop different perspectives within the discussion (Polgar and Thomas, 2019). As the research aim is to explore the experiences of learning and teaching in a clinical placement setting, focus group discussions provide a means to encourage and utilise the interaction between peers within the educator and student groups. Semi-structured interviews were considered and discounted as they do not afford any peer interaction or discussion on the shared experience that may lead to feedback (Bloor *et al.*, 2000). An observational commentary of the simulation and role-play and simulation experiences undertaken by the students by an experienced group of paramedic educators was added to the initial research design as this may provide additional data and context.

The data is read and analysed for similar phrases and themes, then grouped to form clusters of meaning (Creswell, 2013). The intention is to establish an overall sense of the event, situation or

² Students are also employees of the NAS

experience and arrive at a higher and more in-depth understanding of the clinical placement experience.

The research questions used in the focus group sessions emerged from a review of the literature and a desire to understand the perceptions and understanding of both current student paramedics and educators.

Construct of the Focus Groups.

Six focus groups were successfully convened.

Group Identifier ³	No. of participants	Focus Group duration
B1	8	55 min
B2	7	47 min
D1	9	44 min
T1	6	35 min
T2	8	58 min
C1	6	38 min
Total	44	247 min

Table 2 Focus Group construct.

3.8.3 Phase 2.

Following the focus group sessions, an online survey instrument was distributed to all consenting participants of phase one. The survey instrument was developed from the data collected in the qualitative stage (phase 1), with the codes, themes and language from the qualitative data used in question formation. The codes thus became variables, the themes became scales, and the quotations became survey items (Saldana, 2015).

3.8.4 Phase 3.

A further online survey was issued to the participating educators six months post-student exposure to the simulation and role-play and simulation experience, seeking to establish if there was a notable difference in the expected competence, confidence, etc., when compared to the traditional teaching approach. Conducting a follow-up survey with participating educators six months after serves multiple important purposes. It offers distinct advantages for evaluating the impact of this teaching method in comparison to traditional methods. The purpose of the survey is likely to be to determine

³ Groups B1 & D1 were exposed to an additional placement referred to as the COVID-19 experience which is further discussed in detail in Chapter four

whether the teaching approach has lasting rather than temporary effects. A six-month pause permits a more thorough evaluation of the approach's long-term impact on educators' confidence. Another significant advantage of this time frame is the reduction of potential biases and immediate impressions that could arise if the survey were conducted immediately after the experience. Educators frequently require time to reflect on their experiences and acquire a more objective perspective on the approach's impact. By waiting six months, the survey results are more likely to reflect a stable level of competence and confidence achieved by educators. This reduces the risk of capturing temporary fluctuations in their assessment, providing a more accurate representation of the approach's effectiveness. Finally, assessing the impact after six months can also provide valuable insights into the sustainability of the teaching approach. It helps determine whether educators continue to find value in the method and whether it can be integrated as a long-term pedagogical strategy, contributing to a more informed decision-making process in education.

The survey instrument was developed from the data collected in the qualitative stage (phase 1), with the codes, themes and language from the qualitative data used in question formation. The codes thus became variables, the themes became scales, and the quotations became survey items. The data from of the educator survey serves to provide an objective expert opinion on any change to the expected norm that may have occurred as a result of the simulation or simulation and role-play experience. The next step in the process within phase three is to triangulate the data available. Triangulation refers to the use of multiple methods or data sources in qualitative research to develop a comprehensive understanding of phenomena (Tashakkori and Teddlie, 2010). Triangulation has also been seen as a qualitative research approach to test validity by combining data from multiple sources. This research method includes the associated use of multiple approaches to investigate the same phenomenon. It mainly corresponds to the (convergent) parallel design, but it can also be conducted sequentially (Maggetti, 2018). The "triangulation" in itself consists of the rigorous side-by-side comparison of the qualitative vs. quantitative data (Webb *et al.*, 1966). Broadly speaking, this procedure is grounded in the idea that different methods shed light on different facets of empirical reality, which cannot be captured by single-method studies (Denzin, 1978).

Triangulation also provides for the enrichment of the explanation of the data as well as the synthesis or integration of ideas in this way, educator responses can be used to increase credibility, trustworthiness, and validity, thus are matched with specific methodologies (Jick, 1979). Consequently, the independent application of multiple methodologies that produce the same

findings strengthens trust in the exploratory model and the validity of the results (Jick, 1979). Triangulating multiple data-collecting methods helps to cross-validate findings and show the existence and amount of measurement error, if any. The use of different data analysis methods allows the development of well-validated conclusions, for example, by comparing statistical results with thematic results from focus group sessions or, alternatively, by taking the necessary steps to understand why different methods generated different results (Creswell, 2013).

3.8.5 Coding.

The qualitative phase began by analysing the data by first coding textual segments. Codes were statements that were initially considered as provisional codes relevant for the study or inductive topics that were discerned during data review. A generic qualitative study was used rather than employing a specific qualitative tradition such as grounded theory or case study. Thus, codes were applied to text and then considered for more abstract themes with code combinations that suggested more evocative concepts also considered. As the research question explores the experience of clinical placement, I was also interested in the topic arising that related to the experience, and this included the environment and specific placement setting.

All codes arise directly from the focus group responses (Saldana, 2015). The initial data was collected in three parts. Firstly, the focus group data sample was read, and codes were created. A second pass (re-read) of the data was undertaken to ensure the codes were applied correctly. The second and third data samples were read, had the same codes applied, and again re-read the same data. This was again re-read to ensure brevity of the codes used and new codes created where required at each stage (Cohen *et al.*, 2018). Finally, all data were re-read, and all responses were re-coded where necessary. Upon initial analysis, 310 preliminary codes were identified. These were refined to 112 final codes. This allowed for any themes to develop during the coding process (Saldana, 2015).

Project Overview








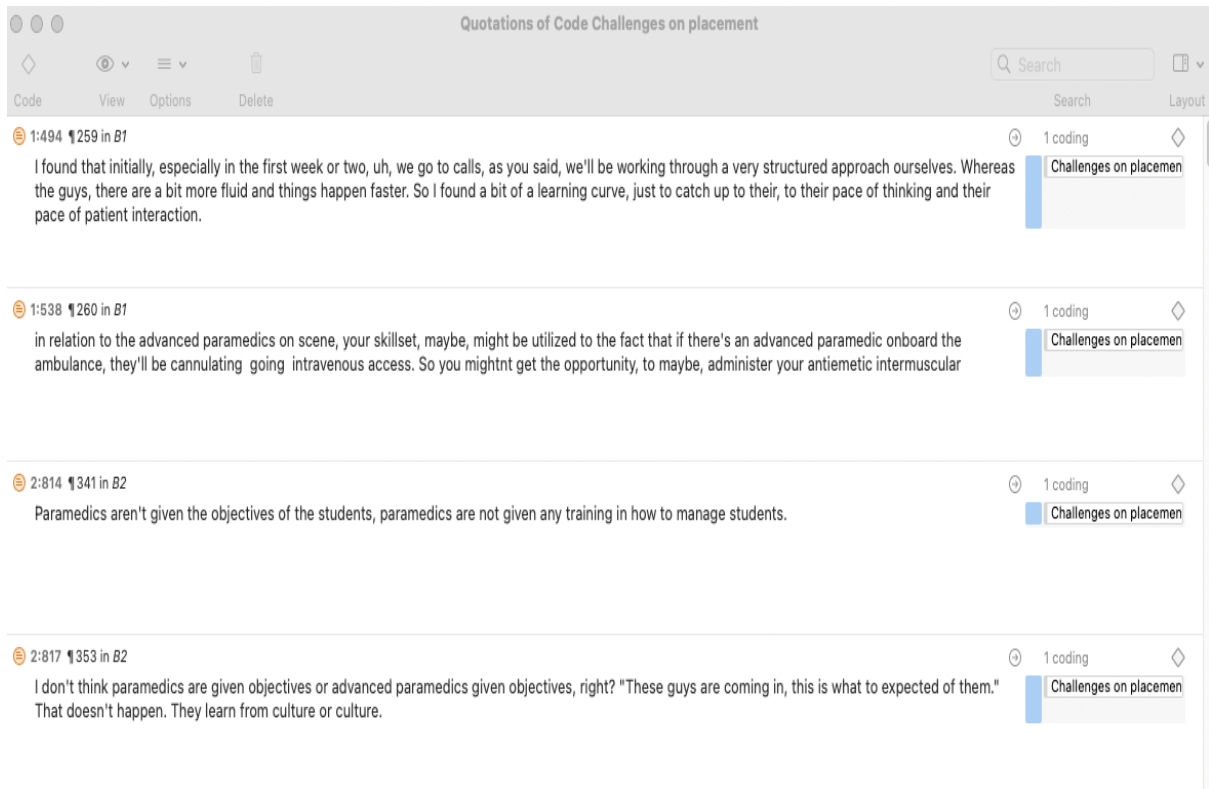
 Documents	6	 Created by David Hick on 29 Oct 2022
 Codes	112	 Last edited on 26 Dec 2022
 Quotations	666	 Current user: David Hick
		 Version: 22.2.3 (3738)

Figure 5- Atlas.ti project overview.



The screenshot displays the Atlas.ti interface for a project titled "Quotations of Code Challenges on placement". The interface includes a search bar, a menu with options like "Code", "View", "Options", and "Delete", and a list of quotations. Each quotation is accompanied by a code application icon and a label "Challenges on placement".

Quotation	Code Application
1:494 ¶ 259 in B1 I found that initially, especially in the first week or two, uh, we go to calls, as you said, we'll be working through a very structured approach ourselves. Whereas the guys, there are a bit more fluid and things happen faster. So I found a bit of a learning curve, just to catch up to their, to their pace of thinking and their pace of patient interaction.	1 coding Challenges on placement
1:538 ¶ 260 in B1 in relation to the advanced paramedics on scene, your skillset, maybe, might be utilized to the fact that if there's an advanced paramedic onboard the ambulance, they'll be cannulating going intravenous access. So I mightnt get the opportunity, to maybe, administer your antiemetic intermuscular	1 coding Challenges on placement
2:814 ¶ 341 in B2 Paramedics aren't given the objectives of the students, paramedics are not given any training in how to manage students.	1 coding Challenges on placement
2:817 ¶ 353 in B2 I don't think paramedics are given objectives or advanced paramedics given objectives, right? "These guys are coming in, this is what to expected of them." That doesn't happen. They learn from culture or culture.	1 coding Challenges on placement

Figure 6 - Example of code application

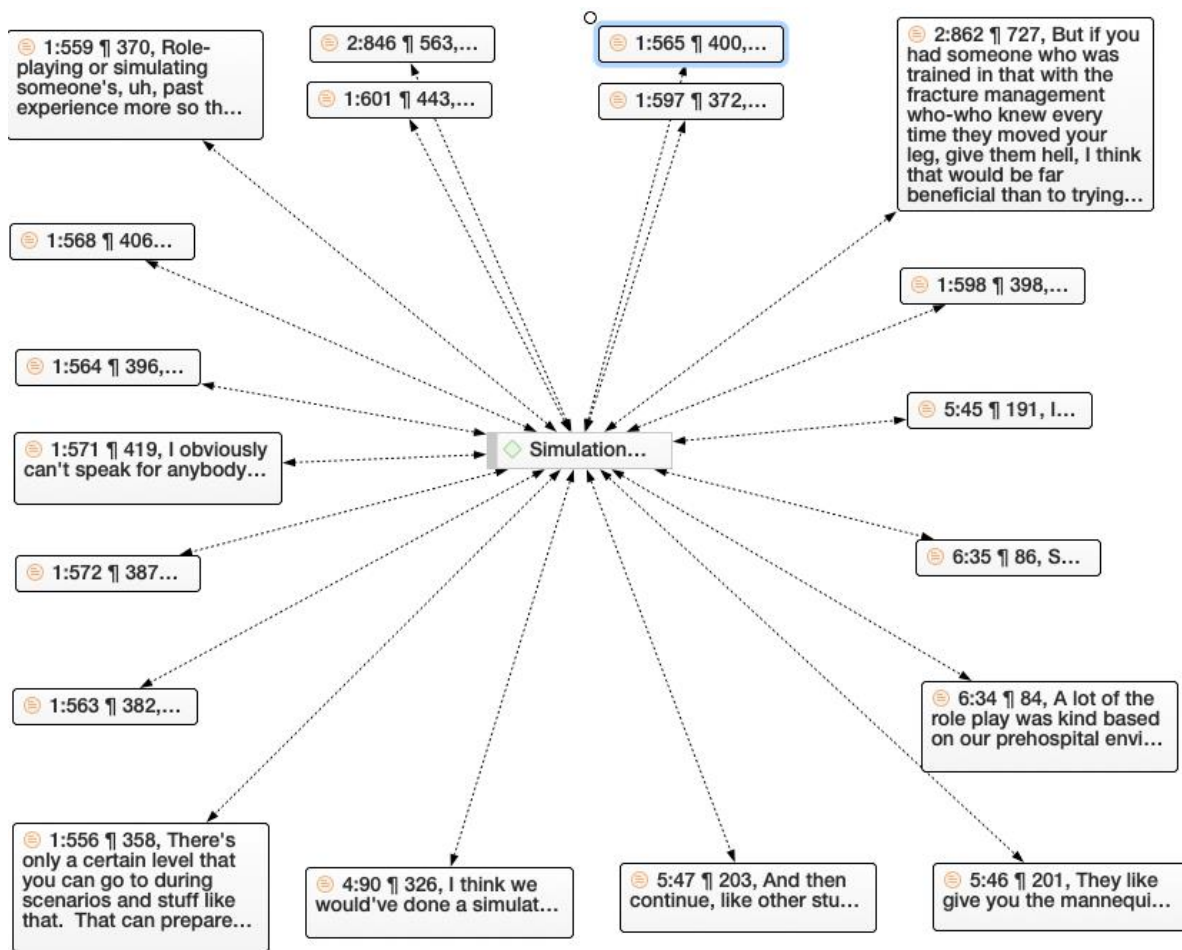


Figure 7 – Theme generation example

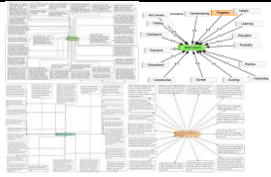



Codes	Categories/sub-themes	Themes
	Encapsulating words for experience Experience from placement Suggestions about placement similarity of simulation and placement	PLACEMENT EXPERIENCE
	Suggestions about mentorship	MENTORSHIP
	Simulation and role play in training Suggestions about simulation.	SIMULATION & ROLE PLAY
	Covid19 placement experience	COVID19 EXPERIENCE

Table 3 - Code/Theme Table

3.8.6 Quantitative Analysis.

Descriptive statistics were used to summarise the data gained from all sections of the Phase 2 questionnaire.

Response rate

All Phase 1 participants were invited to do the Phase 2 survey; 38.64 percent of those invited responded. The percentage of people who responded to the survey after the first attempt was determined by dividing the total number of responses by the initial sample size.

A further online survey was issued to the participating educators six months post focus group interaction (phase 3), where two respondents replied.

Chi-square test for association (Pearson's chi-square)

The Chi-square test for association (laerd.com, 2023) is used in the process of determining whether or not there is a statistically significant association between two category variables. I conducted the Chi-square test for association (Pearson's chi-square) between the variables. Hence, the Chi-square test seeks any association between the categorical variables. Pearson's chi-square test is among the most common nonparametric tests used for data that don't follow the assumptions of parametric tests, especially the assumption of a normal distribution (Griffith, 2010). It is also called a "goodness of fit" statistic because it measures how well the observed distribution of data fits with the distribution that is expected if the variables are independent. Assessing normal distribution in a survey can be beneficial for identifying outliers (laerd.com, 2023).

Assumptions

There are two assumptions verified before running the Chi-Square test for association. The two variables should measure nominal or ordinal level. I find that all variables are measured on a nominal level. Secondly, the two variables should have two or more categorical independent groups. This assumption is met as all variables have more than two categories or independent groups.

Hypothesis

H0: There is no statistically significant association between categorical variables (Null Hypothesis).

H1: There is a statistically significant association between categorical variables (Alternative Hypothesis).

Hypothesis Testing

By running the Chi-square test for association, there are two main outputs: Chi-Square coefficient and p-value. This report indicates the findings with p-values.

Criteria to Reject Null Hypothesis

Null Hypothesis is rejected if $P\text{-value} \leq 0.05$

Findings

Compiled findings in the form of separate sections for each variable, such as:

	No	Yes	p-value
Prior to the study, I understood the difference between simulation and simulation with role-play	8	3	0.308
I took part in simulation exercises before I went on clinical placement	7	4	0.166
I took part in role-play exercises before I went on clinical placement	0	11	...
I took part in combined role-play and simulation exercises before I went on clinical placement	9	2	0.497
I was provided with an orientation to the clinical placement site that I was assigned	8	7	0.011
I required orientation for each clinical placement site	1	14	0.001
I was aware of who my mentor was before I arrived at the clinical placement site	11	4	0.067
I had a set of defined learning outcomes to achieve while on placement	8	7	0.448

Table 4 Findings

A chi-square test of association (laerd.com, 2023) is conducted between "Did you experience a simulation experience or a role-play and simulation experience?" and other binomial variables. The p-values are provided in the 3rd column of Table 4. This displayed that there is a statistically significant association between "Did you experience a simulation experience or a role-play and simulation experience?" and "I was provided with an orientation to the clinical placement site that I was assigned" as $p\text{-value} = 0.011$, "I required orientation for each clinical placement site" as $p\text{-value} = 0.001$.

It is not possible to compute the Chi-square test for association (Pearson's chi-square) for Likert scale variables as "Did you experience a simulation experience or a role-play and simulation experience?" is constant; therefore, a computation for the observed frequency is shown.

Cross tabulation between simulation experience and Likert scale

Simulation and Role-Play		Simulation and Role-Play	Simulation only		Simulation only
		Count			Count
I felt safe in the combined role-play and simulated environment	Strongly disagree	0	I felt safe in the simulated environment	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	0		Neutral	1
	Agree	0		Agree	3
	Strongly agree	9		Strongly agree	2
Simulation and Role-Play improve my clinical reasoning and decision making	Strongly disagree	0	Simulation improves my clinical reasoning and decision making	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	0		Neutral	1
	Agree	3		Agree	5
	Strongly agree	6		Strongly agree	0
Simulation and Role-Play improved my communication	Strongly disagree	0	Simulation improved my communication	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	0		Neutral	6
	Agree	2		Agree	0
	Strongly agree	7		Strongly agree	0
I found it difficult to treat a manikin as a real patient	Strongly disagree	9	I found it difficult to treat a manikin as a real patient	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	0		Neutral	1
	Agree	0		Agree	5
	Strongly agree	0		Strongly agree	0
Pace and flow of the Simulation and Role-Play reflect a real clinical situation	Strongly disagree	0	Pace and flow of the Simulation reflect a real clinical situation	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	0		Neutral	6
	Agree	4		Agree	0
	Strongly agree	5		Strongly agree	0
I feel that including role playing in the simulation experience would enhance my learning	Strongly disagree	0	I feel that including simulation experience would enhance my learning	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	1		Neutral	1
	Agree	0		Agree	5
	Strongly agree	8		Strongly agree	0

Simulation and Role-Play improved my confidence	Strongly disagree	0	Simulation improved my confidence	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	1		Neutral	4
	Agree	0		Agree	2
	Strongly agree	8		Strongly agree	0
Combined Role-Play & Simulation Brings Learning to Life	Strongly disagree	0	Simulation Brings Learning to Life	Strongly disagree	0
	Disagree	0		Disagree	1
	Neutral	0		Neutral	5
	Agree	1		Agree	0
	Strongly agree	8		Strongly agree	0
I received useful feedback on my performance	Strongly disagree	0	I received useful feedback on my performance	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	0		Neutral	0
	Agree	1		Agree	5
	Strongly agree	8		Strongly agree	1
I found the experience valuable	Strongly disagree	0	I found the experience valuable	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	0		Neutral	1
	Agree	1		Agree	5
	Strongly agree	8		Strongly agree	0
I found the sessions provided relevant to my learning experience	Strongly disagree	0	I found the sessions provided relevant to my learning experience	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	0		Neutral	2
	Agree	2		Agree	4
	Strongly agree	7		Strongly agree	0
I would recommend this session to my peers	Strongly disagree	0	I would recommend this session to my peers	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	0		Neutral	4
	Agree	1		Agree	2
	Strongly agree	8		Strongly agree	0
Multiple exposures to the combined role-play and simulated environment would better prepare me for clinical placement	Strongly disagree	0	Multiple exposures to the simulated environment would better prepare me for clinical placement	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	0		Neutral	3
	Agree	0		Agree	3
	Strongly agree	9		Strongly agree	0

Multiple exposures to the combined role-play and simulated environment could be used to reduce the time required for clinical placement	Strongly disagree	0	Multiple exposures to the simulated environment could be used to reduce the time required for clinical placement	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	3		Neutral	2
	Agree	1		Agree	3
	Strongly agree	5		Strongly agree	1
I would be interested in attending further Simulation and Role-Play sessions	Strongly disagree	0	I would be interested in attending further Simulation sessions	Strongly disagree	0
	Disagree	0		Disagree	0
	Neutral	0		Neutral	3
	Agree	1		Agree	2
	Strongly agree	8		Strongly agree	1

Table 5 Cross-tabulation between simulation experience and Likert scale

Frequency Tables for Nominal (Yes/No) Questions

	No	Yes
	Count	Count
Prior to the study, I understood the difference between simulation and simulation with role-play	8	3
I took part in simulation exercises before I went on clinical placement	7	4
I took part in role-play exercises before I went on clinical placement	0	11
I took part in combined role-play and simulation exercises before I went on clinical placement	9	2
I was provided with an orientation to the clinical placement site that I was assigned	8	7
I required orientation for each clinical placement site	1	14
I was aware of who my mentor was before I arrived at the clinical placement site	11	4
I had a set of defined learning outcomes to achieve while on placement	8	7

Table 6 Frequency Tables for nominal (Yes/No) Questions

3.9 Ethical considerations.

As outlined in Chapter Two, this research aims to explore the effectiveness of a blended approach, combining role-play and simulation, as a practical teaching and assessment method. While role-play and simulation are individually valuable teaching strategies, the hypothesis is that their constructive interaction can lead to the development of a robust, learner-centred educational model for paramedic training in clinical skills and patient interactions, traditionally requiring extensive experience in a well-mentored environment. Although experience remains invaluable in healthcare (Broad, 2016), this research seeks to expedite the learning process ethically, safely, and realistically.

