An Evaluation of Novel Methodologies to support Reflective Practice among Pre-Hospital Emergency Care Practitioners.

By

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Thesis submitted for the award of Doctor of Education.

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Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of Doctor of Education is entirely my own work, and that I have exercised reasonable care to ensure that the work is original, and does not to the best of my knowledge breach any law of copyright, and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

Signed: *C. O'Connor.*   Date: 26th October 2017.

Christopher O'Connor.   ID Number: 12211686.

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Dedication.

To Mum, and in memory of Dad.

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List of Abbreviations.

AHA   American Heart Association

ALS   Advanced Life Support

BLS   Basic Life Support

BP   Blood Pressure

AP   Advanced Paramedic

CPC   Continuous Professional Competence

CPR   Cardiopulmonary Resuscitation

DFB   Dublin Fire Brigade

EMS   Emergency Medical Services

EMT   Emergency Medical Technician

HCPC   Health and Care Professions Council (UK)

HSE   Health Service Executive

ILCOR   International Liaison Committee on Resuscitation

IO   Intraosseous

IV   Intravenous

NAEMSE   National Association of EMS Educators (USA)

NAS   National Ambulance Service

NQEMT   National Qualification in Emergency Medical Technology

NREMT   National Registry of Emergency Medical Technicians (USA)

OSCE   Objective Structured Clinical Examination

PCR   Patient Care Report

PHECC   Pre-Hospital Emergency Care Council

ROSC   Return of Spontaneous Circulation

RTC   Road Traffic Collision

Abstract.

Christopher O'Connor.

An Evaluation of Novel Methodologies to support Reflective Practice among Pre-Hospital Emergency Care Practitioners.

Background:
In the education of pre-hospital emergency care practitioners in Ireland, it is only in the last decade that the notion of reflective practice has been tentatively approached as a strategy for learning. Until recently it has largely been ignored as practitioners and educators alike have been slow to engage with this new way of learning.

The purpose of this research project is to examine the value of employing novel methodologies, such as reflective discussion of real-life patient encounters, the use of audio-visual recording technology in medical simulation and real-life patient encounters, to facilitate reflection in order to support reflective learning and reflective practice, both individually and collaboratively, among pre-hospital emergency care practitioners.

Literature:
The research was informed by reviewing literature from a number of areas including: Adult Learning, Reflective Practice, Educational Research directly relating to Emergency Medical Services (EMS), and EMS & Nursing Journals and publications.

Methodologies:
An action research model consisting of three cycles was employed. Data was collected via an online survey questionnaire, and by conducting a series of semi-structured interviews with various stake-holders. These included all three clinical levels of pre-hospital emergency care practitioners and educators from emergency service providers, private ambulance services, and voluntary organisations.

Findings:
Many practitioners consider themselves to be reflective practitioners. However, very few of them use a structured model of reflection.
Reflection, and reflective practice are not part of the education standards for practitioners in Ireland, and consequently receive very little attention in most education programmes.
All three new methodologies were deemed to be beneficial by practitioners and educators alike.
Collaborative forums were also found to be beneficial, although concerns were raised about their potential for abuse and misuse.

Recommendations:
Reflective practice to be included in the education standards for all levels of practitioners in Ireland.
Education for course faculty regarding reflection, reflective learning, and reflective practice.
Audio-visual recording of simulated scenarios to be available to students and practitioners to facilitate reflection.
A learning contract to be in place prior to any collaborative forums.

Chapter 1

Introduction

1. 1. Introduction.

The term 'reflective practice' seems to have been around forever. However, it has only been as recently as the mid 1980's that reflective practice has been formally acknowledged and adopted, particularly in nursing education, as a key strategy for learning. Influenced by the work of Schön (1983), who identified reflective practice as one of the main ways in which professionals learn, it has become one of the cornerstones of medical education for nurses, doctors, and many of the other allied healthcare professions.

In the area of Pre-Hospital Emergency Care in Ireland, it is only in the last decade that the notion of reflective practice has been tentatively approached. Indeed until recently it has largely been ignored as practitioners and educators alike have been slow to engage with this new way of learning, preferring the 'old school' tried and trusted 'sage on the stage' style of teaching and learning methodologies. Now however, regulatory bodies such as the Pre-Hospital Emergency Care Council (PHECC) in Ireland, and the Health & Care Professions Council (HCPC) in the UK, have begun to offer Continuous Professional Competency (CPC) education points for case studies, reflections and reflective journals and consequently this validation by the main statutory regulators has ignited interest and curiosity around the process of learning through reflective practice.