Paramedics must possess cultural, emotional, and social intelligence to connect with patients effectively; skills often acquired gradually through exposure to diverse clinical settings.

However, as cited in Chapter Two, the scarcity of accessible hospitals and suitable training sites due to increasing healthcare demands (Bvumbwe, 2020, and Boyle *et al.*, 2008) limits students' clinical experience. Consequently, the study raises the question: "Does combining role-play and simulation enhance student learning and better prepare them for clinical practice?"

In order to research this question, a methodological approach, as outlined earlier in this Chapter, was employed. Ethical challenges and considerations emerge in all professional realms, including academic research within paramedic educational methodology. Despite the rise of institutional ethics committees and the growing standardisation of research and professional ethics, perspectives on the ethical ramifications of different research approaches and practices differ. This translated into a requirement for multiple interactions and applications to the various ethics and gatekeeper committees with varying responsibilities and requirements. It was really interesting to see the different processes, agreements, and conditions between the different organisations who themselves uphold rigorous requirements that must be met before ethical approval or gatekeeper permission will be considered and approved.

In order to ensure compliance with all gatekeeper and ethical requirements, this researcher undertook clear and transparent communication while being collaborative and consultative. A clear explanation of the informed consent processes, confidentiality, and data protection, and compliance with legal and regulatory frameworks was discussed with all, thus ensuring that the concerns and expectations of gatekeepers and other stakeholders were met.

Chapter One describes the National Ambulance Service (NAS) and its position within Paramedicine and frontline Emergency Medical Services in Ireland. This research characterises paramedicine as a continuously evolving profession and practice within the National Ambulance Service (NAS). Over time, the field of paramedicine has witnessed significant developments and changes, which has reflected the growing complexity and demands of pre-hospital care. As a response to these changes, there has been a notable upsurge in research activities related to paramedicine in Ireland. Recognising the expanding scope and importance of research in the field of paramedicine in Ireland, the establishment of a dedicated Research Committee was deemed necessary (NAS, 2023a). This committee is tasked with facilitating and promoting research initiatives within the National

Ambulance Service. Its formation acknowledges the growing significance of evidence-based practices and the need for structured research efforts to inform and advance the profession. The committee plays a pivotal role in coordinating research activities, supporting researchers, and fostering collaboration among stakeholders in the field of paramedicine.

The National Ambulance Research Committee (NASRC).

The focus of this committee is to ensure that research projects supported by NAS adhere to correct governance procedures and contribute to the betterment of patient care.

Governance Procedures: The Research Committee is responsible for overseeing research projects and ensuring they adhere to proper governance procedures. This includes assessing proposed research projects that involve NAS data or personnel.

Optimised Research Outputs: NAS aims to optimise research outputs, ensuring that the results of research projects lead to meaningful improvements in patient care. This emphasises the practical application of research findings.

Collaborative Research: NAS encourages collaborative research projects with other organisations, universities, and researchers. Collaboration can bring diverse expertise and resources to research endeavours.

Involvement of NAS Personnel: When significant use of NAS data or personnel is required for a research project, at least one approved NAS employee is expected to be included as a co-investigator. This ensures that NAS staff are actively involved in the research process.

Key Criteria for Assessment: The Research Committee evaluates research projects based on several key criteria, including:

- The potential benefits and knowledge that will arise from the research.
- Alignment of the research with NAS's strategic direction.
- Operational impacts of the research on NAS.
- The availability of funding or potential sources of funding for the research.
- The credentials and technical competence of the researchers involved.
- Assessment of risks to NAS associated with conducting the research.
- Opportunities that the research may bring to NAS.
- Ensuring that ethical considerations, including ethics committee approval where applicable, are addressed.

Overall, NAS manages and supports research initiatives, emphasising the importance of ethical conduct, collaboration, and the practical application of research outcomes in improving patient care. Therefore, any research conducted within the NAS, regardless of ethical approval from other recognised authorities, must undertake this process successfully.

In undertaking this research, it was necessary to obtain ethical approval from:

The University of Winchester. – Ethical Approval for research.

The University of Winchester has a responsibility to ensure that research, knowledge exchange, and consultancy carried out by its staff, researchers, and students, or by others in its name is carried out in conformity with the law, its own articulated values, and procedures and in accordance with the best current practice and principles. The University expects its staff and students to maintain integrity and high ethical standards in the conduct of research, knowledge exchange and consultancy and to ensure validity and accuracy in the collection and reporting of funding regardless of how the activity is funded. This University's Research Ethics Policy and Procedures builds upon and is fully in accordance with the UK Research Integrity Office Code of Practice for Research.

Infringements shall be dealt with in accordance with the University's Academic Misconduct Policy.

University College Cork: Social Research Ethics Committee (SREC).

SREC is one of three ethical approval committees at UCC (social research, animal experimentation, and clinical research).

UCC academic staff and postgraduate research students can apply to SREC when undertaking social research where the methodology is not clinical or therapeutic in nature and proposes to involve:

- Direct interaction with human participants for the purpose of data collection using research methods such as questionnaires, interviews, observations, focus groups etc.
- Indirect observation with human participants, for example, using observation, web surveys etc.
- Access to, or utilisation of, anonymised datasets.
- Access to, or utilisation of, data or case files/records concerning identifiable individuals.
- Conducting Internet Research or research online.

Gatekeeper approval was then sought from:

National Ambulance Service – Research Committee

Head of Education and Competency Assurance – National Ambulance Service

Letters of support/approval from relevant heads of services and each site:

Course Director - National Ambulance Service College – Ballinasloe

Course Director - National Ambulance Service College – Tallaght

Course Director - National Ambulance Service College – Tullamore

Senior Lecturer- BSc Paramedic Studies – University College Cork

Potential Participants informed by:

Head of Education and Competency Assurance – National Ambulance Service

Timeline of applications and correspondence

While the chronological account that follows may seem to follow a linear sequence, it is essential to note that numerous conversations, encompassing both formal and informal exchanges, along with discussions regarding the path forward, took place concurrently. This multi-dimensional approach was adopted to guarantee the smoothest and fastest possible progression. Knowing points of contact in the various arms of the involved organisations allowed for a considerable reduction in time expended.

August 3rd, 2020 – Initial application to University of Winchester (UoW) – co-signed by Supervisors and Module Lead. Approved on Aug 10th, 2020.

August 11th, 2020 – Informal application to National Ambulance Service Research Committee (Corporate Gatekeeper).

- Notified by return that there is a requirement to have a NAS staff member involved with the data collection process, etc. Further advised that gatekeeper permission will be subject to ethics application and approval from home institution also as I am a staff member.

August 12th, 2020 – Letter to Head of Education NASC (departmental gatekeeper) seeking cooperation and oversight from a suitable NAS staff member.

August 15th, 2020 – Secured support from a staff member and application made to the National Ambulance Service Research Committee.

August 17th, 2020 – Application to Social Research Ethics Committee at University College Cork (UCC)

August 26th, 2020 – The Social Research Ethics Committee in University College Cork (UCC) were furnished with a copy of the application to UoW and NAS Research committee requirement – determines that a second application is not required.

August 27th, 2020 – Formal application to National Ambulance Service Research Committee

October 6th, 2020 – National Ambulance Service Research Committee subject to the terms aforementioned.

October 7th, 2020 – Engagement with NAS staff members and circulation of study poster, etc, undertaken.

May 13th, 2022 – Confirmation and Clarification requirement from UoW supervisor that Ethics still valid – Ethics in UoW validate that no additional review is required.

3.9.1 Conducting and constructing.

As discussed earlier in section 3.9.1, following a grant of approval from the ethics faculty at the University of Winchester (UoW), a further application was made to the Social Research Ethics

Committee (SREC) of University College Cork (UCC) at the behest of the National Ambulance Service (NAS) Research Committee (primary/corporate gatekeeper), who considered my position as a staff member demanded additional scrutiny and assurance. Following approval from the SREC, authorisation to proceed was granted by the NAS Research Committee. The National Ambulance Service College (NASC) gatekeeper approved the scheduling of the focus group sessions. It was envisaged that a minimum of four focus groups would be required to reach thematic consensus (Nowell *et al.*, 2017). Despite the challenges posed by the current pandemic (Byrom, 2020), I was able to form six focus groups, totalling forty-four participants. This proved to meet the saturation requirement after processing the data. A plan was established with the gatekeeper, allowing for timely collection of data whilst not being overly demanding on the time or resources of the participating students and educators who choose to participate.

This research was conducted at multiple locations in Ireland, namely the National Ambulance Service Colleges (NASC) in Ballinasloe, Tallaght, and Tullamore and also at the School of Medicine in University College Cork (UCC). Participants of the study are volunteer students who were undertaking Paramedic degree programmes, which are delivered in collaboration by UCC and NASC. Specific participant criteria are available in Chapter Three, section five. Data collection required considerable cooperation from multiple gatekeepers as the logistical challenges of accessing all the participants in the time allowed proved to be significant in the pandemic climate. Other logistical challenges, such as access to oversized rooms, additional sanitisation of the simulation suite, personal protective equipment, and additional voice recording technology to allow for adequate voice capture of the focus group sessions, presented as the room sizes were significantly bigger than initially envisaged.

Informed Consent: When gatekeepers are involved, ensuring that participants are adequately informed about the research can be challenging. Gatekeepers need to convey the research objectives and procedures to participants, potentially introducing interpretation biases. It was necessary to obtain consent before participants could take part in the study, and participants were informed by way of a study poster (see appendix 4) and participant information sheet (see appendix 5). This included an explanation of how their information would be used before consent was formally requested. My positionality was indicated to potential participants, assurance of no detriment was provided, and an explanation of how a participant can effect change for their discipline by participating in the research process. At the outset of each and every session with the

focus group, this was once more emphasised. The right to participate or withdraw at any time without detriment was reinforced.

Chavez (2008) and Sim and Waterfield (2019) contend that participants may very well be inclined and happy to share detailed or personal information and discuss issues with someone they deem understanding. Converse developments may occur where, for fear of being judged, the participant may not share information or the impact on their ongoing relationship. As a result, power bias was at the forefront of my planning and execution. During the conception, design and implementation of the research proposal and data collection, student vulnerability was a primary and overarching consideration. My position as the programme coordinator for the degree they are undertaking would classify them as potentially vulnerable (BERA, 2018).

3.9.2 Conclusion.

While thinking about the philosophical perspective for this study, it became apparent that most of the literature treated the many research philosophies and the related theories with them in isolation. A researcher may have held the notion that only objective, quantitative research can be depended upon to determine the actual world truth and that subjective, qualitative research held little merit, depending on whether they were positivists, interpretivists, realists, or relativists.

These topics might (and have) inspired volumes of written discussion, but what really matters are the underlying philosophical and methodological frameworks and the reasoning behind their adoption. It does not claim membership in any one school of thought; rather, it takes a method that seems logical to be most effective for achieving the study's intended aims.

The philosophical position and methodological approach of the work, as well as an explanation of how these factors influenced the research, have been described in this chapter. This was followed by an explanation and defence of the key data collection techniques that were employed. Importantly, the researcher positionality and reflexivity were discussed in this chapter, where specifically, sections 3.3, 3.6 and 3.7 identified theories and effects of bias and power dynamics that are crucial considerations given the nature of this research and the relationships herein. Importantly, issues pertaining to positionality will feature throughout the thesis. What follows in Chapter Four is a detailed analysis of the primary data, broken down and structured in line with the coded themes. This investigation used a triangulation strategy, combining data from several sources to reduce the

possibility of erroneous conclusions. Its goal is to learn how students' experiences on placements influence their development from novice to expert practitioners.

Chapter 4: Research Findings and Discussion.

This thesis examines the practical and philosophical implications in relation to introducing role-play and simulation into paramedic training. This combination of role-play and simulation is viewed in this study as an adjunct to the clinical placement experience thus reducing the student burden of onboarding new skills in an unfamiliar and sometimes highly charged environment: an environment where priority of service must be given to the patient. Chapter Two describes how heretofore there is a paucity of literature pertaining to such a training model in the Irish context and such exposure is limited to low-level simulation. Chapter Three describes the methods used to collect and analyse data concerning current practice and attitudes to such significant developments in paramedic training nationally. The current chapter will present an account of emergent themes and relate them to future educational design and practitioner practice. Findings from data analysis of both qualitative and quantitative methods described in Chapter Three are presented here.

4.1 Themes from the data.

Following the initial coding and the development of categories, four broad thematic areas were generated that will be discussed below. These themes are placement experience, simulation and role-play, mentoring and Covid-19 experience. Within these themes, a number of topics were identified, and the data have been organised into these areas. All quotations below are from the focus groups described in Chapter Three. The thematic presentation of data is directly linked to the aims of the research which are to explore the experiences, concerns, and observations of the paramedic students regarding clinical placement and to explore student opinions of augmenting a traditional model of clinical placement with the introduction of a combined role-play and simulation experiences.

The core assumption of the methods used in this research is that the combination of qualitative and quantitative approaches provides a more complete understanding of a research problem than either approach alone. However, when presenting both qualitative and quantitative data within a theme, it's important to distinguish between the two types of data and their respective contributions to the overall understanding of the theme. Moreover, in each theme, it is crucial to integrate both types of data to provide a comprehensive view. Quantitative data offers a broad overview and allows for generalisations, while qualitative data provides depth and detail, allowing for a more nuanced understanding of the theme (Creswell and Plano Clarke, 2018).

Quantitative Data: This type of data is numerical, measurable, and can be used for statistical analysis. For example, where within one of the themes is " I felt safe in the environment," the quantitative data includes survey results where students rate their satisfaction on a scale (Creswell, 2013).

Qualitative Data: This type of data is descriptive and interpretive, derived from the focus groups (Fetters *et al.*, 2013). Within the themes the qualitative data includes direct quotes from students about their experiences. This data is presented as narratives or quotes to highlight individual experiences or common trends.

Under the theme of placement experience, suggestions about placement, experience, encapsulating words for experience, experience from placement and similarity of simulation and placement emerged as key areas. They were common across both qualitative and quantitative accounts. Interestingly, mentorship was not a topic that featured following a review of the literature in Chapter Two, it was considered important as area for discussion by focus group participants. The attitudes and practical considerations relating to simulation and role-play in training with suggestions for development and implementation featured consistently in the data and are presented.

Finally, the theme Covid-19 experience was an unanticipated theme that manifested as a consequence of the pandemic.

It is important to state that a priority of this work was to ensure that the participants' voices were represented as the aim of this thesis is to explore the student experience. By choosing a focus group discussion with participants all efforts were made to ensure perceptions of research participants informed these findings. As described in Chapter Three, specifically section 3.8, unlike interviews, where power dynamics may have influenced how the participants responded, the students may have been more empowered in the focus group. Therefore, all transcription was verbatim, and extracts are presented in text boxes for clarity. The questions posed were designed to elicit statements that describe the experience while on clinical placement so that a greater understanding of the phenomena may be achieved (Saldana, 2015). The purpose of which is to use this insight to develop a set of statements about teaching and learning grounded in the participants' perceptions of their roles. A number of themes emerged (Cohen *et al.*, 2018) from the focus group participants. The analysis is viewed from the standpoint that the analysis is from all group members regarding the particular question being discussed.

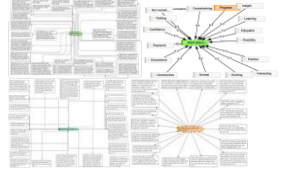



Codes	Categories / sub themes	Themes
	Encapsulating words for experience Experience from placement Suggestions about placement similarity of simulation and placement	PLACEMENT EXPERIENCE
	Suggestions about mentorship	MENTORSHIP
	Simulation and role play in training suggestions about simulation	SIMULATION & ROLE PLAY
	Covid-19 placement experience	COVID-19 EXPERIENCE

Table 7 Code/Theme Table

4.1.1 Theme 1 Placement experience.

This thesis has described how placements in clinical practice are a crucial part of the paramedic curriculum. For students, joining a new team in an unfamiliar environment with its own conventions, practices and professional language can be challenging.

I was acutely aware as discussed in Chapter Three that due to my insider researcher positionality, there could be some hesitance from students to respond authentically during the focus group sessions. Further, I was conscious of the potential influence my presence as the researcher and focus group moderator could have (Sim and Waterfield, 2019). A few icebreaker introductions around how they were enjoying their student journey were casually discussed for the first few minutes of each focus group session, as I recognised that it could take some time for the participants to feel comfortable enough to engage in open and natural conversation. I considered the possibility that participants might hold back their true opinions of their placement experience out of fear of being perceived negatively, which could potentially impact their academic progress.

Being aware of these potential challenges is vital as it allowed me to address them proactively and ensure the integrity of the focus group discussion. I spoke in a way that was appropriate for the profession, considering all of the subtleties, slang and customs that are shared by members of the ambulance service (Donaghy, 2020). With the focus groups, this particular usage of language facilitated understanding and communication (Bryson, 2016).

The focus group data reports how students who get the most out of their clinical placements are motivated, feel included, feel comfortable to question and explore, and have established good relationships with their clinical colleagues, this is further supported in the literature (Henderson *et al.*, 2012; McIntosh *et al.*, 2014). Where most focus group participants discussed a supportive and welcoming environment, others discussed how they perceived the experience as isolating. Issues regarding rostering, workload and deployment inevitably were associated with negative learning outcomes.

The experiential placement of paramedic students is an integral part of the training, and it can determine to a large extent the level of competence possessed by the student at this time. For such an important educational component, it is important to understand students' thoughts on clinical placement in order to improve and develop the course design. To this end, the following provides the findings of the research that pertain to this experience.

The concept of the clinical placement being a positive learning environment was recounted by participants who had differing experiences of clinical placement.

“But from day one of starting this course up until now, I felt that the placements I did and, uh, being on the road experience has really- I've seen the progress in my- in my own, uh, abilities and my education” (3:704 ¶ 55 in D1).

The focus group generated discussion where the participants reported dissatisfaction and disconnection with the current placement arrangements. Discussion on their experience, concerns, and observations (research aim) in relation to the potential implications of this disconnect will be explored in more detail in Chapter Five. Further probing on this topic elicited consensus from participants who described a disconnect with between what is being taught and expected of a student when in college versus what they experience when they attend ambulance placements in the field. This disconnect has led to students undervaluing the experience of existing practitioners as they believe that they hold the new knowledge of the discipline that has yet to be disseminated to the main body of the paramedic workforce.

Paramedics aren't given the objectives of the students; paramedics are not given any training in how to manage students” (2:814 ¶ 341 in B2).

The knowledge garnered from experienced paramedics was appreciated; however, a belief across the participants was that in general, the clinical placement paramedics could be better orientated on

the course content for the placement experience to be more beneficial. It was related that placement paramedics with a knowledge of the course content would be better placed to provide context for their on-the-job knowledge and experience on offer.

“I think what would be really nice is in a station where someone's up to date with the courses” (3:564 ¶ 200 in D1).

From a practical perspective, participants highlighted challenges that they experienced on the placement such as locker space, parking, access to radios and other equipment and more. Moreover, participants were aware of the stress when on such a placement; however, any suggestions to manage their wellbeing were directed at the need for system change. Specifically, the wellbeing challenges they encounter on placement result in increased stress and anxiety. They feel their experience of placement in its current form is not what could be described as a healthy workplace environment, a concept that will be discussed in Chapter Five. While students articulated this awareness, they do not necessarily feel adequately supported in these areas.

“ I even missed a call one day, cause I didn't have a radio. and I went to the loo downstairs instead of going in the one upstairs. I think it's a safety issue. If you're going into apartment blocks and you could go up with one person and you're the one that's going back down for the equipment, and you could get lost wherever else. No, no. Who's in room? The apartment blocks. You could be attacked. You could slip, you could trip. You fall wherever and you're on your own, but you don't always have the person's phone number in your own” (4:123 ¶ 422 in T1).

A key finding from the focus groups revealed how there is a persistent discrepancy between current students' learning objectives and current practice in the field. The learning objectives are set by the regulator and interpreted by the PHECC recognised institution in concert with the university academic partner. However, the operational paramedics are often out of sync with the updated educational objectives (clinical practice guidelines) which can lend itself to tension between student and experienced practitioner whilst on placement. Currently, clinical practice guidelines are updated on a periodic basis. When this occurs, the service is required to update the knowledge and interventional skills of active practitioners within the service. In reality this process has a notional timeline of eighteen months whereby the new skills and interventions should be implemented throughout the service. As the educational cycle is constant this results in the student being educated on the most recent version of clinical practice guidelines, medication formulary and is expected to approach practice utilising this code of practice. The challenge is that the supervising paramedics may themselves have not yet undertaken the “upskilling” training and be privileged and authorised to respond using the same clinical practice guidelines and medication formulary. As the

clinical responsibility rests with the senior practitioner there are resulting tensions: this will be discussed further in Chapter Five.

“So there's a very grey area as to what we can and can't do when we're out there, you know? That's what I found anyway. Just some crews think you can do everything. Some crews think you do nothing. Okay. And we don't know ourselves, you know? It's, you know, we don't have a full license to you”. (4:223 ¶ 472 in T1).

Participants repeatedly articulated the need for more comprehensive training in relation to dealing with patients who present with behavioural and psychiatric conditions. They felt underprepared for these instances when on placement. Participants acknowledged that didactic training cannot wholly prepare one for the experience; however, additional support would be welcome. The findings of the focus groups would strongly suggest that the topic of mental health and the experience of it in terms of emergency response, i.e. de-escalation and aftermath from the perspective of a paramedic is not afforded enough time and attention in the curriculum. Support was forthcoming from the paramedic crews but in a less structured way and at the point of need.

“I feel like there could be more in like preparing us to deal with mental health. Like I don't think the topic was covered to an extent. Like it happens every day. I certainly didn't feel prepared to walk into, you know, what do you call it? Like mental health related deaths as in, you know what I mean? And seeing them every day and preparing your psyche for it they prepare you with everything else. But I don't think, and like one or two days of a course of situa of like, um, scenarios of like, de-escalation of that I don't think really is sufficient for like a lifetime career” (5.61 ¶ 260 in T2).

Participants described challenges with the clinical placement log, Jotform (Jotform Inc., 2022), as a tool that is unsuited to the task in its current form. The views expressed are that this is a paper exercise rather than a learning exercise and thereby compromises the learning opportunity and practice development. Participants instead expressed a preference for a more logical progression and learning pathway with appropriate gates with clearly articulated and achievable milestones. Chapter Five will discuss the recommendation for a more developed and intuitive logging system and a solution that acknowledges the technology rich environment in which modern paramedics operate daily. The scope for Jotform to be a case simulation to function as an opportunity for self-reflection and future development will be discussed.

“In my opinion I've learned nothing from them. Only very time consuming, and took me away from what I should be doing was asking the experienced crew inside on what-what was kind of going on there?” (1:619 ¶ 570 in B1).

The students identified issues with consistency in work requirements and work relationships. Rostering can be inconsistent and workforce planning can often change week to week. This is seen to disrupt training and training relationships. In terms of relationships with the Operations Resource Manager (ORM) and other senior management this is largely left to each individual ORM to manage. Meetings with the ORM can be weekly in some cases and monthly in others. More consistency in terms of scheduling and agenda would remove some ambiguity from the student placement experience.

“Some people are getting a roster two months in advance. Some people are covered, some people aren't. You know, it, it kind of, it varies usually around the country. Mm. And there's no standard approach for placements whatsoever amongst any person.” (4:253 ¶ 464 in T1)

Some of the students describe the differences between their expectation and reality of paramedic practice with one citing that the placement was a completely different experience to the training that they had received.

“I obviously can't speak for anybody else, but generally speaking being out on placement was just a completely, completely different world, a completely different experience” (1:571 ¶ 419 in B1).

When questioned about the use of simulation and role play as a tool to support their initial training and development the students generally accepted its utility as an alternative to situations that are rare to come by in real life.

“So like as in Yes, going to the ambulance in the first day, like I didn't have a clue what I was doing and during patient assessment, none of that. So if you had that before that it would kind of help” (5:51 ¶ 215 in T2).

The groups were unable to agree that simulation alone as a teaching tool would be able to replicate a real situation. Of note, participants demonstrated an awareness of what they believed they should be learning from simulation; however, their lack of understanding of, and exposure to, high fidelity, sophisticated simulation and role-play, as described in Chapter Two, was evident. As such, the level of reality that can be portrayed from simulation and role-play is an area that can be further developed to enhance the student experience.

“Well, obviously, you can never stimulate, simulate a real patient in a real scenario with, uh, sometimes, maybe, in some scenarios, your blood pressure would be up anyway.” (6:42 ¶ 215 in T2).

This is explained further by another participant citing that:

“You can't simulate real pain or real emotion.” (1:562 ¶ 376, in B1).

There was broad agreement in all of the focus groups that simulation and role-playing may provide an educational solution for the challenges that they faced as students. They indicated the benefits, which include having a crisis experience before entering a live clinical setting, being able to assess and reflect on activities in a safe atmosphere. Therefore, the student is afforded the opportunity to view their experience from a more global perspective and reflect on the impact locally, the skills required, how to apply those skills and what it means to them as professionals and individuals.

“Dealing with higher-end simulations, it would, yeah, it would definitely improve your, um, experience when on the road.” (2:868 ¶ 886 in B2).

While participants described various challenges and inconsistencies while on placement, it also appears to have played an essential role in boosting their confidence when it came to speaking and interacting with patients. The group referred to how having no previous experience in a healthcare setting was a possible disadvantage as they had not developed the interpersonal skills when it came to dealing with sick people. There was general agreement within the group that the clinical placement experience helped them to develop confidence in the interpersonal skills required for paramedic practice, recognising in particular the importance of being able to speak to people. They further displayed a recognition that this is something that can only be acquired with the passage of time and experience in a variety of settings.

“I wouldn't have been in a caring profession before of any experience and as you certainly know how to speak to people after your placement.” (2:839 ¶ 518 in B2).

The students also expressed that their confidence increased as their first-hand exposure in the field to the application of theory in practice helped to develop their confidence especially when witnessing a critically unwell patient react positively to an emergency intervention or medication.

“And the confidence aspect I think plays into that as well. You kind of-- you have a lot of theory initially which has to translate to practical and then lots of theory and little confidence is kinda how you start, and then that confidence sort of grows as you see treatments for- medications taking effect or dealing with things that would constitute patients being big sick.” (3:533 ¶ 74 in D1).

The participants of the simulation only experience discussed the educational experience and how it evolves for them, recognising the incremental nature of the learning experience. They indicated that

they felt the classroom training had adequately prepared them and that they felt confident, and that they could be reliant in their personal ability and that of their colleagues. They further express that they encountered flexibility and understanding of the learner’s position by experienced practitioners during placement of the participant:

“Em, I felt that we had the adequate training and it was coming from me own ability and the colleagues that I was working with, they never pushed you forward when you were uncomfortable and such” (1:528 ¶ 58 in B1).

Following the focus group session, the participants were invited to take part in a survey. The survey questions sought to validate or elicit additional explanation or some of the data that emerged from the groups. Interestingly, the majority of the respondents reported that prior to exposure to the simulation and role-play experience, which was provided as an exemplar immediately prior to the focus group, that they did not understand the difference between them. Similarly, the data findings show that role-play in isolation was a feature of the student paramedic curriculum but that the majority of students did not take part in a simulation exercise before attending a clinical placement. This would question the nuanced understanding of the participants when relating to the terminology and understanding of simulation and role-play.

Compiled findings in form of separate sections for each variable such as:

	No	Yes	p-value
Prior to the study I understood the difference between simulation and simulation with role-play	8	3	0.308
I took part in simulation exercises before I went on clinical placement	7	4	0.166
I took part in role-play exercises before I went on clinical placement	0	11	...
I took part in combined role-play and simulation exercises before I went on clinical placement	9	2	0.497

Respondents reported a strong affinity towards the use of combined role-play and simulation when asked if they felt that it could better prepare them for clinical placement versus simulation alone.

		Simulation only	Simulation and Role-Play
		Count	Count
Multiple exposures to the combined role-play and	Strongly disagree	0	0
	Disagree	0	0

simulated environment would better prepare me for clinical placement	Neutral	2	0
	Agree	3	0
	Strongly agree	1	9
Multiple exposures to the combined role-play and simulated environment could be used to reduce the time required for clinical placement	Strongly disagree	0	0
	Disagree	0	0
	Neutral	3	3
	Agree	3	1
	Strongly agree	0	5

The group further indicated that multiple exposures to the combined role-play and simulated environment could be used to reduce the time required for clinical placement.

This theme has looked at the how experiential placement of paramedic students is an integral part of their training, and how it can determine ,to a large extent the level of competence possessed by the student at this time. It looked at the benefits of a positive learning environment and how this impacts on the quality of the experience. The idea of 'disconnect' emerged where classroom teaching and practice were quite different and where, frequently, supervising paramedics were not orientated on the most up-to-date clinical guidelines which resulted in tensions between student and experienced paramedic. This theme has elicited that practical elements of placement could be implemented in a systematic manner as currently students are left to their own devices to navigate a new and challenging environment without direction on practicalities. As such, placement experience is not conducive to being a healthy working environment as increased stress and anxiety are commonplace amongst students. Where students encounter patients with behavioural and psychiatric issues, they feel that more training is required to better equip them for such experiences and to better serve the patient while remaining safe in their practice. The clinical placement log, 'Jotform', in its current form is problematic and overly labour intensive with little value in terms of learning. This would be better served with an emphasis on reflective learning. Overall, the idea of simulation and role play was viewed to have a beneficial role in paramedic training and when implemented correctly can better prepare students for the placement experience. Finally, this theme, 'placement experience', has strongly identified the need for overall consistency in terms of placement where student expectations, practical needs, clinical training, and personal development are managed.

4.1.2 Theme 2 Mentorship.

In the field of formal education, it can be assumed that the quality of education provision is underpinned, not only by appropriate content and teaching methods but also by quality mentorship (Carmel and Paul, 2015; SREB, 2007). The findings relating to the question of mentorship are presented here and will be discussed further in Chapter Five.

The student paramedic participants in this research described how mentorship is perceived and how it directly and indirectly effects their learning experience. From an analysis of the data, it became clear that there is a high level of disconnect between the educators and the operational paramedic crews tasked with mentoring the students. Participants describe how they typically do not know who will be mentoring them before arriving at the placement site. Participants further articulate that they do not receive an orientation regarding the placement location, something that students broadly feel creates unnecessary anxiety around placement.

“Paramedics are not mentors, paramedics do what they think is best because that's probably what was done to them.” (2:815 ¶ 343 in B2).

Where quality mentorship is present, this is observed as being very beneficial to the student learning experience as participants described regular meetings with a local training officer and cited them as being very helpful to their learning. Conversely, the participants further articulate that not all the paramedic crews that they were placed with have mentorship training. The participants report that not all qualified paramedics have an interest in being a mentor or indeed not all paramedics that are interested should in fact be allowed to mentor as they felt that it was a role that did not suit everyone. They spoke about the importance of paramedic crews knowing in advance that there would be a student on their shift. Other participants described not having time at the end of their shift to talk with practitioners and debrief any incidents that may have occurred or to seek clarification on something.

“But I know it's not the experience for everyone. And there are some people in the station like, “Oh, you're a student. Just stay back and watch.” (3:630 ¶ 260 in D1).

As previously discussed, the data concerning orientation and awareness of who the student mentor was is reflected in the survey data. Students were asked in the survey only as to whether they required an orientation for the clinical placement, the response was conclusive that they felt that it was necessary.

	No	Yes	p-value
I was provided with an orientation to the clinical placement site that I was assigned	8	7	0.011
I required orientation for each clinical placement site	1	14	0.001
I was aware of who my mentor was before I arrived at the clinical placement site	11	4	0.067

Some participants believe that if mentoring trainee paramedics was included as part of the paramedic job description, then it would be seen as part of their professional responsibility.

“I think it should be in the job description of each and every one of us though, because I think it, it should be everyone's responsibility to help other people come into the service. Because one of the main things we're lacking is people like, and, um, it, every single paramedic should be a mentor, I think.” (4:112 ¶ 377 in T1).

It is further suggested that being placed with a crew that is comprised of a paramedic practitioner that has recent experience as a student or is a current programme tutor would ensure currency of the course material and learning objectives.

“But I think what would be very beneficial is, when I'm in a crew it's someone that maybe has went through a process up here and is tuned in with what's going on. Knows what the objectives are of the course, and can relate to what's going on here, as opposed to going on with someone.” (3:590 ¶ 316, D1).

Across the focus groups, the participants displayed a desire for multiple mentors to be made available in each ambulance station. With some suggesting that a designated tutor and mentor be made available at each ambulance base. This further highlights participant awareness that it is possible to enhance the student experience with a minimum of change. Should a designated tutor and/or mentor be able to meet and guide any student having difficulty with any aspect of the training.

“It would be nice to have one person dedicated that you could say, look, I don't understand this. Can you give me 10 to 15 minutes to go through it?” (1:549 ¶ 324 in B1).

An unexpected finding of this research was the high number of students who discussed a lack of awareness regarding the learning outcomes when on clinical placement. This was further supported in the data taken from the survey.

	No	Yes	p-value
I had a set of defined learning outcomes to achieve while on placement	8	7	0.448

This theme explored and described the perceptions and lived experience of the students in relation to mentorship and how this can impact on the learning experience. The findings showed that educators and operational paramedic crews who mentor students are separate entities. Participants report that they rarely know their mentor before arriving at the placement site. Students also report they don't get an orientation on the placement location, which they say makes placement anxiety worse so having some familiarity with the mentor would be helpful.

Quality mentoring improves student learning, as participants viewed characteristics such as frequent contact with a local training officer as useful; however, some paramedic crews did not have mentoring training, and this was evident in the relationship. Participants reported that not all qualified paramedics wanted to mentor, and some went as far as to question their competence as mentors. That said, some participants discussed how the coaching of students should form part of the paramedic job description. Debrief is associated with best practice for paramedics; however, some participants reported not having time at the conclusion of their shift to debrief or discuss issues with practitioners which they believe to be a missed learning opportunity.

This theme also discussed how being assigned to a crew that includes a paramedic practitioner who has recently qualified, or indeed a programme tutor, would guarantee consistency in understanding course material and learning objectives. Moreover, suggestions were made whereby a tutor and mentor be situated at each ambulance base. This, it was stated, would reinforce student knowledge and understanding. Additionally, of note, a significant proportion of students who reported not understanding or even being aware of learning outcomes on clinical placement was surprising. Overall, participants understand the value of quality mentorship and seek consistency in certain parts of the practice described herein.

4.1.3 Theme 3 Simulation and Role-Play.

Learners get the opportunity to practice developing skills and experiences in a setting that is realistic whilst safe through the use of simulation. Students that experienced combined role-play and simulation had a positive reaction to the interactive experiences. Students that experienced a simulation only event highlighted the lack of emotional and behavioural feedback which they felt was missing from the experience.

Students that experienced a combined role-play and simulation experience indicated that they felt safe in this learning environment.

		Simulation only	Simulation and Role-Play
		Count	Count
I felt safe in the environment	Strongly disagree	0	0
	Disagree	0	0
	Neutral	1	0
	Agree	3	0
	Strongly agree	2	9

Speaking directly to the combined role-play and simulation experience, after participating as a role-player.

“I think you learn quite a bit as well, being the patient as well as being the practitioner.” (2:848 ¶ 572 in B2).

Simulation or role play was accepted as a means of gaining experience by participants as it was used in their regulatory assessment of skills.

“We would have experienced it a with our PHECC OSCEs where they brought in real actors Uh, per day body actress.” (1:568 ¶ 406-407 in B1).

This approach was however argued against by another participant who was considering cost and logistics.

“That's not really valuable in my opinion, to be getting actors in.” (1:598 ¶ 398 in B2).

However, a participant during the discussion mentioned how their experience of simulation demonstrated a less than optimal experience. After reading the passage from the transcript, it is quite evident that the student in question has not actually participated in an immersive experience; rather, the student has participated in a low-fidelity scenario that was most likely of subpar construction.

“There's only a certain level that you can go to during scenarios and stuff like that. That can prepare you for a thing but getting handed a mannequin and told it's a floppy child, it's not the same thing.” (1:556 ¶ 358 in B1).

It was proposed that the scenarios used in simulations are based on the designer of the scenario's previous experiences, both in real life and in other real-life situations.

“Role-playing or simulating someone's, uh, past experience more so than anything else. So, if you've got a lecturer or a tutor, that, been to that call before.” (1:559 ¶ 370 in B1).

It is interesting to note that the students have concluded that it is appropriate, and that regardless of whether the construct in question is genuine or invented, they will respond in the same way.

“No matter how the environment, you still like to stick to your own clinical skills set in your linear pattern.” (1:571 ¶ 419 in B1).

This asks the question of good practice, modified practice and adaptation and learning from mistakes (critical incident analysis) and being able to appreciate and bring together the clinical, the physical and the psychosocioemotional aspects of effective and holistic paramedic practice.

A participant mentions the different memory used when either a physical placement is done or when there is simulation or role play.

“There's muscle memory and there's cognitive memory.” (2:846 ¶ 563 in B2).

Interactivity is a key component of the experience if benefit is to be achieved.

“But if you had someone who was trained in that with the fracture management who who knew every time they moved your leg, give them hell, I think that would be far beneficial than to trying box splint with a glass of water. And if that makes sense, I think it will be beneficial to you guys because we do forget the human element.” (2:862 ¶ 727 in B2).

Most of the participants agree that simulation can enhance placement, with some suggesting it can go a long way to give paramedics experience in cases where there are no possibilities of exposure to a set objective they are required to achieve as part of the training programme. Participants suggest it should just be used as a means of exposure for the students so as to get familiar with those process before going into actual live cases.

“So maybe a bit more exposure to, um, what we actually are, student paramedics to go with.” (2:864 ¶ 745 in B2).

The general consensus from survey data is that students who were exposed to a combined role-play and simulation event felt the experience enhanced their clinical reasoning and decision making. The combined role-play and simulation event also displays a deeper level of immersion as the students reported that they did not find it as difficult treating a manikin when undertaking the combined event. Both the survey and focus group data agree that combined role-play and simulation improve communication skills.

		Simulation only	Simulation and Role-Play
		Count	Count
I found it difficult to treat a manikin as a real patient	Strongly disagree	1	4
	Disagree	0	4

	Neutral	3	1
	Agree	2	0
	Strongly agree	0	0
The experience improves my clinical reasoning and decision making	Strongly disagree	0	0
	Disagree	0	0
	Neutral	1	0
	Agree	5	3
	Strongly agree	0	6
Simulation and Role-Play improved my communication / Simulation improved my communication	Strongly disagree	0	0
	Disagree	0	0
	Neutral	6	0
	Agree	0	2
	Strongly agree	0	7

Another participant suggests that a recording will be beneficial if can be utilised because it can be watched over and over again until the learners have the level of mastery and reflection of performance required for the particular task.

“I can see a recording being beneficial, but I think when students have to give feedback they're more inclined to, like if-if you can rewatch it's like a match.” (2:865, 780 in B2).

It was also suggested that an orientation could be used to sensitise paramedics by using simulation before they go on to practice.

“Probably a day's orientation I guess once I've been through the system as a- as an EMT, as a paramedic, um, and I think like hopefully when I'm trying to find somewhere like here or in Beaumont.” (2:866, 787 in B2).

Simulation allows students develop skills and experience in a setting that is realistic and safe. This theme examined student views and beliefs when given the opportunity to exercise skills and experience in a safe, realistic setting. Some participants had simulation experience; however, role-play plus simulation students enjoyed the interactive experience and benefits when on placement were obvious. Simulation-only students noted the lack of feedback pertaining to emotional and behavioural considerations and questioned how this could be experienced outside of a real-world setting. Role-play and simulation students felt very comfortable, and participants acknowledged simulation or role play as a possible way to obtain experience for regulatory competence evaluation. Of note, students believe that the simulation plus role-play is appropriate and would behave the same way whether the construct is real or not.

Most participants described how simulation can improve the placement experience, and some suggest it can help paramedics gain experience in circumstances where they cannot meet a training objective. Participants support the idea of using it to familiarise students with specific procedures prior to experiencing real-life cases. It was further suggested that combined role-play and simulation before practice might better prepare and orientate student paramedics for the placement component.

4.1.4 Theme 4 COVID-19 experience.

The timing of this research coincided with a global pandemic and thereby was met with unique and unprecedented challenges that informed the field research and subsequent findings described here. Following the declaration of the Covid-19 global pandemic, all university placements were either cancelled or deferred. However, where possible if a medical or allied health professional student had reached a milestone level of competency (stage 1 paramedic training), they were deployed into the mainstream health-care system in Ireland as part of the response to the pandemic. For example, junior student nurses who had clinical placements experience were redeployed as Health Care Assistants (HCA) while similarly, junior trainee doctors assisted in testing centres.

The National Ambulance Service (NAS) responded by quickly redeploying all students who were about to attend clinical placements to a different role as part of the national response, primarily as ‘community swabbers’. The students were summarily trained in the specifics of the role and then committed to the operational divisions within the service. Incidentally, this required agreement from the statutory regulator as this was a departure from the normal educational pathway required for paramedic students. In the role of community swabber, the student paramedic would respond as a lone worker, using a marked service vehicle, directly to the home of a patient suspected to have been infected with SARS-CoV- 2 virus. Student paramedics undertook this Covid-19 specific role for a period of three months. The data discussed here relates to two focus groups only, namely B1 and D1 (see Chapter Three) as the decision was taken to apply a dispensation to medical and allied health students after that time.

The reports from those two focus groups are revealing and actionable. Pre pandemic, a lack of knowledge reportedly restricted students’ ability to prepare and increased their nervousness about going into clinical placement but the Covid-19 experience appears to have changed that paradigm completely. For the purposes of this analysis, the three-month placement is being characterised understandably as low risk and low stress compared to normal ambulance crew shifts and calls.

There are no emergency calls on this placement, there are no time pressures, full PPE was provided to minimise Covid-19 transmission etc.