The purpose of this research project is to examine the value of employing novel methodologies, such as reflective discussion of real-life patient encounters, the use of audio-visual recording technology in medical simulation and real-life patient encounters, to promote reflection in order to support reflective learning and reflective practice, both individually and collaboratively, among pre-hospital emergency care practitioners so as to improve patient care.

In this chapter, I will outline the context in which my research project is set and the background to my research project. I will also describe the roles I have played within the organisations involved in this project.

In Chapter Two, I will undertake a review of the literature relevant to my research project. My research will be informed by reviewing literature from a number of areas including: Adult Learning, Reflective Practice, Emergency Medical Services (EMS) and Nursing Journals & publications, and Educational Research directly relating to EMS from organisations such as National Association of EMS Educators (NAEMSE) and the National Registry of EMT's (NREMT) in the USA, and the College of Paramedics (COP) in the UK.

I will also be drawing upon my own experience and referring to my own unpublished research and work relating to the use of Reflective Practice as a means of evaluating and improving clinical practice.

In Chapter Three, I will describe the Research Design I have chosen, and outline the rationale for my chosen preferences. The ethical issues relating to my research are also addressed in this chapter.

In Chapter Four, I will present the findings of my investigation and in Chapter Five, I will discuss the issues emerging from the research findings, and outline my conclusions and recommendations.

1. 2. Context - Pre-Hospital Emergency Care in Ireland.

In Ireland all Ambulance Services and other providers of Pre-Hospital Emergency Care are regulated by the Pre-Hospital Emergency Care Council (PHECC).

Aims and Vision

Our Mission
The Pre-Hospital Emergency Care Council protects the public by independently specifying, reviewing, maintaining and monitoring standards of excellence for the safe provision of quality pre-hospital emergency care.

Our Vision
That people in Ireland receive the most appropriate pre-hospital emergency care.
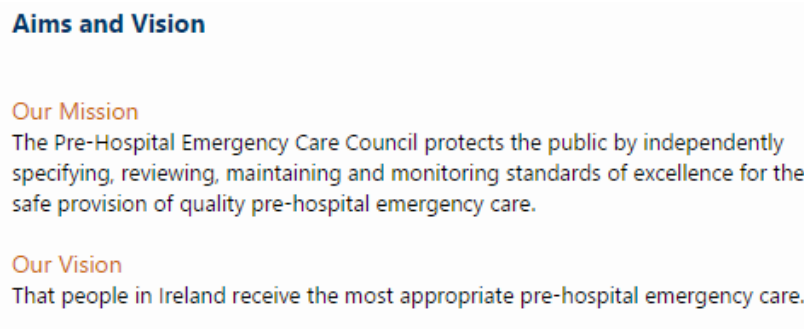
Figure 1.1. Mission and Vision Statements of the Pre-Hospital Emergency Care Council (PHECC, 2016).

To become an approved provider of pre-hospital care, organisations must demonstrate adherence to a rigorous set of standards specified by PHECC. PHECC registered service providers may be divided into four categories:

- Statutory Service Providers- These are organisations who are funded directly by the state in order to provide emergency medical services. For example: Health Service Executive (HSE) National Ambulance Service (NAS), and Dublin Fire Brigade (DFB).

- Voluntary Service Providers- 'Not-for-profit' organisations who provide pre-hospital emergency care, such as Irish Red Cross, Order of Malta and St John Ambulance.

- Private Service Providers- Private registered companies who provide pre-hospital emergency care. For example: Medicall Ambulance Service, Event Medical Services, etc.

- Auxiliary Service Providers- These are organisations whose primary purpose is to provide rescue services, and emergency care forms an element of the service they provide. For example: Civil Defence, Defence Forces, Dublin Airport Authority, etc.

As the regulator, PHECC also sets education and training standards for pre-hospital responders and practitioners. There are three basic responder standards, and three Practitioner standards set by PHECC. These are shown in figures 1.2. and 1.3.

Responder Level	Description
Cardiac First Response (CFR)	The cardiac first responder is trained in the skills of cardiopulmonary resuscitation (CPR) and in the use of an automated external defibrillator (AED). These responders often respond as part of a local volunteer CFR groups to patients who have suffered suspected acute coronary events. They can provide life-saving skills in advance of the arrival of the emergency medical services (EMS).
First Aid Response (FAR)	FAR is the foundation first aid standard. First Aid Responders often volunteer by providing occupational first aid within their workplace.
Emergency First Response (EFR)	The emergency first responder undertakes a much more comprehensive training programme so that they may respond to a wide variety of medical and trauma emergencies. The EFR also possesses the appropriate knowledge and skills so that they may safely assist with the administration of certain prescribed medications. Many members of the Voluntary Service Providers and Retained Fire Services are trained to the EFR standard.