This is recounted by a participant who acknowledges the apprehension at being inexperienced; however, the task was completed appropriately and thereby giving a sense of achievement and enhanced confidence to the student.

“I think in particular the swabbing, um, really helped me in that aspect because i-instead of being in-in a group of three with two other people to prepare you or help you, you're there by yourself, um, and you're turning up in people's houses when they're scared. Um, and going out on the first call there, I remember being terrified.” (3:535 ¶ 77 in D1).

Students reported finding the learning curve less steep and enhanced learner confidence:

“Building that confidence over the three months or so that we were out, to be able to go into people's houses and reassure them and have the confidence in your own ability that you can recognise when they're actually sick, versus when you just have to actually swab them, like, that was, um, that was a good aspect of it.” (3:536 ¶ 78 in D1).

The experiential placement in the Covid-19 car improved learner confidence and this shaped their response to emergency situations thereafter. Interestingly, the three months of Covid-19 car work also fostered confidence in the ambulance crews and personnel in the station in the students' ability which further improved the training experience and variety:

“I think I found what I gained from the COVID car being in the same station for the swabbing and all of my placements, um, was that the crews knew I could talk to patients, so would let me lead earlier than they may have if I hadn't been even around the station before that.” (3:503 ¶ 136 in D1).

In practical terms, learners reported that this confidence manifested itself in key ways, namely in communication and 'soft skills' and in core clinical tasks such as patient assessment:

“I felt you could communicate a lot better. I wouldn't have been in a caring profession before of any experience and as you certainly know how to speak to people after your placement.” (3:545 ¶ 131 in D1).

“And patient assessment in a roundabout way, in that, you were distanced from people, but you did have to kind of make an assessment of them and their condition, because if somebody is very sick, you can't really walk away and leave them there.” (1:532 ¶ 239 in B1).

Learners introduced to placement in a more measured, less stressful, and operationally challenging environment reported the development of a more holistic skillset including interpersonal skills:

“You know, if you can have a bit of a laugh with them, and kind of a meaningful enough conversation with the person on the journey to the hospital, yeah, just to see the positive impact that can have. Because maybe clinical skills weren't necessarily being developed during COVID, but certainly the interpersonal skills they must have been. I think everybody would probably agree that everyone's interpersonal skills were being developed.” (2:929 ¶ 525 in B2).

The development by students of this more holistic skillset in a less stressful operational setting was an unintended consequence of measures taken in response to the pandemic. This is an actionable insight and is something learners do not want to lose from the curriculum and placement with the gradual return of pre-pandemic conditions. This low risk and low stress environment yielded tangible learning benefits in terms of clinical practice, development of a more rounded, holistic skillset and confidence in learners borne of practical experience:

“But I think if you were doing the, do you know, your 12 weeks without having going to Covid car, the lads done That you wouldn't be as confident going to like a paed call because the amount of talking you had to do to a child till they'd be allowing you to put a swab at their nose, like--and I think we're quite lucky, uh, the class was in a way lucky that they've got to go on the road for three months, they're covid testing because you learned the dynamic of the station.” (2:742 ¶ 857 in B2).

This andragogical learning regarding placement is actionable and especially for simulation and role playing. Both of these seek to offer a less stressful and risky environment for students to hone a holistic skillset: communication and clinical, operational, and interpersonal. The Covid-19 placement was reported generally as beneficial by students as they had the opportunity to network with practitioners and familiarise themselves with operational elements of the role without feeling under pressure clinically. The onus is now on paramedic educators, mentors, and curriculum designers to ensure that these valuable insights are deployed to best effect for future paramedic students.

This theme was an unintended component of this study as a result of the timing of this research and the Covid-19 pandemic. While the pandemic brought about challenges to the research, it also gifted the study with additional real-world questions. Pre-pandemic, a lack of understanding allegedly hindered students' preparation and made them apprehensive about clinical placement; however, the Covid-19 experience appears to have transformed that paradigm. During this time, the three-month placement was a low-risk and low-stress experience compared to ambulance crew shifts and calls. This placement had no emergency calls or time limits. Students reported a flatter learning curve and also described how their confidence to practice increased, something that they described as helpful for shaping their ability for emergency response. Another unintended consequence here was that station ambulance crews had enhanced confidence in the students, which made for a

better placement experience for students and practitioners. Learners described how their growing confidence was evident in how they communicated with patients and how they engaged with the practice of patient assessment.

Simulation and role-play can be modelled in part on this experience where a less stressful and risky environment can be provided for students to hone a holistic skillset, inclusive of clinical and communication skills.

Chapter 5: Discussion and Conclusion.

The primary aim of this thesis was to introduce the concepts of simulation and role-play as complementary pedagogical tools to enhance the learning of student paramedics. Specifically, the aims stated in Chapter One are:

1. Explore the experiences, concerns, and observations of the paramedic students regarding clinical placement.
2. To explore student opinions of augmenting a traditional model of clinical placement with the introduction of a combined role-play and simulation experiences.

This study was concerned with the pedagogical approach considering the dichotomies that exist in the changing landscape where paramedic practice and education are at a key point of evolution. It questioned attitudes and perceptions in relation to clinical placement and possible adjunct approaches that may support the many skills and practices needed while addressing tensions that exist in the current zeitgeist. This thesis seeks to inform future researchers, policymakers, educators, and practitioners on best practice for paramedic training and education. It is important to emphasise that this chapter is a discussion of the findings as interpreted by this researcher and that the hypotheses contained herein may be regarded as tentative rather than conclusive. This researcher is open to the possibility that others may interpret the data differently.

The current chapter will examine the research objectives and findings in relation to the research question and present a contribution to knowledge. Recommendations for practice and suggestions for future research are woven throughout the narrative of the chapter rather than treated separately. The discussion is set in the context of the history and development of paramedicine described in Chapter One and the theoretical framework for the thesis as presented in Chapter Two. Key themes elicited from the findings documented in Chapter Four will be developed here. Crucially, the discussion on findings and recommendations woven throughout this chapter are what this research is contributing to existing knowledge and practice.

The study set out to explore the experiences of student paramedics on clinical placement. Further exploration of the existing knowledge and relationship of simulation and combined simulation and role-play was necessary to establish its utility as a potential adjunct to clinical placement.

In furtherance of this pursuit, a methodologic approach to explore and confirm the domestic academe was considered, designed, and executed so as to establish the perception of mainstream use within the paramedic curriculum in Ireland (see Chapter Three).

Engaging with an exploratory approach enabled insight to develop a set of statements about teaching and learning grounded in clinical educators' and students' perceptions of their roles so that a pathway for stakeholder engagement could be further discussed and developed.

5.1 Placement experience.

This thesis has demonstrated how placements in clinical practice are a significant aspect of the paramedic curriculum. For students, joining a new team in a new and unfamiliar setting with its own social conventions, procedures, and professional language is challenging. Chapter Four reports how students who get the most out of their clinical placements are motivated, feel included, feel comfortable to question and explore, and have established good relationships with their clinical colleagues. Specifically, the focus groups discussed inclusion and collegial support and how that benefited their learning experience. Moreover, the findings discussed in Chapter Four drew attention to specific challenges faced by student paramedics on placement and also experiences where they felt embraced and supported by qualified practitioners. This demonstrates the significant influence that supervising paramedics have on the education of students while with them on placement. Overarchingly, the student participants in this research expressed the sentiment that the clinical placement was a 'positive learning environment'; however, there are both systemic and educational considerations which would suggest that a structural and procedural review of the institutional and educational approach currently in place is timely. Systemic considerations, including preferential access and rollout of in-service training for supervising paramedics coupled with dedicated liaison personnel who provide local guidance on practical matters for student placement, are valid, and adjustments would be of benefit to both students and the service. This is consistent with the description in Chapter One and the literature in Chapter Two that looks at the approach to Paramedic education as one where students need to internalise the values, attitudes, and skills that form professional practice, manage complicated and confusing situations in hierarchical placement settings; and learn from a variety of educators with varied methods and styles of instruction (Higgs and Edwards, 2002; Jarski *et al.*, 1990). Similarly, educational considerations, specifically the provision of trained mentors, having been identified as somewhat cumbersome, could also be improved upon to better serve the student and practitioner experience. This is clearly evidenced in the findings in Chapter Four when the participants describe the importance of trained mentors to

support the placement experience. Similarly, Basak *et al.* discuss how a positive placement experience adds to the pedagogical value of the learning opportunity; as such, the provision of trained mentors would provide this better experience (Basak *et al.*, 2016).

By scrutinising the placement experience process and implementing a standardised national approach, as recommended in this thesis, the potential that a placement experience can offer to a novice practitioner could be realised. Given the size and structure of the National Ambulance Service, the implementation of these recommendations would require commitment from senior management, clarity from the regulatory body, education providers and a structured method to measure the successes and failures of the process.

This research has elicited disparities between student expectations and the reality of paramedic practice; however, Chapter Four explicitly describes how it is clear from the contribution of most participants that they are generally positive towards their experience while on placement. This positive placement experience, due to appropriate pre-placement induction, supported by clinical facilitators and trained mentors at the placement site, makes for better learning environment, consistent with the best practice described in Chapter Four and also in the literature presented in Chapter Two where allied health care professions are discussed (Hayden, 2011; Hayden *et al.*, 2014; McLaughlin *et al.*, 2008). It can be hypothesised from this thesis that students appreciate that they are engaged in a model of learning based on the principle that their ability to permissibly engage with a patient is determined by the acumen that they incrementally display to the supervising practitioner. This process ensures that students not only incrementally display the acquired knowledge but also the ability to conduct a complete patient assessment and analysis, determine a diagnosis and deliver the appropriate medications and interventions as required by the community of practice in paramedic education. It also demonstrates the importance of the role of the paramedic supervisor in supporting the educational development of students. While their clinical knowledge is central to this pedagogical model, their attitude toward the student and their ability to clearly communicate with the student is also significant to the experience. This thesis has not merely concurred with a body of literature that identifies best practice for clinical placement but offers solid recommendations that would drive, nationally, a consistent approach for the placement experience that includes preparation that involves high-fidelity simulation and role-play and a system for upskilling supervising paramedics that ensures they have the most up-to-date knowledge commensurate with the academic programme. Moreover, this thesis suggests ways in which the placement experience can be improved where practical considerations are built into an induction

bundle for students. As students have identified points on the placement journey that they find particularly stressful, implementing such support would be of benefit to the experience.

Internationally, best practice for clinical placement teaching involves mentors and educators obtaining feedback from students and others on the appropriateness and strengths of the teaching and learning strategies provided. Moreover, this feedback informs whether the methods were appropriate and reliable in assisting the students in achieving their learning objectives. This thesis strongly recommends that mentors and educators seek feedback on issues such as whether there have been enough relevant learning opportunities provided, if appropriate learning resources were available, and, most importantly, whether there was sufficient mentor-student support and mentor-student feedback about the student's progress and whether their learning needs were met. This process will identify specific areas for development for the mentor or educator that require adjustment. Chapter One, in describing the background to the study, and particularly the findings of the research described in Chapter Four, shows that, currently, appropriately trained, and supported mentors are not consistently available to the programme.

Interestingly, every paramedic practitioner must be committed to the coaching of trainees as a requirement of continued registration (Pre-Hospital Emergency Care Council, 2017). That said, coaching does not feature as part of the paramedic curriculum. It is therefore reasonable to assume that the majority of paramedics do not have the skills necessary to achieve this requirement. This thesis recommends that development of a discipline-specific and sustainable model for mentorship, preceptorship, and student feedback whilst on all forms of placement be designed and implemented. Again, such an initiative, identified through this research, would require significant organisational support from senior management via a structured implementation strategy.

A systematic approach to developing and implementing coaching that would meet the stipulations of paramedic registration is suggested here. The benefits of such a systematic approach are many and ultimately strive to optimise individual and organisational performance. This thesis has discussed many elements concerning paramedic education and the inexorable link between simulation, role play and placement. Coaching can have a pivotal role in supporting a structured debrief model such as the Diamond debrief (Jaye *et al.*, 2015) where self-awareness, self-reflection, self-development and indeed, continuous professional development can be facilitated. Such a role may also have a positive impact on a student's personal attributes, such as social interaction and confidence; both concepts were identified in Chapter Four by students as being important

considerations. Coaching goes beyond concentrating on relevant skills and desired outcomes, performance, and well-being (Grant, 2017). Development of a coaching cycle that is linked to the personal and professional development of existing paramedics who, in turn, coach student paramedics could be considered as part of a mandatory personal and professional development cycle rooted in paramedic pedagogical practice.

The single largest topic discussed by the students in relation to placement was confidence: how they perceive achieving it, how they measure it and the implication it has towards their ability to learn and practice. While the confidence participants take from the clinical experience is articulated as crucial, the participants have flagged that they are exposed to challenging and difficult situations. Student participants in this research were keen to discuss the importance of confidence in relation to their placement experience, both in how they can build their confidence to practice and, indeed, the implication it has towards their ability to learn and practice. While the confidence participants take from the clinical experience is described by students as being crucial, they acknowledge that, due to the very nature of the profession, opportunities for skills acquisition, development and maintenance for paramedic students are challenging in the clinical environment. Service needs and the available teaching opportunities limit the opportunities afforded to students. Some paramedic skills are utilised in rare and life-threatening situations and need to be delivered promptly and under stressful conditions, further reducing the student's opportunity to learn or practice the skill. This is key to the research aims of this thesis, which looks to explore student opinions of augmenting a traditional model of clinical placement with the introduction of combined role-play and simulation experiences. As such, this thesis clearly identifies the need for an educational curriculum which provides an opportunity for learners to practice clinical skills in a low stake setting before they perform on real patients and can only be perceived as beneficial by students and educators alike.

The student placement experience would benefit significantly from having preparatory material available to students. Chapter Four spoke of how students were not adequately informed as to the practicalities of the placement and how this could be a predictor of a negative experience. Practically, questions such as exactly where is the placement site? Where do I park? Who do I contact? Where can I get lunch? What am I expected to do if I am unable to attend due to sickness? It can negatively impact on students who are already embarking on a placement, which itself is challenging. A recommendation from this thesis is that providing a positive and well-prepared student paramedic experience will inspire professionalism in students and make for a more worthwhile learning experience.

Therefore, it is suggested here that the development of an online database with instructions that include a named contact, parking information including potential cost and Eircode would significantly reduce the initial anxiety and stress of the student's first encounter on the placement. The development and inclusion of this database within the existing technology stack available to students as part of their educational support would allow for an ease of accessibility. It is crucial that this information is current, as personnel changes often happen in healthcare settings such as ambulance stations. This practical, yet potentially impactful recommendation, can form part of the placement 'bundle' that ultimately would make for a streamlined and consistent approach to placement.

Students also spoke about Jotform (Jotform Inc., 2022) and its use as a data collection tool for recording all calls that students attend for eventual inclusion in their learning portfolio. However, as a reflective tool, Jotform (or other similar online digital tools) could be better used to create case simulations that can aid paramedics in consolidating their learning and developing a deeper understanding of the application of their knowledge and skills. Through reflection on their simulated cases, students can identify areas of strength and weakness and develop strategies to enhance their clinical practice. A digital platform also offers the advantage of providing immediate feedback and assessment, allowing students to track their progress and identify areas for improvement. The platform could also facilitate communication and collaboration among students and educators, enabling the exchange of feedback and sharing of best practices. Any suitable and supportive digital platform offers a promising scope to function as a case simulation and reflective tool for paramedics, supporting their learning and professional development through interactive and a modified version of 'just in time teaching' (JITT) with content specific to paramedicine and relative to the case that they just experienced in the field with the data tailored to the students current level of training and experience (Ragazzoni *et al.*, 2021; Vanderbilt University Center for Teaching, 2022).

5.2 Simulation and Role play.

One of the aims of this research described in Chapter One is to explore student opinions of augmenting a traditional model of clinical placement with the introduction of a combined role-play and simulation experiences. In the body of literature pertaining to simulation in Chapter Two, we can see how, essentially, simulation allows students to develop skills and expertise in a setting that is realistic and safe. In particular, Hernandez *et al.* describe simulation and role-play as perceived and accepted as a 'safe space' in which to practice while attaining mastery (Hernandez *et al.*, 2019). In keeping with research aims, Chapter Four elicited student views and beliefs when given the

opportunity to exercise skills and experience in a safe, realistic setting. A key finding of this research is that students who engaged in both role-play and simulation felt very positive towards this as a learning experience and one that is a possible way to obtain experience for regulatory competence evaluation. The development and implementation of this, it is suggested here, would have a significant impact on the educational development of student paramedics and would make for a more productive placement experience.

Chapter Four describes how a significant proportion of participants in the study described how simulation can improve the placement experience, and some suggest it can help paramedics gain experience in circumstances where they cannot meet a training objective. Participants support the idea of using it to familiarise students with specific procedures prior to experiencing real-life cases. It was further suggested that combined role-play and simulation before practice might help better prepare and orientate student paramedics for the placement component. As the aim of this research is to explore student opinions of augmenting a traditional model of clinical placement with the introduction of a combined role-play and simulation experiences, such insight from participants described here is crucial to pedagogical development for paramedic practice.

High-Fidelity Simulation.

The benefits of high-fidelity simulation as a complementary adjunct to clinical placement are many. Authors such as Basak *et al.* (2016) and Ackermann (2009), as presented in Chapter Two, describes how the student can be 'inoculated' to real practice via a deliberate construct of robust, complex, and challenging simulation experiences and will be better able to assimilate and learn in the operational environment. Building on this body of critical literature on the topic, this thesis purports that by using this approach it is reasonable to assert that students are empowered to transition from an observer role to active student practitioner early in their clinical placement. This approach equips the novice learner particularly and if implemented consistently would provide students with an optimal learning experience. This research has shown that students who experience combined simulation and role-play as part of their educational programme are typically better informed and more contented with the placement experience. That said, a system change is required to meet the rigours of high-fidelity simulation as standard as Chapter One describes how the current status is where, overarchingly, simulation plays a modest and inconsistent role within the programme and when utilised, is mainly low fidelity. A consideration from this research is that lessons shared in the literature pertaining to simulation from cognate professional training and education (Lane and Rollnick, 2007; Larue *et al.*, 2015) are valuable and similar to those yielded in this research.

Debriefing.

An often overlooked and underappreciated core element of role-play and simulation education is debriefing (Jaye *et al.*, 2015). Debriefing is essential for the effective application of simulation and role-playing sessions. The simulation scenario is complemented by a debriefing. Debriefing is distinct from feedback in that it incorporates a facilitated discourse between the students who participated in the scenario and the educator. Feedback typically involves considering a learner's performance to a predetermined set of standards. Through reflection and analysis of their actions, the student receives insight to consider for the future. With feedback, the learner only receives instruction on how to proceed differently. It is crucial to establish psychological safety at the start of the simulation and to continue doing so throughout the exercise. To encourage learner reflection, effective debriefers frequently employ open-ended questions. Similar to active listening, engaged nonverbal communication has a direct impact on how effective the debriefer is. Additional effective strategies to encourage reflection include validation, encouragement, and a summary of the learner's experience. The debriefer should refrain from making judgments and instead ask probing, thought-provoking questions. Debriefing the student's post experience is crucial for students to gain the benefit of a fully integrated educational approach. Moreover, educating students in the area of debriefing would also develop their confidence, as described earlier in this chapter.

Implementation.

Chapter Two has presented literature that describes how the interpretation of the internationally accepted design and implementation of simulation and role-play in paramedic education has been different in Ireland and requires a concerted and systematic approach to implementation here. In particular, Hayden, J. K. *et al.* (2014) describe best how this has been implemented along with pitfalls that should be avoided within the nursing profession. Therefore, set in the context of this existing knowledge and the student experience described in Chapter Four, this thesis suggests that what is needed to implement such an innovative approach in the first instance is consideration and consensus on the terminology and definition of role-play and simulation. The discipline-specific skills and attitudinal requirements of paramedic practice, fully supported with the trained staff and physical resources must be considered at the design stage. The literature from cognate professions supports this assertion as cited in a review of the literature on simulation in nursing education published in the journal *Nurse Education Today*, which notes that resources, staffing, and technology are among the key considerations for effective simulation-based education (Hayden, J., 2011). The review emphasises the need for a culture of innovation and commitment to excellence in simulation-

based education, including a commitment to ongoing staff development and infrastructure investment.

The recommendations from this research described here, to further develop best practice, can have a positive impact on system change whereby the whole idea behind combined role-play and simulation is to give students a repository of experience from which they may draw so that they will not meet the same situations for the first time when dealing with real patients in a dynamic, challenging, and fast-paced prehospital world. Learners can develop expertise, develop comfort, and skill through combined role-play and simulation without having to assess patients with particular, frequently unusual pathology, injury or situations that are not encountered very often. Additionally, combined role-play and simulation can be utilised at any point in a person's professional lifetime to maintain procedural, clinical, and non-clinical abilities. This thesis highly recommends that consideration should be given to a model of combined role-play and simulation that allows student paramedics to train and evolve professionally in tandem with existing practitioners who are "upskilling". This could serve to initiate, foster, and develop a mentor/preceptor link from the outset directly between the student and operational paramedic. It would further ensure that the supervising paramedic in the field holds currency of practice.

The findings of this study described in Chapter Four clearly show that the students who took part in the study indicated that they liked the inclusion of role-play inside the simulation experience. They describe how the combination enriched and enhanced their learning, strengthened their collaboration and communication skills, gave them insight into the perspectives of other people, and better prepared them for clinical placement, which will, in turn, help guide them to becoming competent, safe, and empathic paramedic practitioners.

5.3 Mentorship.

Suggestions about mentorship

A key finding from this research concerns the idea of mentorship and the impact that this can have on the placement experience. Chapter One describes how, along with technical and clinical practice advances within the profession itself, the educational model for paramedics has also evolved from a traditional vocational apprenticeship model engaging in on-the-job training into a professional-level tertiary education programme. The importance of mentorship remains crucial to the student placement experience (SREB, 2007). An aim of this research is to explore the experiences, concerns, and observations of the paramedic students regarding clinical placement and from the findings reported in Chapter Four, mentorship is key to the success or failure of this experience.

The findings of this research, set in the context of the literature reviewed in Chapter Two and personal reflective notes, confirm that the educational link is perceived as quite disconnected from the operational environment and that of the classroom. The findings of this research presented in Chapter Four clearly describe the importance of mentorship. It would appear that the operational demand, oft referred to as 'the exigencies of the service' by practitioners, is supplanting the intention of the education programme by not creating an environment where the experienced practitioners are conversant in the specifics required within the learning objectives of the student paramedic. Indeed, it was reported in Chapter Four that paramedic practitioners are not adequately informed as to up-to-date clinical guidelines. Chapter One explained that guidelines for clinical practice are periodically revised in line with best evidence. When this happens, the service must ensure that its active practitioners have up-to-date knowledge and interventional skills. This process has an implementation timeframe whereby students who are taught the new knowledge before engaging in the ambulance clinical placement experience are paired with paramedic crews that may not have had the opportunity to update their practice and achieve currency or competence. The participants articulated that this could cause considerable and unnecessary tension while on ambulance clinical placement. An example of this is when a student has been educated and trained to administer a medication that may comfort a patient, but the supervising practitioner has not yet obtained the clinical privileges to administer the medication. One of the aims of this research was to explore the experiences, concerns, and observations of the paramedic students regarding clinical placement. As such, a key recommendation of this thesis is that students are only paired with practitioners who hold the most current clinical privilege so that they may effectively supervise the novice practitioner.

Again, this is a systematic challenge and one that requires senior management commitment to change whereby practising paramedics are routinely upskilled and where their knowledge is consistent with current guidelines, policy, and procedure.

It is impossible to undervalue or underestimate the contribution that experienced paramedics provide to the education that students gain during their practicum, again something that emerged as a key finding in Chapter Four. The input, direction and critique provided by experienced paramedics to students are crucial for students to observe, comprehend and reflect upon. This leads the student to identify, and, importantly, focus on developing their areas of strength and weakness, in addition to learning how to continuously grow professionally. This can be achieved by providing the level of feedback required and ensuring that professional practice is of a high level.

5.4 Covid-19 Experience.

This research was scheduled to happen when the unexpected and unprecedented arrival of a global pandemic, namely Covid-19, affected all aspects of living. The following describes the impact that Covid-19 had on this study from a practical and learning perspective. It discusses how the placement and other learning experiences had to be reconfigured somewhat during this time and how, ultimately, there was significant learning that can inform how the traditional model of clinical placement can be reimagined. This was a demanding and yet exciting time for healthcare professionals where creativity and commitment were key features. The following describes how intended and unintended consequences impacted on the study under review. Due to the unprecedented nature of the pandemic, the following describes 'new experience' and the learning from the experience is considered here as 'new knowledge' and, thereby, contributing significantly to the existing body of knowledge in the field.

Impact on study.

The Covid-19 pandemic presented many challenges for this study and its participants. Some students were redeployed to areas within the wider health service as appropriate to their level of training at that time. Others who would have normally attended clinical placement sites such as hospitals and urgent care centres were placed on operational ambulances only, which still meant meaningful placements and importantly, their services, while on placement, played a crucial part in the pandemic response. Logistically, scheduling challenges for this researcher happened as access to the high-fidelity simulation suites was removed as they were commandeered for urgent upskilling and training of hospital staff who were assisting in the intensive care and high-dependency units. There was a further delay in gaining access to the high-fidelity simulation suites when the aforementioned training was complete, as this created a backlog of normal teaching operations that had to be cleared first. Additional challenges were presented in the form of accessing oversized rooms and sanitisation equipment when focus groups could be convened. Considerable cooperation was afforded to this researcher by the multiple gatekeepers involved; however, the resultant challenges led to a significant delay in the schedule of research and also a lot of participants withdrawing, most citing fatigue.

Covid-19 placement experience.

As described in the background to the study in Chapter One, the current pedagogical approach is to immerse a student in a clinical placement setting. Typically, a student has not been orientated in a placement area, which necessitates investing valuable time in becoming acquainted with new

equipment, workflows, and an unfamiliar environment before the thrust of clinical learning can begin. Further compounding the challenge is a lack of clinical placements and supervisory faculty in facilities to meet the demands (Taylor *et al.*, 2017). The consequence of this is that educators are obliged to add additional time in a clinical placement setting for some students in order to achieve the necessary exposure. This situation was further highlighted during the Covid-19 pandemic, whereby all student paramedic hospital placements in Ireland were unavailable, and as a result, they were undertaken aboard an operational ambulance instead. This change to the norm of clinical placements in a hospital setting required regulatory approval. Student paramedics, depending on their level of experience, were positioned appropriately either to specifically support the Covid-19 response as swabbers, or on operational ambulances. Prior to the arrival of the pandemic, a lack of understanding of the placement environment and role allegedly hindered students' preparation and made them apprehensive about clinical placement; however, while on placement during the pandemic, students reported a flatter learning curve and also described how their confidence to practice increased, something that they described impacted positively on their ability to work as student paramedics when they eventually deployed to an operational ambulance placement.

The current pressures on service delivery as described internationally in Chapter Two by Taylor, C. *et al.* (2017) and cited by the Prehospital Emergency Care Council when they state that, there is a shortage of placement opportunities within the ambulance service to allow adequate training or learning time, in their published paper, *The Future of Paramedicine* (PHECC, 2016). These pressures do not always allow a student practitioner time or a comfortable environment in which to practice and refine skills such as patient assessment. Of note, students who had experienced the swabber role during Covid-19 overwhelmingly indicated that they were more confident in their approach, communication, and management of patients.

Recommendations from experience.

Covid-19 was a central yet an unintended component of this study as a result of the timing of this research and the Covid-19 pandemic; however, this author did not see the challenge of the pandemic as a barrier to the research but rather saw the opportunity for learning. While the pandemic brought about challenges to the research, it also gifted the study with real-world questions such as optimising the resource that is the student paramedic and matching their skillset to necessary tasks. Another unintended consequence here was that ambulance crews had enhanced confidence in the students, which made for a better placement experience for students and practitioners. Chapter Four describes how students' confidence increased, something that was

evident in how they communicated with patients and, in particular, how they engaged with the practice of patient assessment.

Learning and recommendations from this unique time suggest placing student paramedics on low acuity, intermediate care vehicles could potentially improve their learning experience, as it allows them to gain exposure to a wider range of patients and medical conditions. Low-acuity vehicles typically transport patients with less severe injuries or illnesses, which may provide a less stressful environment for student paramedics to practice their skills and learn from more experienced practitioners. Working on low-acuity vehicles may also allow student paramedics to develop a more well-rounded skill set, as they will likely encounter a greater variety of medical issues than they would on high-acuity vehicles. This exposure can help to better prepare student paramedics for future roles and responsibilities in a more relaxed and controlled environment. It is important to note that any changes to clinical education must be carefully planned and monitored to ensure the safety and well-being of both the patient and the student paramedic. Adequate supervision and support from experienced paramedics must be in place to ensure that student paramedics are not placed in situations beyond their ability or training level. Ultimately, the effectiveness of placing student paramedics on low-acuity intermediate care vehicles will depend on various factors, including the quality of the training programme and the support and guidance provided by the clinical educators.

As a result of the response to the Covid-19 pandemic, this thesis contends that simulation and role-play can be modelled in part on this experience where a less stressful and risky environment can be provided for students to hone a holistic skillset, inclusive of clinical and communication skills.

5.5 Conclusion.

In the same way that access to clinical placements affects student preparation for nursing and other health-related professions, paramedic education must innovate strategies to generate student experience, evaluate competence, and guarantee graduates match industry requirements. If students are going to thrive in accomplishing learning outcomes in prehospital settings, clinical placements must include critical characteristics such as a supportive environment and excellent connections between students and mentors.

While it can be easily understood that the critical mission of an ambulance service is to serve the needs of patients and the public as part of an integrated health system through the provision of

high-quality, safe, and patient-centred services (NAS, 2023b). This can only be achieved with an integrated and highly educated workforce whereby all of the component arms of the service, educational, support and operational work in concert to accomplish the mission.

In this thesis, a number of key recommendations have been presented, including the necessity for establishing a consensus on the terminology and definitions of role-play and simulation to ensure effective training for paramedics. Additionally, the author proposes the identification of specific skills and attitudes required for professional paramedics and the integration of a combined approach of role-play and simulation to enhance the training process. Gaining international consensus on the terminology pertaining to simulation in the literature would be difficult; however, a national working group could formulate a consensus document. Possible methods to achieve this include the Delphi or World Café method (Jolly *et al.*, 2021). This could pave the way toward a national consensus, demystifying simulation and role-play, subsequently encouraging meaningful engagement by the regulatory body, educators and the discipline as it would be better understood.

This thesis recommends that student paramedics be provided with opportunities to train alongside existing practitioners who are undergoing continuous professional development and the development of mentorship and coaching support programmes. Furthermore, the implementation of simulation and role-play as tools to enable students to develop a comprehensive skillset, including both clinical and communication skills, in a lower-risk and less stressful environment has been suggested. The implementation of high-fidelity simulation and role-play as tools to enable students to develop a comprehensive skillset, including both clinical and communication skills, in a lower-risk and less stressful environment could have several beneficial impacts. Specifically, simulation and role-play activities can provide a safe and supportive environment for students to practice and refine their skills. This can help them develop confidence and competence in a variety of scenarios, which can translate into improved clinical and communication skills. The activities involved in such an approach can increase student engagement in that they can help students apply their knowledge in a practical way and make learning more enjoyable and interactive. It is important to note that simulation and role-play activities can help reduce the risk of harm to patients and students by allowing them to practice in a controlled environment. This can help to minimise the risk of errors and improve patient safety. Also, positive, clear, and succinct communication is a critical aspect of paramedic practice and something that simulation and role-play activities can help students develop effectively. They can learn how to communicate with patients, families, and colleagues in a variety of scenarios, supported by feedback, which can help them become better practitioners. Finally,

simulation and role-play activities can help students build confidence in their clinical abilities, which in turn can translate into better performance in real-world situations. This can help to reduce anxiety and stress for students and improve their overall well-being and, indeed, enjoyment of the educational experience.

This thesis has demonstrated that the implementation of simulation and role-play activities can have a positive impact on student learning and the quality of care provided to patients. By providing a safe and supportive environment for students to practice and refine their skills, these activities can help to improve the overall quality of prehospital care.

It is important to note, however, that further process evaluation would be necessary to accurately guide the implementation of these recommendations. This thesis has shown the importance of further investigation into the idea of partially replacing clinical hours in paramedic education in Ireland with high-quality role-play and simulation. In order for this to happen, the governing and regulatory bodies would need to acknowledge combined role-play and simulation as a component in clinical placement hours, and tertiary institutions would need to develop programmes to support role-play and simulation to adequately prepare students. Further research would be essential to formulate a uniform definition and standard for role-playing and simulation, as well as to understand how this would integrate into undergraduate coursework. Further, the balance and ratio of role-play simulation hours to clinical placement hours needed for proficient students requires exploration and definition.

It is known that clinical placement experience for paramedic students is an integral part of their training, and it can determine the level of competence possessed by the student (Boyle *et al.*, 2008; Levett-Jones *et al.*, 2006). The placement experience also gradually influences and shapes their response and confidence. Therefore, understanding the student's viewpoint is pivotal to future development of the course design. This thesis has identified that being valued and made feel part of a team are important elements for a student paramedic. Moreover, it helps to increase their sense of belonging, which is vital to their overall educational experience. The essence of the educational placement model is such that the one-to-one relationship the student has with an experienced paramedic crew is necessary for the socialisation and evaluation process of student integration and learning. The findings from this research show how currently this is not adequately supported or structured to facilitate the student in a meaningful way.

The incorporation of role-play and simulation experiences into a conventional model of clinical placement can offer students valuable learning opportunities that can augment their clinical and communication skills, bolster their self-assurance and proficiency, and equip them with the necessary skills to succeed as paramedic professionals in the future (Hunter *et al.*, 2021; McGaghie *et al.*, 2010).

This thesis has presented several recommendations; however, it has also identified areas where further research would be appropriate for the discipline. Specifically, a question for further study would be to explore the balance and ratio of simulation and clinical placement hours for paramedic education. Simulation and role-play activities are crucial in developing skills and competencies among undergraduate healthcare students (Eppich *et al.*, 2011; Ziv *et al.*, 2003); however, the appropriate balance and ratio of simulation and clinical placement hours that would be of most benefit for paramedic students require further exploration. A mixed-methods approach involving a systematic review of relevant literature, and, from the results of this review, a survey of healthcare educators and students is proposed. The study will identify the factors that influence the balance and ratio of simulation and clinical placement hours. While this proposed study will provide insight into the optimal balance and ratio of simulation and clinical placement hours for developing proficient paramedic students, offer recommendations for healthcare educators on how to design and implement effective undergraduate programmes and contribute to the ongoing discussion.

This thesis has identified the importance of having skilled mentors and coaches to support student paramedics. While many paramedics possess the skills and experience necessary to serve as coaches, they may not have received any formal training in how to coach others effectively. Further research could investigate the most effective ways to develop a system to support experienced paramedics to become effective coaches and how to implement a system to ensure that they are able to continue providing high-quality support to the paramedic student population. Also, Peer mentoring is a model of mentorship where individuals of similar experience support each other in learning and development. A qualitative study could explore the potential impact of peer mentoring in paramedic education and whether it can be an effective way to supplement traditional mentorship relationships and improve the student and practice experience.

5.6 Personal Reflection.

I have been aware of the problem of decreasing clinical placement opportunities for student paramedics and a shortage of appropriate supervising clinical faculty for some time now. It is clear to

me that a solution is necessary to help students meet their clinical learning needs, especially in situations where clinical placement is not readily available. This is a common issue in paramedicine and other related fields, not just in Ireland but worldwide. To address the impending challenge of a shortage of paramedics and the inevitable requirement to educate and train more, the discipline needs to explore and consider alternative options. It is imperative to avoid a situation where an ageing population with increasing and complex health issues will not have enough paramedics to care for them in the future (ICGP, 2016). The National Ambulance Service has responded to the problem by opening more facilities, and universities have also joined the effort to educate and train more paramedics. However, this expansion of paramedic programmes in Ireland will cause further challenges in accessing clinical placement facilities, which can be addressed through a considered scheme that reflects on the findings of this thesis (the student voice) and provides the necessary blueprint, infrastructure, and resources.

In undertaking this research, I have come to realise that while lessons from the published literature can and should be learned from other disciplines, we are reluctant to embrace new ideas that challenge our own established practices and beliefs. This can lead to a certain degree of insularity within our own fields, which ultimately impedes progress and innovation. As such, it is important to remain open-minded and actively seek out new perspectives, even if they may initially seem unfamiliar or uncomfortable.

Furthermore, collaboration across disciplines can be a powerful tool in driving innovation and discovery (Dinh *et al.*, 2020). By combining knowledge and expertise from multiple fields, we can create a more holistic understanding of complex problems and develop more effective solutions. This requires a willingness to engage in dialogue and work towards common goals rather than being content with working in disciplinary isolation.

Overall, I believe that a more open and collaborative approach to research can lead to significant breakthroughs and advancements in many areas of paramedic education. It is up to each of us to cultivate this mindset and actively seek out opportunities for interdisciplinary collaboration and learning.

5.7 Summary.

The primary aim of the thesis was to introduce simulation and role-play as pedagogical tools to enhance the learning of student paramedics. The author explored the experiences, concerns, and observations of paramedic students regarding clinical placement, as well as their opinions on

augmenting traditional clinical placement with combined role-play and simulation experiences. This exploration contributes to the understanding of how these tools can enhance paramedic training and education.

The study examined the placement experience of student paramedics and highlighted the challenges they face in joining a new team in an unfamiliar setting. The findings emphasized the importance of motivation, inclusion, questioning, exploration, and good relationships with clinical colleagues for a positive learning experience. The study also identified systemic and educational considerations that could be improved to enhance the placement experience for students.

The research proposed recommendations for practice and suggestions for future research. These recommendations include implementing a standardized national approach to placement experiences, providing appropriate pre-placement induction, supporting clinical facilitators and trained mentors at placement sites, and incorporating high-fidelity simulation and role-play into the placement experience. These recommendations aim to improve the learning environment and ensure that students develop the necessary knowledge, skills, and attitudes for professional practice in paramedicine.

Overall, the achievements in this text include contributing to the understanding of how simulation and role-play can enhance paramedic training, identifying challenges in the placement experience, and proposing recommendations to improve the learning environment and support the development of student paramedics.

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Appendices.

Appendix 1

Variations in Paramedic Training and Responsibilities Across Different Regions and Countries

There are several titles globally that can mean "paramedic." These titles may vary depending on the country or region. The titles in the table below were used as search terms.

Paramedic	Emergency Medical Technician (EMT)	Ambulance Technician	EMS Provider
Emergency Care Practitioner	Ambulance Paramedic	Field Medic	Mobile Intensive Care Paramedic (MICP)
Paramedic Technician	Rescue Medic	Flight Paramedic	Community Paramedic
Paramedic Specialist	Advanced Life Support (ALS) Provider	Paramedic Officer	
Combining simulation and role-playing	Paramedic simulation	Paramedic role-play	High-fidelity simulation
Role-play and simulation	Paramedic education	EMT education	

These terms can vary by region and country, and the level of training and responsibilities associated with each title may differ, however most of the literature agrees with the following:

1. Paramedic: This is the most commonly used title for emergency medical professionals who provide pre-hospital care and transportation to patients in need of medical assistance.
2. Emergency Medical Technician (EMT): In some countries, such as the United States, the term EMT is used interchangeably with paramedic. However, it's important to note that EMTs may have different levels of training and scope of practice.
3. Ambulance Technician: This title is used in some countries to refer to paramedics who work specifically in ambulance services.
4. Emergency Care Practitioner: In certain regions, paramedics may be referred to as emergency care practitioners, emphasizing their role in providing immediate medical care in emergency situations.
5. Advanced Care Paramedic: This title is used to describe paramedics who have received advanced training and can provide a higher level of care, such as administering medications or performing advanced procedures.

It's important to note that the specific titles and their meanings can vary across different countries and healthcare systems.

The role of a paramedic is crucial in providing emergency medical care and responding to various medical conditions and trauma emergencies. However, the level of training and responsibilities associated with the title of "paramedic" can vary significantly by region and country. Factors such as the healthcare system, regulatory bodies, and local needs influence the paramedic roles and qualifications. This appendix provides a rudimentary overview of how the role of a paramedic differs across different regions and countries, including the United States, United Kingdom, Australia, Canada, South Africa, and India.

United States:

In the United States, the requirements to become a paramedic vary depending on the state. Generally, candidates are required to have a high school diploma or equivalent and complete a paramedic program accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) or the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP). The paramedic program curriculum includes comprehensive training on various medical conditions, patient assessment, and emergency care. Upon completion of the program, individuals are eligible to take the National Registry of Emergency Medical Technicians (NREMT) examination to become a certified paramedic.

United Kingdom:

In the United Kingdom, the requirements to become a paramedic vary depending on the region. Generally, candidates are required to have a Level 3 qualification in Health and Social Care or a related field. They will also need to complete a paramedic science degree program or a work-based learning program. The paramedic science degree program provides in-depth theoretical knowledge and practical skills necessary for effective emergency care. Paramedics in the UK are considered a higher level of practitioner compared to ambulance technicians. They have the authority to administer medications, perform advanced procedures, and make autonomous decisions about patient care. Paramedics play a crucial role in the National Health Service (NHS) and are often involved in primary care and community-based services.

Australia:

In Australia, paramedic training programs often lead to a bachelor's degree. These programs provide comprehensive education in emergency medicine skills and equip paramedics with the ability to provide complex care and interventions. Paramedics in Australia work in various settings, including ambulance services, hospitals, and aeromedical services. They are trained to handle a wide range of medical emergencies and trauma cases, ensuring timely and efficient prehospital care.

Canada:

Paramedic training in Canada can vary by province or territory, but it typically involves two to three years of education. Paramedics in Canada are trained to administer medications, perform advanced procedures, and provide prehospital care. The role of a paramedic is often integrated into the healthcare system, with some paramedics working in hospital settings alongside other healthcare professionals. This integration allows for seamless coordination of patient care from the prehospital setting to the hospital.

South Africa:

In South Africa, there are different levels of prehospital care providers, with "paramedics" representing the highest level. Paramedic training often involves a two-year diploma program that covers both medical and trauma emergencies. South African paramedics are trained to administer medications, provide advanced life support, and manage critical patients in challenging environments. They play a crucial role in ensuring timely and effective emergency medical services across the country.

India:

In India, becoming a paramedic requires a diploma in Emergency Medical Services (EMS). The program is a two-year course that covers topics such as anatomy, physiology, pharmacology, and emergency care. Students are also required to complete clinical placements to gain practical experience. After completing the diploma, candidates can work as emergency medical technicians (EMTs) or paramedics. Paramedics in India are trained to handle various medical emergencies and provide essential prehospital care. In India, the scope of practice for paramedics is determined by their level of training and certification as emergency medical technicians (EMTs) or paramedics. EMTs typically provide basic life support, while paramedics can provide advanced life support and perform more complex procedures.