Figure 1.2. PHECC Responder Levels (PHECC, 2016).

Practitioner Level	Description
Emergency Medical Technician (EMT)	Emergency Medical Technicians (EMT) are trained emergency care practitioners. The EMT is trained to manage patient care in inter- facility and pre-hospital emergency care settings. The PHECC standard for EMT includes patient assessment skills in addition to more thorough patient care and management skills. An EMT is the minimum practitioner grade that is trained for transporting inter-facility patients.
Paramedic (P).	Paramedics are skilled emergency medical care practitioners who are trained to a high level of professional competence. They possess a higher skill set in terms of patient assessment and management, and have authorisation to provide a greater range of medications.
Advanced Paramedic (AP)	The AP is a highly skilled and experienced emergency care practitioner who is regarded as an expert in the field of pre-hospital emergency care.

Figure 1.3. PHECC Practitioner Levels (PHECC, 2016).

PHECC maintains the professional register of pre-hospital emergency care practitioners. Practitioners who achieve the standard at their respective level (EMT, P, or AP) are awarded the National Qualification in Emergency Medical Technology (NQEMT), and are eligible to apply for inclusion on the PHECC register at the appropriate level.

1. 3. Context - My Role in EMS.

I have been involved in EMS in Ireland since 1986 when I joined the Irish Red Cross as a volunteer. Since then I have acquired a substantial body of experience and qualifications, both clinical and academic, as a practitioner and as an educator. I hold Advanced Life Support (ALS) Paramedic credentials in Ireland, UK and USA, and I am registered with PHECC as a Tutor. In my current role with Red Cross as an Area Training Officer I facilitate

Education Programmes for EMTs, EFRs, and First Aiders, and I also continue to volunteer as an Advanced Paramedic.

In addition to my role with Red Cross I work as an Advanced Paramedic with Event Medical Services, a private company who provide medical support services at a wide range of large public events such as, music festivals, concerts, sporting events, etc.

At the commencement of this project I was employed by Medicall Ambulance Service as their Education and Practice Development Manager. Founded in 1993, Medicall is the longest established Private Ambulance Service in Ireland. Operating a fleet of 18 ambulances from bases in Dublin, Cork, Tralee, Galway, Limerick and Letterkenny, Medicall employ 60 full-time staff, most of whom are Emergency Medical Technicians (EMTs), Paramedics and Advanced Paramedics (APs). In addition, there are approximately 40 part-time EMT's, Paramedics and AP's who are employed on a part-time basis. The inter-facility transfer of patients comprises the majority of the work carried out by Medicall. In addition to this work, emergency ambulance cover is provided at a wide variety of large scale public events such as music festivals, football matches, motor sport, etc. All of Medicall's EMTs, Paramedics and APs are registered as pre-hospital emergency care practitioners with the PHECC.

At the time my role within the organisation was a newly established one. Among other responsibilities I ensured that all clinical staff remained competent, and provided educational opportunities so that they could develop their clinical practice. I was also responsible for overseeing the delivery of EMT Education and Continuous Professional Competency (CPC) Education for EMTs, Paramedics and APs from outside of the organisation on a commercial basis.