Conclusion:

In conclusion, the role of a paramedic requires specific skills and training that may vary depending on the country. The United States, United Kingdom, Australia, Canada, South Africa, and India all have unique requirements and educational pathways for individuals aspiring to become paramedics. While some countries emphasize degree programs for paramedic training, others focus on diploma programs. Additionally, the scope of practice for paramedics varies across regions, with some countries allowing paramedics to administer medications, perform advanced procedures, and make autonomous decisions about patient care. It is important to recognize that the roles and responsibilities of paramedics continue to evolve over time due to local regulations, healthcare needs, and advances in medical practice.

Appendix 2

The Simulation Event

Hydrofluoric Acid Burn Simulation Case Low fidelity simulation scenario

This document contains specific case details and supporting documents to support a low-fidelity simulated case of hydrofluoric acid exposure to Paramedic students.

Narrative Description

This simulated case describes a patient that is identified as part of an emergency response to a 112/999 call via the Irish National Emergency Operations Centre (NEOC). The Paramedic Students are dispatched by NEOC to a street in a busy Irish city in the south of Ireland. Upon arrival at the scene the paramedic students begin their assessment and interventions.

Upon arrival the patient initially presents with a poor exposure history of the concentration and quantity of the unknown (hydrofluoric) acid as well as localised pain of the area splashed by the chemical. Providers will need to recognise the need for decontamination and rapid assessment of electrolytes and myocardial function.

Fire service personnel on scene offer a chemical antidote that is unfamiliar to the paramedic students – Dipotherine.

After noting clear abnormalities in the electrocardiogram, learners should provide rapid dilution of the chemical burn site. Appropriate consultation with the fire service regarding chemical dilution and antidote followed by appropriate disposition to a higher level of care will complete the scenario.

The included debriefing materials will provide a deeper understanding of the unique mechanisms of toxicity and treatment of hydrofluoric acid exposure.

- I. TITLE: Hydrofluoric Acid Burn

- II. TARGET AUDIENCE: Paramedic students

- III. LEARNING OBJECTIVES:
 - a. Primary Learning Objectives
 - i. Develop and demonstrate an approach to the adult patient with suspected dermal exposure to hydrofluoric acid
 - ii. Recognise the risk of severe burns, hypocalcaemia, hyperkalaemia, and dysrhythmias with severe hydrofluoric acid exposure

 - b. Secondary Learning Objectives
 - i. Demonstrate appropriate skin decontamination after hydrofluoric acid exposure
 - ii. Discuss the appropriate use of intravenous calcium (gluconate and chloride) and calcium gluconate or carbonate gel
 - iii. Utilise closed-loop communication

 - c. Critical Actions Checklist (attached)
 - i. Place the patient on telemetry and obtain an ECG
 - ii. Rapidly administer (antidote) after diagnosis of systemic hydrofluoric acid toxicity
 - iii. Rapidly treat hyperkalaemia as appropriate
 - iv. Aggressively control pain with analgesia
 - v. Consult for severe chemical burn
 - vi. Transfer the patient

- IV. ENVIRONMENT
 - a. Lab Set Up – Holding cell of a Garda (police) Station
 - b. Manikin Set Up – The manikin will appear as a 32-year-old clothed male who will be positioned in a supine position on the cell bed. He will have a reddened face and a superficial scalp wound above the right eye. The right hand will appear red.
 - c. Props – The following items should be readily available either at the bedside or rapidly upon request by the learners:
 - i. Cardiac monitor, pulse oximetry, and blood pressure
 - ii. Supplemental oxygen with nasal cannula and non-rebreather mask
 - iii. Airway equipment to allow for oxygen delivery and advanced airway management
 - iv. IV fluids and tubing
 - v. Fully-stocked drugs bag, specifically including:
 - 1. Insulin and D50
 - 2. Sodium Bicarbonate

V. CASE NARRATIVE

a. Scenario Background

- i. Chief Complaint: Pain to right hand side of the face following an unknown chemical been thrown at the patient.
- ii. Dispatcher Report (given freely): “32-year-old male patient with reported burns to the face – attacked by unknown assailant that has left the scene.
- iii. Vital Signs: HR 112, BP 150/95, RR 18, SpO2 96% RA, T 37 oral
- iv. Demographics: 32 y/o male weighing 80kg
- v. Past Medical History: Asthma
- vi. Medications: unknown
- vii. Allergies: NKDA
- viii. Family/Social History: unknown

b. Initial Scenario Conditions

- i. History Given by patient: Patient reports that he was walking down the street when two people approached him. One of the persons threw a liquid across his face. The patient reacted by reaching out to stop the chemical from hitting him in the face but failed to stop it from happening. It splashed his right hand and across his face. He noted the container had the word “fluoric” on it but cannot recall anything else. He estimates about a litre of the chemical was in the container and he thinks he was only splashed by some of it. He does not think he inhaled any of it. Within 2 minutes he began to feel pain on his hand and face. After about 10 minutes developed a severe burning sensation on his face and right hand where the chemical contacted his skin. He currently is in severe distress due to pain and repeatedly asks the paramedic to help with the pain.
- ii. Associated symptoms (given during review of systems): The patient complains of severe pain to the face and right hand, but denies paraesthesia to the distal hand. Remainder of the review of systems is negative.
- iii. Initial Exam
 1. General: The patient is a well-developed 80kg adult male who is moaning in pain and appears very uncomfortable
 2. Pupils are equal. Normal vision. Moist mucous membranes.
 3. Cardiovascular: Tachycardic. No murmurs
 4. Respiratory: Breath sounds are clear and equally bilaterally. No wheezes, rhonchi or rales
 5. Abdominal: Soft, non-tender, non-distended. Normal bowel sounds
 6. Genitourinary: Normal appearing
 7. Neurological: Alert and oriented x3. Non-focal examination of gross motor function and sensation
 8. Skin: Face and right hand appears moderately red without signs of deep burns on examination. No crepitus. A small superficial laceration above the right eye. No other signs of blunt trauma are present
- iv. Vital Signs - as noted above in “scenario background”

c. Scenario Branch Points

- i. Decontamination. The learner should ask if the patient was decontaminated at the scene by the fire officer on arrival. The learner should specifically ask about the method of decontamination and duration of decontamination. Appropriate decontamination would include removing all clothing and jewellery, running clean water over the exposure site for 30 minutes. If all potentially contaminated clothing and/or jewellery is not removed, then the paramedic (and anyone else who touches the patient's hand or contaminated clothing either with their bare hands or when wearing latex gloves) will develop a burning sensation on their hands. Instructors can consider then removing the provider who touched the uncontaminated patient's hand and replacing them with another unaffected provider. If the group is small, the instructor can advise the team that they are now noting a burning sensation in their hands to prompt decontamination. The use of a chemical-resistant glove can be used to safely touch the patient prior to adequate decontamination if the learners ask for such gloves.
- ii. Pain. If the learners give rapid analgesia, then the patient will report improvement (but not resolution) of his pain. If the patient is re-dosed with analgesia, he should become sleepy, not minimal improvement, ask as "isn't there anything else you can do?" as a prompt for a topical solution. If water gel is applied is provided, the patient will note complete resolution of pain. If, however, no analgesia is given then the patient will become more agitated and refuse to answer questions until his pain is addressed.
- iii. Hypocalcaemia: The lead paramedic should identify this as a potential issue.
- iv. Hyperkalaemia: The lead paramedic should identify this as a potential issue.
- v. Consultation of specialists: Request advanced paramedic to attend scene.

VI. INSTRUCTOR NOTES:

- a. Scenario Flow – The instructor can interject the following information:
 - i. Key aspects of the case – Learners must recognise that the scenario is a dermal exposure to a high concentration of hydrofluoric acid. If learners progress through the scenario without identifying the hydrofluoric acid, they may be informed of this in the debrief session
 - ii. Assessment of Toxicity. The learners should recognize that this exposure is a potentially life-threatening exposure. High concentrations of hydrofluoric acid can cause systemic symptoms even with small amounts of exposure. The following concentrations and % body surface areas (BSA) have caused systemic toxicity (Greco *et al*, 1988):
 - >50% concentration HF of 1% BSA
 - Any concentration HF >5% BSA
 - iii. Consultations – Not possible.
- b. Scenario Programming – Not possible

VII. DEBRIEFING PLAN

- a. Method of Debriefing – The group will be debriefed immediately following completion of the scenario. All learners and educators should be present. Possible methods of debriefing may include:
 - i. Open-ended questions by facilitator – The facilitator should start by asking open-ended questions to encourage the learners to reflect on the scenario. Often asking “what went well”, followed by “what did not go well” and “what could you have done differently” will provide an organised debriefing roadmap and will allow the learners to process the scenario in an organised manner. Open ended questions will also encourage learners to share their thought processes and previous experiences with other learners.
 - ii. Review of critical and important actions for this case – The facilitator should be prepared to discuss the details of the case and the team’s management choices. However, the facilitator should be sure to not focus on minor details but place emphasis and encourage discussion of the important concepts related to hydrofluoric acid toxicity.
- b. Rules for debriefing – Learners should be provided a safe learning environment that supports open discussion and encourages questions. To do this the instructor should:
 - i. Begin by asking the group as a whole what went well. You can then ask the group what didn’t go well and how the process (not individual tasks) could have went better.
 - ii. Express to all learners that this is a challenging and uncommon clinical scenario, and that you did not expect the learners to manage this scenario perfectly
 - iii. Encourage learners to think aloud and explain their thought processes
 - iv. Encourage participation from all learners (even those who remain quiet)
 - v. Provide a summary of the key points and thank everyone for participating.
- c. Specific questions to facilitate debriefing:
 - i. What are the important clinical implications of exposure to hydrofluoric acid?
 - ii. What is the mechanism of toxicity for hydrofluoric acid?
 - iii. What are treatment priorities in a case of hydrofluoric acid exposure?
 - iv. What challenges do you think you will face when managing someone with hydrofluoric acid toxicity?

VIII. References

- a. Garza, F, *et al.* (2012). Poisoning & drug overdose.
- b. Greco R, *et al.* Hydrofluoric acid-induced hypocalcaemia. *J Trauma*, (1988) 28, 1593-1596.
- c. Hoffman, R., *et al.* (2014). Goldfrank's Toxicologic Emergencies 10/E. McGraw Hill Professional.
- d. Holstege, C, *et al.* The electrocardiographic toxidrome: the ECG presentation of hydrofluoric acid ingestion. *Am J Emer Med* (2005) 23, 171-176.

Appendix 3

The Combined Role-play and Simulation event

Hydrofluoric Acid Burn
Simulation & Role-play Case
high-fidelity role-play and simulation scenario

This document contains specific case details and supporting documents to support a high-fidelity simulated case of hydrofluoric acid exposure to Paramedic students.

Narrative Description

This simulated case describes a patient that is identified as part of an emergency response to a 112/999 call via the Irish National Emergency Operations Centre (NEOC). The Paramedic Students are dispatched by NEOC to a street in a busy Irish city in the south of Ireland. Upon arrival at the scene the paramedic students begin their assessment and interventions.

Upon arrival the patient initially presents with a poor exposure history of the concentration and quantity of the unknown (hydrofluoric) acid as well as localised pain of the area splashed by the chemical. Providers will need to recognise the need for decontamination and rapid assessment of electrolytes and myocardial function.

Fire service personnel on scene offer a chemical antidote that is unfamiliar to the paramedic students – Dipotherine.

After noting clear abnormalities in the electrocardiogram, learners should provide rapid dilution of the chemical burn site. Appropriate consultation with the fire service regarding chemical dilution and antidote followed by appropriate disposition to a higher level of care will complete the scenario.

The included debriefing materials will provide a deeper understanding of the unique mechanisms of toxicity and treatment of hydrofluoric acid exposure.

IX. TITLE: Hydrofluoric Acid Burn

X. TARGET AUDIENCE: Paramedic students

XI. LEARNING OBJECTIVES:

a. Primary Learning Objectives

- i. Develop and demonstrate an approach to the adult patient with suspected dermal exposure to hydrofluoric acid.
- ii. Recognise the risk of severe burns, hypocalcaemia, hyperkalaemia, and dysrhythmias with severe hydrofluoric acid exposure.

b. Secondary Learning Objectives

- i. Demonstrate appropriate skin decontamination after hydrofluoric acid exposure.
- ii. Discuss the appropriate use of intravenous calcium (gluconate and chloride) and calcium gluconate or carbonate gel.
- iii. Utilise closed loop communication

c. Critical Actions Checklist (attached)

- i. Place the patient on telemetry and obtain an ECG.
- ii. Rapidly administer (antidote) after diagnosis of systemic hydrofluoric acid toxicity
- iii. Rapidly treat hyperkalaemia as appropriate
- iv. Aggressively control pain with analgesia
- v. Consult for severe chemical burn.
- vi. Transfer the patient.

XII. ENVIRONMENT

a. Lab Set Up – Holding cell of a Garda (police) Station.

b. Manikin Set Up – The manikin will appear as a 32-year-old clothed male who will be positioned in a supine position on the cell bed. He will have a reddened face and a superficial scalp wound above the right eye. The right hand will appear red.

c. Props – The following items should be readily available either at the bedside or rapidly upon request by the learners:

- i. Cardiac monitor with the ability to monitor telemetry, pulse oximetry, and blood pressure.
- ii. Supplemental oxygen with nasal cannula and non-rebreather mask
- iii. Airway equipment to allow for oxygen delivery and advanced airway management.
- iv. IV fluids and tubing
- v. Fully stocked drugs bag, specifically including:
 1. Insulin and D50
 2. Sodium Bicarbonate

- d. Distractors – Fire Service personnel suggest decontamination - lead paramedic can resist the need for proper decontamination using water since no material can be visualised on the skin. The paramedic in charge can suggest that everyone “just wear gloves” instead.

XIII. ACTORS:

- a. Roles – The number of participants in the scenario can range from a single provider to several providers and support staff. The ideal number of actors are:
 - i. One lead paramedic who will direct the care of the patient.
 - ii. One dispatcher to provide the initial radio report to the team.
 - iii. Fire Officer to provide information, assist with the event description and decontamination approach.
 - iv. One phone consultant (ED Consultant, burn surgeon, and toxicologist)
- b. Who may play them – The treating team may be played by any of the learners. The role of the paramedic and all phone consultants should be played by an individual competent in hydrofluoric acid toxicity and management and may include an ED consultant, senior paramedic, or the simulation case instructor.
- c. Actions for each role:
 - i. Lead paramedic– This individual will serve as the main participant and will direct all scenario activities. This individual should directly perform a focused history and physical examination and provide direction for testing and treatment. This individual can delegate tasks and procedures.
 - ii. Supporting paramedic – This individual will assist the lead paramedic in assessing and treating the patient. This individual may also collaborate with the lead paramedic on clinical decision making, though the lead paramedic should still be recognised as the authority throughout the scenario.
 - iii. Dispatcher - This individual will provide an initial radio report prior to on scene arrival.
 - iv. Fire Officer- The Fire Officer will also be available for about 2 minutes after patient arrival to answer questions about the prehospital care but will then leave and be unavailable for the rest of the scenario.
 - v. Phone consultants – This individual will provide phone (not bedside) consultation to the learners as requested. Phone consultants should not be available until the learners have at least thoroughly attempted an appropriate history and physical examination, cardiac evaluation, and initiated some form of treatment. Consultants should provide answers only to focused and specific questions or they can redirect and prompt the team towards appropriate assessment methods and treatment modalities.

XIV. CASE NARRATIVE

- a. Scenario Background
 - i. Chief Complaint: Pain to right hand side of the face following an unknown chemical been thrown at the patient.
 - ii. Dispatcher Report (given freely): “32-year-old male patient with reported burns to the face – attacked by unknown assailant that has left the scene.

- iii. Vital Signs: HR 112, BP 150/95, RR 18, SpO2 96% RA, T 37 oral
- iv. Demographics: 32 y/o male weighing 80kg
- v. Past Medical History: Asthma
- vi. Medications: unknown
- vii. Allergies: NKDA
- viii. Family/Social History: unknown

b. Initial Scenario Conditions

- i. History Given by patient: Patient reports that he was walking down the street when two people approached him. One of the persons threw a liquid across his face. The patient reacted by reaching out to stop the chemical from hitting him in the face but failed to stop it from happening. It splashed his right hand and across his face. He noted the container had the word “fluoric” on it but cannot recall anything else. He estimates about a litre of the chemical was in the container and he thinks he was only splashed by some of it. He does not think he inhaled any of it. Within 2 minutes he began to feel pain on his hand and face. After about 10 minutes developed a severe burning sensation on his face and right hand where the chemical contacted his skin. He currently is in severe distress due to pain and repeatedly asks the paramedic to help with the pain.
- ii. Associated symptoms (given during review of systems): The patient complains of severe pain to the face and right hand but denies paraesthesia to the distal hand. Remainder of the review of systems is negative.
- iii. Initial Exam
 - 1. General: The patient is a well-developed 80kg adult male who is moaning in pain and appears very uncomfortable
 - 2. Pupils are equal. Normal vision. Moist mucous membranes.
 - 3. Cardiovascular: Tachycardic. No murmurs
 - 4. Respiratory: Breath sounds are clear and equally bilaterally. No wheezes, rhonchi or rales
 - 5. Abdominal: Soft, non-tender, non-distended. Normal bowel sounds
 - 6. Genitourinary: Normal appearing
 - 7. Neurological: Alert and oriented x3. Non-focal examination of gross motor function and sensation
 - 8. Skin: Face and right hand appear moderately red without signs of deep burns on examination. No crepitus. A small superficial laceration above the right eye. No other signs of blunt trauma are present.
- iv. Vital Signs - as noted above in “scenario background”.

c. Scenario Branch Points

- i. Decontamination. The learner should ask if the patient was decontaminated at the scene by the fire officer on arrival. The learner should specifically ask about the method of decontamination and duration of decontamination. Appropriate decontamination would include removing all clothing and jewellery, running clean water over the exposure site for 30 minutes. Dipotherene if present should be used – but only after confirmation by the Fire Officer on the appropriate use of the substance as this is not a regular intervention carried out by paramedic personnel. If all potentially contaminated clothing and/or jewellery is not removed, then the paramedic

(and anyone else who touches the patient's hand or contaminated clothing either with their bare hands or when wearing latex gloves) will develop a burning sensation on their hands. Instructors can consider then removing the provider who touched the uncontaminated patient's hand and replacing them with another unaffected provider. If the group is small, the instructor can advise the team that they are now noting a burning sensation in their hands to prompt decontamination. The use of a chemical-resistant glove can be used to safely touch the patient prior to adequate decontamination if the learners ask for such gloves.

- ii. Pain. If the learners give rapid analgesia, then the patient will report improvement (but not resolution) of his pain. If the patient is re-dosed with analgesia, he should become sleepy, not minimal improvement, ask as "isn't there anything else you can do?" as a prompt for a topical solution. If water gel is applied is provided, the patient will note complete resolution of pain. If, however, no analgesia is given then the patient will become more agitated and refuse to answer questions until his pain is addressed.
- iii. Hypocalcaemia: The lead paramedic should identify this as a potential issue.
- iv. Hyperkalaemia: The lead paramedic should identify this as a potential issue.
- v. Consultation of specialists: A toxicologist from the poison centre, a critical care consultant, and a burn surgeon will be available by telephone, but only after the patient has had a history and physical examination obtained and some form of treatment at least attempted.

XV. INSTRUCTOR NOTES:

- a. Scenario Flow – The instructor can interject the following information:
 - i. Key aspects of the case – Learners must recognise that the scenario is a dermal exposure to a high concentration of hydrofluoric acid. If learners progress through the scenario without identifying the hydrofluoric acid, the instructor may call the Fire Officer to intervene and robustly explain the toxic nature of the chemical. The fire officer should inform the lead paramedic that the hydrofluoric acid is likely 60% (industrial strength) and that he knows even a small amount could be deadly if not treated quickly. Also, recognition of the systemic toxicity of dermally absorbed hydrofluoric acid must occur early. If learners do not recognise the potential for hypocalcaemia and hyperkalaemia, the patient should become hypotensive, and the instructor can either show a wide complex tachycardia on telemetry.
 - ii. Assessment of Toxicity. The learners should recognize that this exposure is a potentially life-threatening exposure. High concentrations of hydrofluoric acid can cause systemic symptoms even with small amounts of exposure. The following concentrations and % body surface areas (BSA) have caused systemic toxicity (Greco *et al*, 1988):
 - >50% concentration HF of 1% BSA

- Any concentration HF >5% BSA
- iii. Consultations – If the learners are less advanced learners who have no knowledge of hydrofluoric acid toxicity, consultants can be more open and provide guidance at an earlier time. This is to encourage less advanced learners to seek expert consultation when they are unfamiliar with a condition.
- b. Scenario Programming – No advanced setting will be required for a manikin or high-fidelity simulator, other than manipulation of vital signs and the telemetry waveforms.

XVI. DEBRIEFING PLAN

- a. Method of Debriefing – The group will be debriefed immediately following completion of the scenario. All learners and educators should be present. Possible methods of debriefing may include:
 - i. Open-ended questions by facilitator – The facilitator should start by asking open-ended questions to encourage the learners to reflect on the scenario. Often asking “what went well”, followed by “what did not go well” and “what could you have done differently” will provide an organised debriefing roadmap and will allow the learners to process the scenario in an organised manner. Open ended questions will also encourage learners to share their thought processes and previous experiences with other learners.
 - ii. Review of critical and important actions for this case – The facilitator should be prepared to discuss the details of the case and the team’s management choices. However, the facilitator should be sure to not focus on minor details but place emphasis and encourage discussion of the important concepts related to hydrofluoric acid toxicity.
- b. Rules for debriefing – Learners should be provided a safe learning environment that supports open discussion and encourages questions. To do this the instructor should:
 - i. Begin by asking the group as a whole what went well. You can then ask the group what didn’t go well and how the process (not individual tasks) could have went better.
 - ii. Express to all learners that this is a challenging and uncommon clinical scenario, and that you did not expect the learners to manage this scenario perfectly.
 - iii. Encourage learners to think aloud and explain their thought processes.
 - iv. Encourage participation from all learners (even those who remain quiet)
 - v. Provide a summary of the key points and thank everyone for participating.
- c. Specific questions to facilitate debriefing:
 - i. What are the important clinical implications of exposure to hydrofluoric acid?
 - ii. What is the mechanism of toxicity for hydrofluoric acid?
 - iii. What are treatment priorities in a case of hydrofluoric acid exposure?

- iv. What challenges do you think you will face when managing someone with hydrofluoric acid toxicity?

XVII. References

- a. Garza, F, *et al.* (2012). Poisoning & drug overdose.
- b. Greco R, *et al.* Hydrofluoric acid-induced hypocalcaemia. *J Trauma*, (1988) 28, 1593-1596.
- c. Hoffman, R., *et al.* (2014). *Goldfranks Toxicologic Emergencies 10/E*. McGraw Hill Professional.
- d. Holstege, C, *et al.* The electrocardiographic toxidrome: the ECG presentation of hydrofluoric acid ingestion. *Am J Emer Med* (2005) 23, 171-176.

Appendix 4

Study Poster

LOOKING FOR VOLUNTEERS

Are you over 18?

Are you a Paramedic Student or a Paramedic Educator with the National Ambulance Service?

Are you interested in participating in research?

This study seeks to examine clinical educators' and students' experiences, views and interpretation of the clinical placement experience

If you are interested in participating, you will be asked to take part in a role play and simulation exercise and a focus group interview, which will take approximately 2 hours.

Participation in this study is completely voluntary. There is no obligation to participate. If you agree to take part in this study, you will be asked to sign a consent form before the study

This study has obtained ethical approval from the University of Winchester, the University College Cork Social Research Ethics Committee and the National Ambulance Service Research Committee.

If you have any queries about this research, you can contact me at:

David Hick d.hick.19@unimail.winchester.ac.uk

Appendix 5

Participant Information Sheet

Information Sheet

Thank you for considering participating in this research project. The purpose of this document is to explain to you what the work is about and what your participation would involve, so as to enable you to make an informed choice.

The purpose of this study is to examine clinical educators' and students' experiences, views and interpretation of the students' clinical placement experience. Should you choose to participate, you will be asked to take part in a focus group interview with a member of the research team. This interview will be audio-recorded and is expected to take 90 minutes to complete.

Participation in this study is completely voluntary. There is no obligation to participate, and should you choose to do so you can refuse to answer specific questions, or decide to withdraw from the interview. Once the interview has been concluded, you can choose to withdraw your details at any time in the subsequent two weeks.

All of the information you provide will be kept confidential and anonymous and will be available only to the research team and supervisors. The only exception is where information is disclosed which indicates that there is a serious risk to you or to others. Once the interview is completed, the recording will immediately be transferred to an encrypted laptop and wiped from the recording device. The interview will then be transcribed by the researcher, and all identifying information will be removed. Once this is done, the audio-recording will also be deleted and only the anonymised transcript will remain. This will be stored on the University of Winchester OneDrive system. The data will be stored for 10 years in line with normal University policy. The information you provide may contribute to thesis and/or research publications and/or conference presentations.

I do not anticipate any negative outcomes from participating in this study. At the end of the procedure, I will discuss with you how you found the experience and how you are feeling. Should you experience distress arising from the interview, the contact details for support services provided below may be of assistance.

This study has obtained ethical approval from the University of Winchester and the UCC Social Research Ethics Committee and the National Ambulance Service Research Committee.

If you have any queries about this research, you can contact me at:

David Hick

d.hick.19@unimail.winchester.ac.uk

Research Supervisor details:

Dr XXXXXX⁴

Senior Fellow

Institute of Education

University of Winchester

If you agree to take part in this study, please sign the consent form overleaf.

⁴ Names have been redacted.

Appendix 6

Participant Consent Form

Consent Form

I.....agree to participate in the research study conducted by David Hick.

The purpose and nature of the study has been explained to me in writing.

I am participating voluntarily.

I give permission for my interview with David Hick to be audio-recorded.

I understand that I can withdraw from the study, without repercussions, at any time, whether before it starts or while I am participating.

I understand that I can withdraw permission to use the data within two weeks of the interview, in which case the material will be deleted.

I understand that anonymity will be ensured in the write-up by disguising my identity.

I understand that should any substantive issues of concern regarding poor practice in agencies are raised by participants, general feedback will be passed to the gatekeeper for the programme for further investigation.

I understand that disguised extracts from the focus group interview may be quoted in the thesis and any subsequent publications if I give permission below:

(Please tick one box:)

I agree to quotation/publication of extracts from my interview

I do not agree to quotation/publication of extracts from my interview

Signed:.....

Date:

PRINT NAME:.....

Appendix 7

Process Outline

Full _Process outline:

1. Permission is sought from the gatekeeper. (XXXXXX, ⁵National Ambulance Service College).
2. Relevant, eligible participants are emailed an invitation containing information which will explain the reason for invitation, the recruitment process, the purpose of the focus group, data handling and use, and ground rules of the focus group. (Current BSc Paramedic Students & Education and Competency Assurance Officers @ Ballinasloe and Tallaght)
3. The focus groups shall be comprised of six-to-eight participants with a mix of stakeholders (educator and student), where possible.
4. The number of focus groups participating will be determined by the number of participants who choose to engage in the research. (Permission for 6 focus group sessions to be requested)
5. Participants who have elected to participate are invited to attend a focus group at an agreed time between the gatekeeper and the research team.
6. Invited participants, declines, dropouts, no shows and final participant inclusion numbers are documented.
7. A schedule of developed questions shall be used to standardise the steer of the focus group discussion across researchers and focus group sessions.
8. Focus groups are convened in a comfortable, accessible location. The duration of each focus group shall be approximately 1 hour 30 minutes.
9. A focus group facilitator and note taker will join the six to eight participants for the discussion.
10. The focus group will begin with a purpose outline, ground rule explanation and reaffirmation and explanation of confidentiality arrangements.
11. Participants will be required to confirm that they are voluntarily taking part, they have provided informed consent and that they may withdraw partially or fully at any time. Confirmation that this has been achieved will be documented via a sign in sheet.
12. Notes are taken from the focus group discussion. Recorded comments are not attributed to specific individuals; however, noting which stakeholder group (educator or student) the contributor belongs to shall be recorded.

⁵ Names have been redacted.

13. After each segment of questions or at the end of the focus group, the facilitator will summarise the emerging themes and request validation from the participants that it reflects their opinions and is an accurate representation of what they have shared.
14. At the end of each focus group, the facilitator and note taker shall meet to reflect on the discussion, share perspectives and record any further notes.
15. Coding is carried out using the group notes as raw data.
16. Subordinate themes are added to the analysis framework as they emerge, creating a coding tree using the software, ATLAS Ti.
17. An analysis of each focus group is added to the tree as it is completed.
18. After the completion of data collection, a summary will be compiled.

Appendix 8

Focus Group questions

Focus Group Interview Questions

Focus Group	Questions
Interview plan	Type of Question
Introduction	Verify participants understanding of study and consent to same. Remind participants on right to withdraw. Promote a relaxed atmosphere by making conversation
Ice break	Factual questions: e.g. What type of placement did you have? Was it in an ambulance or in a hospital setting?
Main Questions	<p>Following your clinical placement period, can you provide a word that encapsulates your experience in clinical placement as a student? Probe question: Can you tell me a little about why you chose that word?</p> <p>Did you understand your role and what was expected of you on your first day of clinical placement? Probe questions: Who welcomed you? Did you have to explain your reason for being there? Do you think they understood your learning need?</p> <p>What did mentorship/preceptorship mean to you prior to coming out on placement?</p> <p>What was your understanding of the stated learning outcomes in your learning and assessment during your clinical experience?</p> <p>What affects your ability to learn? Probe questions: Can you suggest something that could be changed to assist you with this?</p> <p>Did you receive an orientation to the environment? Probe questions: Did it include an introduction to your mentor/preceptor? Was everything new or did you see equipment you were familiar with?</p> <p>What did mentorship/preceptorship mean to you prior to coming out on placement?</p> <p>Did you take part in role-play and/or simulation prior to commencing your clinical placement? Probe questions: How similar was the role-play / simulation to the real thing? Did it / could it/ help you prepare better or get more from the placement?</p> <p>What do you know about role-play as simulation as a learning tool? Probe questions: What do you think of it? Was it valuable to you?</p> <p>Did you have the opportunity to achieve all the clinical learning outcomes in the clinical placement?</p>

	<p>Probe questions: Once or more? Do you feel that you have achieved a level of comfort or competency? What would help achieve comfort and/or competency</p> <p>Do you think you could have achieved competency more quickly if each learning outcome had been covered in a role-play / simulation exercise before you went on placement?</p> <p>Probe questions: can you explain why you say – yes / no</p> <p>Tell me a little about how your mentor/preceptor assisted you in achieving your learning outcomes?</p> <p>Probe question: Did your preceptor discuss tasks and new learning opportunities with you?</p> <p>Were you sufficiently prepared for clinical placement?</p> <p>Probe questions: Had you practised the required skill or competency using role-play or simulation? How did it compare?</p> <p>What did you like best about the clinical placement setting?</p> <p>What did you like least about clinical placement?</p> <p>If you were in charge of clinical placement training, what information in relation to student support and learning would you consider including in the programme?</p>
--	---

Focus Group	Questions
Main Questions	<p>Following your clinical placement period, can you provide a word that encapsulates your experience in clinical placement as a student?</p> <p>Did you understand your role and what was expected of you on your first day of clinical placement?</p> <p>What did mentorship/preceptorship mean to you prior to coming out on placement?</p> <p>What was your understanding of the stated learning outcomes in your learning and assessment during your clinical experience?</p> <p>What affects your ability to learn?</p> <p>Did you receive an orientation to the environment?</p> <p>What did mentorship/preceptorship mean to you prior to coming out on placement?</p>

<p>Did you take part in role-play and/or simulation prior to commencing your clinical placement?</p> <p>What do you know about role-play as simulation as a learning tool?</p> <p>Did you have the opportunity to achieve all the clinical learning outcomes in the clinical placement?</p> <p>Do you think you could have achieved competency more quickly if each learning outcome had been covered in a role-play / simulation exercise before you went on placement?</p> <p>Tell me a little about how your mentor/preceptor assisted you in achieving your learning outcomes?</p> <p>Were you sufficiently prepared for clinical placement?</p> <p>What did you like best about the clinical placement setting?</p> <p>What did you like least about clinical placement?</p> <p>If you were in charge of clinical placement training, what information in relation to student support and learning would you consider including in the programme?</p>
--

Appendix 9

MS Survey Questions

Phase 2 Microsoft Form - Survey Questions.

This study seeks to examine clinical educators' and students' experiences, views and interpretation of the clinical placement experience.

I would like to thank you again for your contribution thus far to this research study. As we now enter phase two, I ask that you take approximately five minutes to complete this questionnaire.

I would like to remind you that participation in this study is completely voluntary. There is no obligation to participate. This survey is completely anonymous and no personal information is captured.

This study has obtained ethical approval from the University of Winchester, the University College Cork Social Research Ethics Committee and the National Ambulance Service Research Committee. If you have any queries about this research, you can contact me at:

David Hick

d.hick19@unimail.winchester.ac.uk

Student Questions.

Considering your position before you experienced a clinical placement: - Options: Yes/No

I was prepared for clinical placement

I was provided with an orientation to the clinical placement site that I was assigned

I required orientation for each clinical placement site

I was aware of who my mentor was before I arrived at the clinical placement site

I had a set of defined learning outcomes to achieve while on placement

Considering your knowledge and experience of Role-Play and Simulation: Likert scale

Prior to the study I understood the difference between simulation and simulation with role-play

I took part in simulation exercises before I went on clinical placement

I took part in role-play exercises before I went on clinical placement

I took part in combined role-play and simulation exercises before I went on clinical placement

Did you experience a simulation experience or a role-play and simulation experience?

Branch questions served to one of the below listed cohorts as selected.

Combined Role-Play and Simulation

Simulation only

Considering your experience of Simulation and Role-Play during the research study: Likert scale

- I felt safe in the combined role-play and simulated environment
- I found it difficult to treat a manikin as a real patient
- Simulation and Role-Play improve my clinical reasoning and decision making
- Simulation and Role-Play improved my communication
- Pace and flow of the Simulation and Role-Play reflect a real clinical situation
- I feel that including role playing in the simulation experience would enhance my learning
- Simulation and Role-Play improved my confidence
- Combined Role-Play & Simulation Brings Learning to Life
- I received useful feedback on my performance
- I found the experience valuable
- I found the sessions provided relevant to my learning experience
- I would recommend this session to my peers
- Multiple exposures to the combined role-play and simulated environment would better prepare me for clinical placement
- Multiple exposures to the combined role-play and simulated environment could be used to reduce the time required for clinical placement
- I would be interested in attending further Simulation and Role-Play sessions

Considering your experience of Simulation during the research study: Likert scale

- I felt safe in the simulated environment
- I found it difficult to treat a manikin as a real patient
- Simulation improves my clinical reasoning and decision making
- Simulation improved my communication
- Pace and flow of the Simulation reflect a real clinical situation
- Do you feel that including the simulation experience enhanced your learning
- Simulation improved my confidence
- Simulation Brings Learning to Life
- I received useful feedback on my performance
- I found the experience valuable
- I found the sessions provided relevant to my learning experience
- I would recommend this session to my peers
- Multiple exposures to the simulated environment would better prepare me for clinical placement
- Multiple exposures to the simulated environment could be used to reduce the time required for clinical placement
- I would be interested in attending further Simulation and Role-Play sessions

Appendix 10

Phase 3 Educator Questions

Phase 3 Educator Questions

The following questions were issued to Educators only:

Educator Questions. Options: Yes/No

Prior to the study I understood the difference between simulation and simulation with role-play

Combined Simulation and Role-Play has the potential improve a student's clinical reasoning and decision making

Have you noticed any positive changes to the expected norm of students that may have occurred because of the simulation or combined simulation and role-play.

Have you noticed any negative changes to the expected norm that may have occurred because of the simulation or combined simulation and role-play.

Educator Questions contd. Options Likert scale

Students that undertook the role-play and simulation exercises are more confident

Students that undertook the simulation exercises are more confident

Students who experienced the role-play and simulation exercises appear to display a higher level of competence

Students who experienced the simulation only exercises appear to display a higher level of competence

Combined Role-Play & Simulation Brings Learning to Life for students and educators

Educator Questions contd. Free text

Would you like to make any free text comments on the combined role-play and simulation experience that you observed?

Appendix 11

Ethical and GateKeeper Approval Application Documents



ADAPTED FROM RESEARCH ETHICS FORM 3: FACULTY REVIEW FORM

Edd Pilot Study

GUIDELINES

This form is for staff and students. It will help you set out the ethical aspects of your project that need to be reviewed. Before completing it, you need to:

1. Read *The University Research Ethics Policy* (a link to this is in Section 5 of this form).
2. Discuss the ethical aspects of your project with your supervisor.

It is your responsibility to follow the University's Policy on the ethical conduct of research and to follow any relevant academic guidelines or professional codes of practice pertaining to your study when answering these questions. This includes providing appropriate information sheets and consent forms and ensuring confidentiality in the storage and use of data.

The questions in this proforma are intended to guide your reflection on the ethical implications of your re- search. Explanatory notes and further details can be found in the Policy document.

If any aspect of your project changes during the course of the research, you must notify the Chair of UREC.

SECTION 1

YOUR DETAILS			
1.1.	Your name: David Hick		
1.2.	Your department: Institute of Education		
1.3.	Your Faculty: Education		
1.4.	Your status:		
	<input type="checkbox"/> Undergraduate Student	<input type="checkbox"/> Staff (Professional Services)	
	<input type="checkbox"/> Taught Master	<input type="checkbox"/> Staff (Academic)	
	<input checked="" type="checkbox"/> Research Degree Student	<input type="checkbox"/> Other (please specify below)	
1.5.	Your university email address: d.hick.19@unimail.winchester.ac.uk		

1.6.	Your telephone number: [REDACTED]
	<u>For students only:</u>
1.7.	Your degree programme: EdD
1.8.	Your supervisor's name: [REDACTED]
1.9.	Your supervisor's department: Education
1.10.	Your supervisor's email: [REDACTED]@winchester.ac.uk

SECTION 2

YOUR RESEARCH		
2.1.	Project title: The application of combined role-play and simulation as a teaching strategy	
2.2.	Start date: September 2020	
2.3.	Expected completion date: April 2021	
2.4.	Expected location of data collection: University College Cork (e.g. school, workplace, public place, University premises etc.)	
2.5.	Has funding been sought for this research?	
	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
2.6.	If so, where have you applied for funding?	
2.7.	Has the funding been granted? N/A	
	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Pending
2.8.	Is the research collaborative? (e.g. co-investigators from another institution, at or with another organisation or colleagues in another department)	
	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	If yes, which?	
2.9.	Is Disclosure and Barring Service clearance required for your study? It is your responsibility to contact the Disclosure and Barring Service (DBS) to confirm whether or not clearance is needed prior to commencing recruitment or data collection. More information here	
	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
2.10.	Will your research be informed by guidelines from a professional association or specific, agreed standards of practice?	
	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	If yes, which? BERA (2018)	

SECTION 3

PROJECT DESCRIPTION
<i>This will be contained in your research proposal so it is not necessary to add any further information in this section.</i>

SECTION 4

REFINING THE LEVEL OF ETHICS REVIEW REQUIRED

<i>Please mark with an Z as appropriate by double clicking on the relevant boxes and selecting 'checked'. Please disregard the questions in grey highlight.</i>		YES	NO
1	Does the research involve members of the public in a research capacity as co-researchers? (I.e., as in participant research where involvement extends beyond data collection)	<input type="checkbox"/>	Z
2	Is there a risk of over-disclosure that may put the participants at risk or cause them any anxiety?	<input type="checkbox"/>	Z
3	Will tissue samples (including blood) be obtained from participants?	<input type="checkbox"/>	Z
4	Will the study require the co-operation of a gatekeeper for initial access to participants? (E.g. to students at school, to members of self-help group.)	Z	<input type="checkbox"/>
5	Is the right to withdraw from the study withheld at any time, or not made explicit?	<input type="checkbox"/>	Z
6	Is there any reason participants may feel obliged to participate in the study against their will?	<input type="checkbox"/>	Z
7	Will the research involve administrative or secure data that requires permission from the appropriate authorities before use?	<input type="checkbox"/>	Z
8	Will financial inducements (other than reasonable expenses and compensation for time) be offered to participants?	<input type="checkbox"/>	Z
9	Are there payments to researchers /participants that may have an impact on the objectivity of the research?	<input type="checkbox"/>	Z
10	Is there any cause for uncertainty as to whether the research will fully comply with the requirements of the General Data Protection Regulation (GDPR) (2018)?	<input type="checkbox"/>	Z
11	Does any part of the project breach any codes of practice for ethics in place within the organisation in which the research is taking place?	<input type="checkbox"/>	Z
12	Are drugs, placebos or other substances (e.g. food substances, vitamins) to be administered to the study participants? Please note: for fast track review, it is expected that the study will not involve invasive, intrusive or potentially harmful procedures of any kind.	<input type="checkbox"/>	Z
13	Is pain or more than mild discomfort likely to result from the study?	<input type="checkbox"/>	Z
14	Could the study induce psychological stress or anxiety or cause harm or negative consequences beyond the risks encountered in normal life? (E.g. involve prolonged or repetitive testing.)	<input type="checkbox"/>	Z

If your research design requires you to answer YES to any questions in the checklist other than Question 4 then after scrutiny by the Faculty Ethics Representative your project may be required to undergo full review by the University Ethics Committee.

SECTION 5

ADDITIONAL INFORMATION

Key documents to refer to in your review of the ethical aspects of your project: BERA (2018)

Ethical Guidelines for Educational Research (4th edn). London: BERA. Available at:

<https://www.bera.ac.uk/publication/ethical-guidelines-for-educational-research-2018>

Scallan, S. (2019) *RKE Ethics Policy and Procedures: University of Winchester*,

See in particular **Section 1.6** (page 5) Guidelines on ensuring compliance with The Data Protection Act 2018 and General Data Protection Regulation (GDPR)

Available at:

<https://intranet.winchester.ac.uk/information-bank/document-store/Published/RKE%20Ethics%20Policy%20and%20Procedures.pdf>

Please note that if the focus of your research requires vulnerable children be invited to participate in your research, please complete the additional section 'Engaging with vulnerable children in your research'. Vulnerable children could include those with Special Educational Needs, children who have suffered trauma, children who are in the care of the state etc. See the following link to guidance from the Children's Commissioner for further information:

<https://www.childrenscommissioner.gov.uk/wp-content/uploads/2017/07/CCO-TP2-Defining-Vulnerability-Cordis-Bright-2.pdf>

Should the focus of your research not require inclusion of vulnerable children in your sample then please could you check the background of all the children you intend to invite to participate so that you do not inadvertently include a child who could be considered vulnerable.