Managing Director

Operations Director

Finance Manager

Finance Administration

Education & Practice Development Manager

Medical Director

General Manager

Training Co-Ordinator/ Tutor & Student Liaison

Operations Supervisor

Dispatch Staff

Ambulance Crews
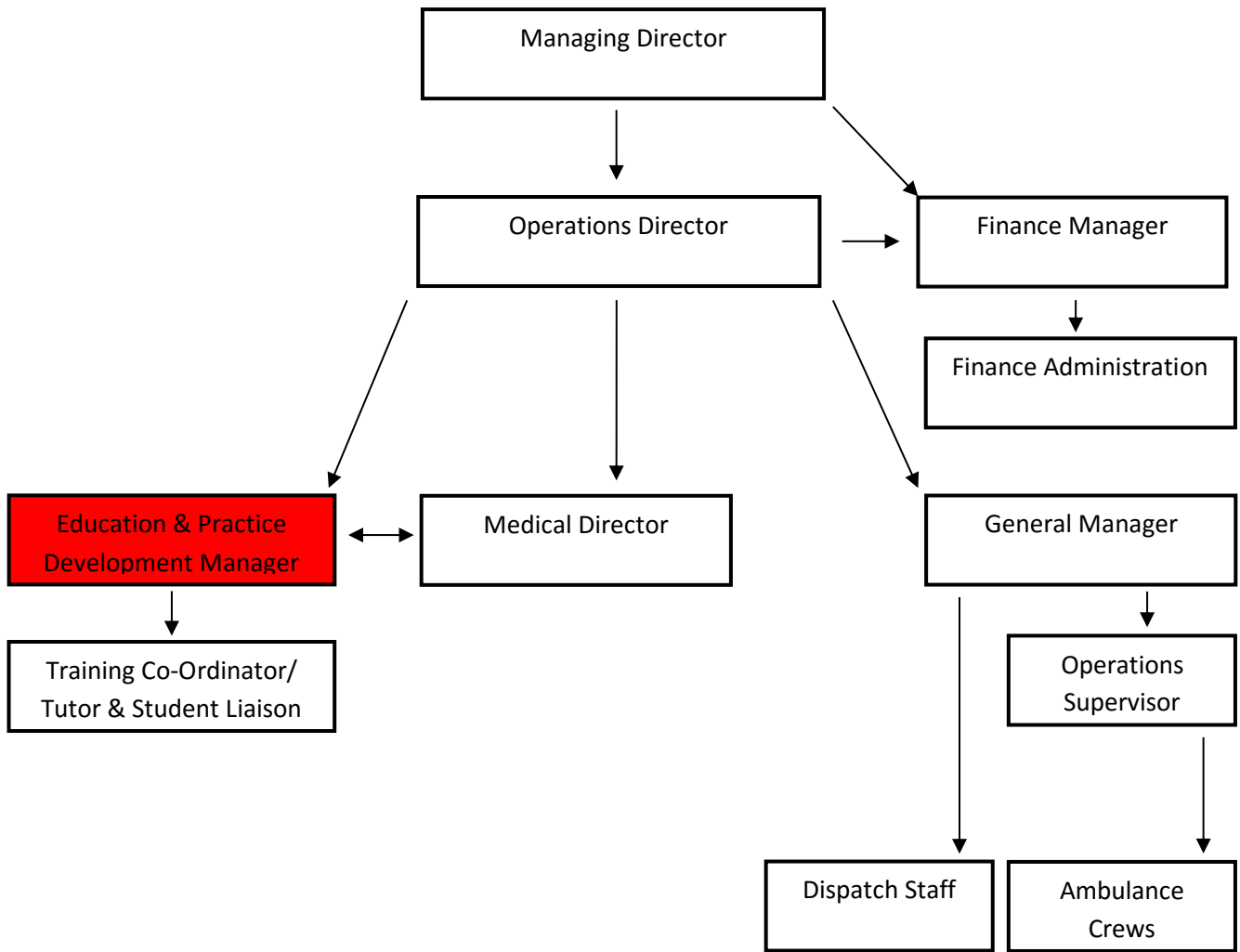
Figure 1.4. Organisation Structure - Medicall Ambulance Service.

1. 4. Background to my Research Project.

It is considered important that all practitioners remain in good standing on the PHECC register, and that they are up-to-date with the latest PHECC Clinical Practice Guidelines (CPG's). The reasoning behind this is that they promote evidence-based best-practice in line with international standards. It must be acknowledged however that this does not guarantee that they remain competent in the performance of their clinical skills. Particularly in an organisation like Medicall where most of the work is of a non-emergent nature, or in Red Cross where the work is generally of a low acuity in nature, there is an increased likelihood of clinical skills deterioration due to lack of exposure to emergency medical situations.

The issue of clinical skills deterioration is well recognised. There exists a substantial amount of research around Resuscitation skills, from the early work of Kaye and Mancini (1986) to the latest scientific guidelines from the American Heart Association (AHA) and the International Liaison Committee on Resuscitation (ILCOR) (Neumar et al, 2015), all of which demonstrates evidence of rapid skills deterioration. Bhanji et al (2010, p. S923) write,

> There is substantial evidence that basic and advanced life support skills decay rapidly after initial training. Basic skills have been shown to deteriorate when assessed at 1 to 6 months.

In my experience the issue of skills deterioration is an uncomfortable fact of life that many healthcare professionals are either unaware of or simply choose to ignore. Chamberlain, Hazinski et al (2003) agree,

> Healthcare professionals are reluctant to attend BLS courses, although numerous studies have shown that they are not uniformly proficient in BLS skills. Their level of skills retention is variable and generally poor.

At a staff education day, during scenario-based 'simulation' sessions, I noticed sub-optimal performance of practical skills and what appeared to be a lack of confidence among staff in dealing with simulated emergency situations. When the group returned to the plenary session

I invited a 'show of hands'. I asked the group: 'In the last two years, how many of you have treated a patient suffering from an Acute Myocardial Infarction (a heart attack)'? No hands were raised. 'A Cardiac Arrest'? Again, no hands were raised. 'A Lower-limb Fracture'? Once again, no hands were raised. This gave me cause for concern because in a 'life or death' situation, the last thing that a sick or injured patient needs is to encounter a 'ring-rusty' Paramedic crew with a crisis of confidence.