Please use the checklist below to structure your reflections on the ethical considerations within your research design.

Overarching questions to help you reflect on ethical aspects of your research design. Use these to help you address the questions in the checklist focussing on access, consent, withdrawing from the research process, confidentiality and anonymity, power imbalance and engaging with participant voice:

1. *Why do you plan to do your research in the way you have outlined in your research design? (rationale for your research design)*
2. *What impact will each aspect of your research design have on participants?*
3. *Is there any aspect of your research design that could be changed to enhance the experience of participants as they engage in the project? How would this impact on the data you are able to collect?*

Please select the EITHER FRAMEWORK 1 OR 2 for your research based on whether the participants require parents/carers to provide additional informed consent. FRAMEWORK 3 IS ONLY REQUIRED IF YOUR PARTICIPANTS ARE CONSIDERED TO BE VULNERABLE.

FRAMEWORK 1: Ethics Framework for EdD Pilot Study: Working with participants who require additional parent/carer consent to engage in the research

Access

If your research requires you to request permission from a gatekeeper to access research participants:
How will you ensure that the gatekeeper fully understands what you intend to do in your research? *E.g.*

- ▶ *Ensure that the wording and layout that all communication such as the project information sheet and letters make the information clear and accessible.*

Response:

A process exists within the National Ambulance Service whereby project approval must first be granted by the National Ambulance Service Research Committee. In order to submit an application for project approval ethical approval must first be obtained from the University of Winchester and also from the Social Research Ethics Committee at University College Cork.

Thus, the stepwise process is as follows:

Obtain university ethical approval. (Winchester University and University College Cork)

Obtain approval from National Ambulance Service Research Committee

Obtain permission from gatekeeper – (. XXXXXXX – Education & Competency Assurance; National Ambulance Service)

Note: An application to the Social Research Ethics Committee of University College Cork for ethical approval is required as I am a staff member.

Consent

1. How will you ensure that the participants fully understand what you intend to do in your research? *E.g.*
 - ▶ *Ensure that your project information sheet written in accessible language and is not too detailed. Consider if you need to have slightly different terminology in the information for participants cf. the gatekeeper. Check the layout is easy to navigate e.g. not too much dense text.*
 - ▶ *Provide opportunities for participants to ask questions about the research either face to face or via email.*

Response:

A Study poster and Project Information sheet has been constructed in plain clear language. See (Appendix 1 & 2) Before each focus group session an explanation of the study and the rights of participants will be reaffirmed. Participants shall have the opportunity to make direct inquiries before, during and after the focus group sessions. See (Appendix 5)

2. How will you ensure that the participants empowered to give informed consent to participate in the study? *E.g.*
 - ▶ *Normally this will take the form of written consent.*
 - ▶ *How will you empower participants to opt out of the research process? Consider how you will make clear that there will be no adverse consequences for those individuals who choose not to participate in the study.*

Response:

All participants shall be required to provide written consent. Contained on the consent sheet is a clear explanation that the participant may withdraw at any time without detriment.

This will be reaffirmed before, during and after each focus group session. The focus group sessions will take place at a location (Ballinasloe & Dublin) that the students are familiar and comfortable with.

Withdrawing from the research process: empowering participants

1. How will you empower participants so that they feel able to withdraw from the study should they wish to? Good research is respectful of the participants and their right to withdraw this is particularly important when working with children. E.g.
 - ▶ Make the possibility of withdrawing from the research very clear in the project information sheet and all communication such as letters.
 - ▶ Consider implementing a process of informal on-going consent throughout research needs to be considered.

Response:

The possibility of withdrawing from the research is very clearly explained in the project information sheet and the consent form. See (Appendix 1 & 2).

Participants will be reminded prior to the focus group session that their right to withdraw for no reason whatsoever is paramount and that they will not be challenged on their reason/s should they wish to withdraw from participation at any time.

2. Is the right of individuals to withdraw from the research clearly explained and are any time limits associated with this clear? E.g.
 - ▶ Often it is not possible to withdraw data once the data analysis phase has started and therefore a timeframe needs to be specified in the project information sheet when withdrawal from the research is possible.

Response:

Yes, the project information and consent sheet clearly identify's and explains that withdrawal extends to a timeframe of two weeks after the completion of the focus group session. After that time the data shall be coded and anonymised making it impossible to identify any individual participant and thus impossible to extract the data.

Confidentiality and anonymity

1. How will confidentiality be ensured in data storage? E.g.
 - ▶ All material that could identify individuals is kept secure on password-protected devices / locked file drawers.
 - ▶ Ensuring that audio recordings are not created unless specific written consent has been given by parents/carers.
 - ▶ IF COLLECTION OF VIDEO EVIDENCE IS NECESSARY the implementation of this must be discussed and agreed with your supervisor and the gatekeeper in the research context where your research will be carried out (if appropriate). Please reflect on the following in the ethics form: Explain how the secure storage of images will be ensured; that no copies of these images will be made; and that the images will be deleted immediately after you have carried out your analysis. Gain written consent from participants to gather video evidence.
 - ▶ If your study involves collection of photographic evidence, please ensure that any photographs that you take DO NOT INCLUDE:

*-anything that could enable identification of a particular individual, also anything else that could be associated with a particular individual;
-anything that could facilitate identification of the research context e.g. logos; notice/display boards in the background.*

Response:

The physically collected data will be converted to electronic format as soon as possible and original written documents (notes) shredded in a confidential method. This physical data shall be stored in a locked cabinet while the process of digitising the data is undertaken. Data will be converted to an anonymous form after 14 days and complete within 28 days. Once the interview is completed, the recording will immediately be transferred to an encrypted laptop and wiped from the recording device. The interview will then be transcribed by the researcher, and all identifying information will be removed. Once this is done, the audio-recording will also be deleted and only the anonymised transcript will remain. This will be stored on the University of Winchester OneDrive system.

2. How will confidentiality be ensured with regard to disclosure of potentially sensitive information? E.g.

- ▶ *Carry out careful scrutiny of all data to ensure that no sensitive information is included.*
- ▶ *Ensure that you are aware if there is a policy within the institution where you are carrying out your research regarding what to do if information is revealed by participants that may require action in relation to Safeguarding issues.*

Response:

Careful scrutiny of all data shall be undertaken to ensure that no sensitive information is included. Should any sensitive data be found, it shall be removed from the data and deleted.

Participants are informed, via the consent form that should any substantive issues of concern regarding poor practice in agencies are raised by participants, general feedback will be passed to the gatekeeper for the programme for further investigation”

3. How will anonymity be achieved in presentation of the data? E.g.

- ▶ *Ensure that both the research context and individual participants cannot be identified; use pseudonyms; do not include data in your findings that could identify an individual due to particular things they have said etc.*

Response:

Audio recordings will not capture names only views and opinions. This will be checked on transcribing and any names removed from transcriptions. Pseudonyms will be used if required to uphold confidentiality.

Considering power imbalance and engaging with participant voice

1. How will you take into account the potential for power imbalance that may impact on participants' responses? E.g.

- ▶ *Enabling participants to respond to questions via a questionnaire where their responses are anonymous*

Response:

Participants will be reminded prior to the focus group session that they should not feel in any way obliged to participate in the research. As per the National Ambulance Service policy the gatekeeper will highlight to the potential participants that this group event is entirely voluntary.

2. Are there opportunities within your research design for giving participants choices regarding how they participate in your research?

Response:

Participants may choose to abstain from any and all questions put to the focus group. The focus group moderator will only ever encourage participation from the wider "group" never directly focusing on a participant.

3. How could you provide opportunities for participants to engage with the findings from your research? E.g.
 - ▶ *Make the research findings available for participants and provide them with op- opportunities to comment*

Response:

This is a pilot study seeking to best prepare for a larger more in-depth study which will require additional participants taking part in combined role-play and simulation exercises. The intention of which is to better prepare students for clinical placement. It is envisaged that the students who participate in the pilot study will willingly participate as a part of their student journey.

The results of the pilot study shall be made available to the participants for comment and interaction.

Any other issues

Considering the research context and the safety of participants and yourself:

- ▶ *Ensure that you carry out your research in a place that is not isolated and consider any possible risks to yourself and participants.*
- ▶ *Consider whether a risk assessment needs to be carried out for any of the activities that you will carry out and if appropriate include this with your research proposal.*

Response:

The focus group sessions shall take place on campus at the National Ambulance Service College which is a safe and familiar location to all involved in the research. The gatekeeper and college support staff will be in the building during the focus group sessions.

Thinking about what your research will 'give back':

- ▶ *Are there any potential benefits of your research for the participants or education context where you will carry out the research?*
- ▶ *How could you enhance opportunities within your research design for making a positive contribution through your research?*

Response:

The student participants themselves will be undertaking a minor research project as a part of their syllabus. Being involved the process may be a useful experience.

If there are any other issues that you consider may be important in the development of the ethics within your study that have not been explored in other parts of this form, please reflect on them here:

Response:

SECTION 6

Please remember to append any forms or documents that may be relevant to your ethics review by copying and pasting them into this document:

- **Letters e.g. gatekeeper and to parents/carers and participants**
- **Consent forms**
- **Project information sheet**

Your form cannot be considered unless it is submitted with the required supporting documentation. Omitting to do so will delay the ethics review process.

PLEASE COPY AND PASTE SUPPORTING DOCUMENTATION HERE:

#1 Study Poster

https://unimailwinchesterac-my.sharepoint.com/:w:/g/personal/d_hick_19_unimail_winc-ter_ac_uk/EQTNrvGRj1dGiSbA9v6oIPYBgiu64i9UfHxUrPqSVIV9ww?e=fq0x2q

LOOKING FOR VOLUNTEERS

Are you over 18?

Are you a Paramedic Student or a Paramedic Educator with the National Ambulance Service?

Are you interested in participating in research?

This study seeks to examine clinical educators' and students' experiences, views and interpretation of the students' clinical placement experience.

If you are interested in participating, you will be asked to take part in a focus group interview, which will take approximately 90 minutes.

Participation in this study is completely voluntary. There is no obligation to participate. If you agree to take part in this study, you will be asked to sign a consent form before the study.

This study has obtained ethical approval from the University of Winchester, the UCC Social Research Ethics Committee and the National Ambulance Service Research Committee.

If you have any queries about this research, you can contact me at:

David Hick 

#2 Participant Information and Consent Sheet

https://unimailwinchesterac-my.sharepoint.com/:w:/g/personal/d_hick_19_unimail_winchester_ac_uk/Eafi4UsuR0hlydoO7uyEY8BI6ZwGNJSLa53kR35p7iRMQ?e=Cj0K1F

Information Sheet

Thank you for considering participating in this research project. The purpose of this document is to explain to you what the work is about and what your participation would involve, so as to enable you to make an informed choice.

The purpose of this study is to examine clinical educators' and students' experiences, views and interpretation of the students' clinical placement experience. Should you choose to participate, you will be asked to take part in a focus group interview with a member of the research team. This interview will be audio-recorded and is expected to take 90 minutes to complete.

Participation in this study is completely voluntary. There is no obligation to participate, and should you choose to do so you can refuse to answer specific questions or decide to withdraw from the interview. Once the interview has been concluded, you can choose to withdraw your details at any time in the subsequent two weeks.

All of the information you provide will be kept confidential and anonymous and will be available only to the research team and supervisors. The only exception is where information is disclosed which indicates that there is a serious risk to you or to others. Once the interview is completed, the recording will immediately be transferred to an encrypted laptop and wiped from the recording device. The interview will then be transcribed by the researcher, and all identifying information will be removed. Once this is done, the audio-recording will also be deleted and only the anonymised transcript will remain. This will be stored on the University of Winchester OneDrive system. The data will be stored for a 10 years in line with normal University policy. The information you provide may contribute to thesis and/or research publications and/or conference presentations.

We do not anticipate any negative outcomes from participating in this study. At the end of the procedure, I will discuss with you how you found the experience and how you are feeling. Should you experience distress arising from the interview, the contact details for support services provided below may be of assistance.

This study has obtained ethical approval from the University of Winchester and the UCC Social Research Ethics Committee and the National Ambulance Service Research Committee.

If you have any queries about this research, you can contact me at:

David Hick
d.hick.19@unimail.winchester.ac.uk

Research Supervisor details:

[REDACTED]
Senior Fellow
Institute of
Education
University of Winchester
[REDACTED]

If you agree to take part in this study, please sign the consent form overleaf.

Consent Form

I..... agree to participate in the research study conducted by David Hick.

The purpose and nature of the study has been explained to

me in writing. I am participating voluntarily.

I give permission for my interview with David Hick to be audio-recorded.

I understand that I can withdraw from the study, without repercussions, at any time, whether before it starts or while I am participating.

I understand that I can withdraw permission to use the data within two weeks of the interview, in which case the material will be deleted.

I understand that anonymity will be ensured in the write-up by disguising my identity.

I understand that should any substantive issues of concern regarding poor practice in agencies are raised by participants, general feedback will be passed to the gatekeeper for the programme for further investigation.

I understand that disguised extracts from the focus group interview may be quoted in the thesis and any subsequent publications if I give permission below:

(Please tick one box:)

I agree to quotation/publication of extracts from my interview

I do not agree to quotation/publication of extracts from my interview

Signed: Date:

PRINT NAME:

#3 Focus Group Ground Rules

https://unimailwinchesterac-my.sharepoint.com/:w:/g/personal/d_hick_19_unimail_winces-ter_ac_uk/ETQ_muffEf9EiBq071DaN_IBP-5YfPyUkb5yUDj2H3Q3mw?e=K4jG1B

Ground Rules

Ground Rules for Focus Group Interviews

1. Maintain confidentiality, everything said in the group remains in the group.
2. Participants are invited to freely express their opinions without consequence.
3. The purpose of the focus group is to engage in constructive/productive dialogue and feedback. Therefore, everyone's opinion matters. You don't need to agree with others, but you must listen respectfully as others share their views
4. Be respectful of other participants' opinions.
5. Participants have the right to question for clarity.
6. Mobile phones to be placed on silent or turned off during focus group discussion.
7. Participants are free to leave at any stage throughout the discussion.

Thank you.

#4 Gatekeeper request letter

https://unimailwinchesterac-my.sharepoint.com/:w:/g/personal/d_hick_19_unimail_winces-ter_ac_uk/EfzmhxxMB8tlqaXWr2k8EyIBOoG_CA30iY6e3F1cJX-L9g?e=Db8nD7

[REDACTED]
National Ambulance Service College
Health Service Executive
Rivers Building,
Tallaght, Dublin 24
D24 XNP2

Dear [REDACTED]

I am writing to ask your permission to conduct research at both National Ambulance Service College training locations for a pilot study entitled ***An exploration of clinical educators' and students' experiences, views and interpretation of the paramedic students' clinical placement experience***, which has been given ethical clearance under reference [REDACTED]

This research is being conducted by David Hick, a research student from the University of Winchester as part of a Professional Doctorate in Education. The study has been approved by the University of Winchester, University College Cork and the National Ambulance Service Research Committee and, as part of that approval process, I am required to obtain gatekeeper permission from sites where I recruit or test participants. I would like to conduct a total of six focus group sessions at the two locations (Ballinasloe & Tallaght) between October and December 2020.

The aim of this study is to investigate the student paramedic clinical placement experience (more details can be found in the attached Participant Information Sheet. The project consists of a focus group interview, made up students and educator participants with each session taking approx. 90 minutes).

If you are willing to be involved, would you please sign the form below that acknowledges that you have read the Participant Information Sheet, you understand the nature of the study being conducted and the risks and likely benefits of participation in this study, and you give permission for the research to be conducted at the site.

Yours sincerely

David Hick

David Hick.

I [REDACTED] of the National Ambulance Service College having been fully informed of the nature of the research to be conducted in the study entitled: ***An exploration***

of clinical educators' and students' experiences, views and interpretation of the paramedic students' clinical placement experience, give my permission for the study to be conducted. I reserve the right to withdraw this permission at any time.

Signature:

Date:

#5 Process Outline

https://unimailwinchesterac-my.sharepoint.com/:w:/g/personal/d_hick_19_unimail_winc-ter_ac/Ed1RT2zaH9BBi1Dec-7r-kABXkUggmxE9K00b02YlwKxeg?e=2O98C0

Full _Process outline:

1. Permission is sought from the gatekeeper. (XXXXXXX, National Ambulance Service College).
2. Relevant, eligible participants are emailed an invitation containing information which will explain the reason for invitation, the recruitment process, the purpose of the focus group, data handling and use, and ground rules of the focus group. (Current BSc Paramedic Students & Education and Competency Assurance Officers @ Ballinasloe and Tallaght)
3. The focus groups shall be comprised of six-to-eight participants with a mix of stakeholders (educator and student), where possible.
4. The number of focus groups participating will be determined by the number of participants who choose to engage in the research. (permission for 6 focus group sessions to be requested)
5. Participants who have elected to participate are invited to attend a focus group at an agreed time between the gatekeeper and the research team.
6. Invited participants, declines, dropouts, no shows and final participant inclusion numbers are documented.
7. A schedule of developed questions shall be used to standardise the steer of the focus group discussion across researchers and focus group sessions.
8. Focus groups are convened in a comfortable, accessible location. The duration of each focus group shall be approximately 1 hour 30 minutes.
9. A focus group facilitator and note taker will join the six to eight participants for the discussion.
10. The focus group will begin with a purpose outline, ground rule explanation and reaffirmation and explanation of confidentiality arrangements.

11. Participants will be required to confirm that they are voluntarily taking part, they have provided informed consent and that they may withdraw partially or fully at any time. Confirmation that this has been achieved will be documented via a sign in sheet.
12. Notes are taken from the focus group discussion. Recorded comments are not attributed to specific individuals; however, noting which stakeholder group (educator or student) the contributor belongs to shall be recorded.
13. After each segment of questions or at the end of the focus group, the facilitator will summarise the emerging themes and request validation from the participants that it reflects their opinions and is an accurate representation of what they have shared.
14. At the end of each focus group, the facilitator and note taker shall meet to reflect on the discussion, share perspectives and record any further notes.
15. Coding is carried out using the group notes as raw data.
16. Subordinate themes are added to the analysis framework as they emerge, creating a coding tree using the software ATLAS Ti.
17. An analysis of each focus group is added to the tree as it is completed.
18. After the completion of data collection, a summary will be compiled.

Addendum.

Online Survey.

Background.

Following Focus Group data collection, a pamphlet shall be given to the participants thanking them for their participation and requesting that they provide an email address to take part in an online Survey three months later. The purpose of which is to allow participants to contribute additional data, having had some time to reflect on the experience. Additionally, this survey will allow for a deeper analysis and also contribute to the robustness and validity of the research.

The email address capture and the online survey shall be conducted using Microsoft Forms, an integral part of the University of Winchester technology stack available to students.

The email address shall only make the participants aware of the survey address and that the survey is active. No personal information shall be requested during participation of the online survey. The survey will be anonymous.

The survey instrument shall be developed from the data provided after the initial analysis of the Focus Group data.

#6 Online Survey

Firstly, I would like to sincerely thank you for your time and participation in the Focus Group research.

Voluntary participant registration.

Firstly, I would like to sincerely thank you for your time and participation in the Focus Group research.

As a part of the overall study I would like to seek your opinions three months after the Focus Group research. The reason for this is:

1. you may wish to contribute additional data or
2. you may, having had some time to reflect on the experience, have new thoughts that you wish to share.
3. the responses received from the survey will contribute to the robustness and validity of the research.

The survey should take approximately 10 minutes and is anonymous. The email address you provide today is to allow for an invitation to participate to be sent in three months' time and will not be used for any other purpose.

As with the Focus Group research your participation in this part of the study is completely voluntary. There is no obligation to participate. If you agree to take part in this study, you will be asked to provide your email address so that we may contact you three months after your participation in the Focus Group research.

This study has obtained ethical approval from the University of Winchester, the UCC Social Research Ethics Committee and the National Ambulance Service Research Committee.



To participate please scan the QR code below or use the below hyperlink

<https://forms.office.g...>



If you have any queries about this research, you can contact me at:

David Hick d.hick.19@unimail.winchester.ac.uk

DECLARATION	
<p>I have read and understood the University of Winchester Research Ethics Policy and confirm that adequate safeguards in relation to the ethical issues raised by this research can and will be put in place. I am aware of and understand University procedures regarding Health and Safety. I understand that the ethical aspects of this project may be monitored by the University Research Ethics Committee.</p> <p>I understand my responsibilities as a researcher as described in the University of Winchester Research Ethics Policy.</p>	
<p>I declare that the answers above accurately describe the research as presently designed and that a new application will be submitted should the research design change in a way which would alter any responses given here.</p>	
<p>I confirm that if a Risk Assessment is required I will complete it and have it co-signed by my Supervisor or Head of Department before data collection takes place.</p>	
<p>I confirm that, if DBS clearance is required for my project, then I will seek it before the start of my project.</p>	
<p>I confirm that my research does not include risks that might cause it to be excluded from coverage by the University's insurers.</p>	
<p>Researcher's signature:</p> <p><i>David Hick</i></p>	<p>Date: 03.08.2020</p>
<p>Please submit this form to your supervisor via email as a Word document</p>	
<p>For the supervisor: The student has the skills to carry out the proposed research. I undertake to monitor the student's adherence to the relevant research guidelines and codes of practice.</p>	
<p>Supervisor's signature:</p> <p></p>	<p>Date: 4/8/2020</p>
<p>Faculty Ethics Representative Signature: -</p>	<p>Date: 10 August 2020</p>
<p>Pilot Study Module Leader Signature:</p> <p></p>	<p>Date: 04/08/20</p>