So the question at the heart of my research is: How do I, as Education and Practice Development Manager, and Area Training Officer, ensure that practitioners who have a relatively low exposure to high acuity situations, remain competent and confident with their pre-hospital emergency care skills?

In this instance, I believed that a good place to start would be to examine, reflect upon, and evaluate our performance in 'real life' clinical situations and to share the experiences gained among peers. I believed that this would be beneficial as it would allow EMS professionals to:

- learn lessons that will improve clinical practice.
- share knowledge and experiences.
- identify education needs by 'quantifying' clinical interventions.
- identify operational issues relating to practice.
- evaluate new technologies relating to practice.

During the course of this research process I have endeavoured to evaluate and improve our clinical practice using the following methodologies:

- Reflective Discussion Forum.
- Medical Simulation with Audio-visual recording.
- Audio-visual recording of real life patient-care encounters.

Reflective Discussion Forum. I convened a regular Reflective Discussion Forum for all staff, where data collected from the Patient Care Report (PCR) forms was presented and discussed. Specific cases involving high acuity patients were selected for presentation so that knowledge relating to these cases could be shared with the practitioners who hadn't been regularly exposed to similar high acuity patient care experiences. Participants were encouraged to speak freely in a supportive and non-judgmental atmosphere so that the facts surrounding each case could be established, and that any lessons might be learned, and that any new knowledge might be shared among the group. It had been agreed in advance that any adverse issues that arose would be dealt with in a supportive manner. This final point is an extremely important one. Practitioners reporting an adverse event must be confident that they will be supported by their line-managers. I have previously worked in an organisation where in the case of an adverse event the practitioners involved have been, metaphorically speaking, 'hung out to dry' rather than supported. This has led to a culture of secrecy, one where mistakes are hidden for fear of serious consequences. In this situation potentially life-threatening events are 'covered up' and go unreported. The result of this is that the risk to patient safety remains in place, and no learning takes place either at an individual or an organisational level.

In another previous role, along with a colleague, I found the process of regular Reflective Discussion to be very effective, both as a learning opportunity for staff, and as a means of improving clinical practice in the management of Cardiac Arrest patients (Kennedy and O'Connor, 2010, 2011 and 2012).

Medical Simulation with Audio-visual recording. While the reflective discussion forum has proven to be a useful exercise, I was aware that while practitioners shared their experiences of a patient encounter, they were sharing *their perspective* of the events that transpired. Fanning and Gaba (2007, p. 122) describe this as 'hindsight bias'. In order to gain insight into what had *actually* transpired I decided that the best approach would be to audio-visually

record a series of simulated medical emergency scenarios. Simulation has become an important teaching methodology in healthcare education. With simulation the facilitator attempts to recreate a real-life patient-care encounter as closely as possible using simulated environments, actors, high-fidelity manikins, etc., so that the student may have a truly immersive experience. By recording the patient-care scenarios the student was presented with the opportunity to review their actual performance, as opposed to their perception of their performance, as part of the reflective process.

Audio-visual recording of real life patient-care encounters. Even in the very best simulated environments the students are aware that the situation isn't 'for real'. Up until now, a student's performance in a real-life situation has been assessed by a preceptor who accompanies them during patient-care encounters. Again this situation doesn't provide a 'real-life' experience for the student, as the preceptor is present should the inexperienced student run into difficulty. The truth is that it is impossible to know how well a student paramedic, or indeed a seasoned practitioner, will perform when working alone because once the back door of the ambulance has been closed nobody truly knows for sure what happens within. So, the only way to gain insight into how well a student, or a practitioner, performs on their own in a real-life situation is to review an audio-visual recording of an actual patient-care encounter and allow them the opportunity to reflect upon the recorded audio-visual footage.

By adding these three methodologies into the Clinical Audit process as outlined below in figure 3, we as students and practitioners can gain a greater understanding of our practice. It also affords the organisation an opportunity to evaluate the appropriateness and the overall effectiveness of our education programmes. While good student feedback and examination results are important, we can only truly evaluate the effectiveness for our education programmes by assessing changes in student's behaviour in their daily practice An additional

important set of indicators are the overall results of the education programme which must also be rigorously assessed (Kirkpatrick, 1998). In other words we must ask if our education programme has resulted in better Paramedic Practice, better patient care, and improved patient outcomes? These are a critical set of questions that this study as a whole will attempt to answer in the coming chapters.
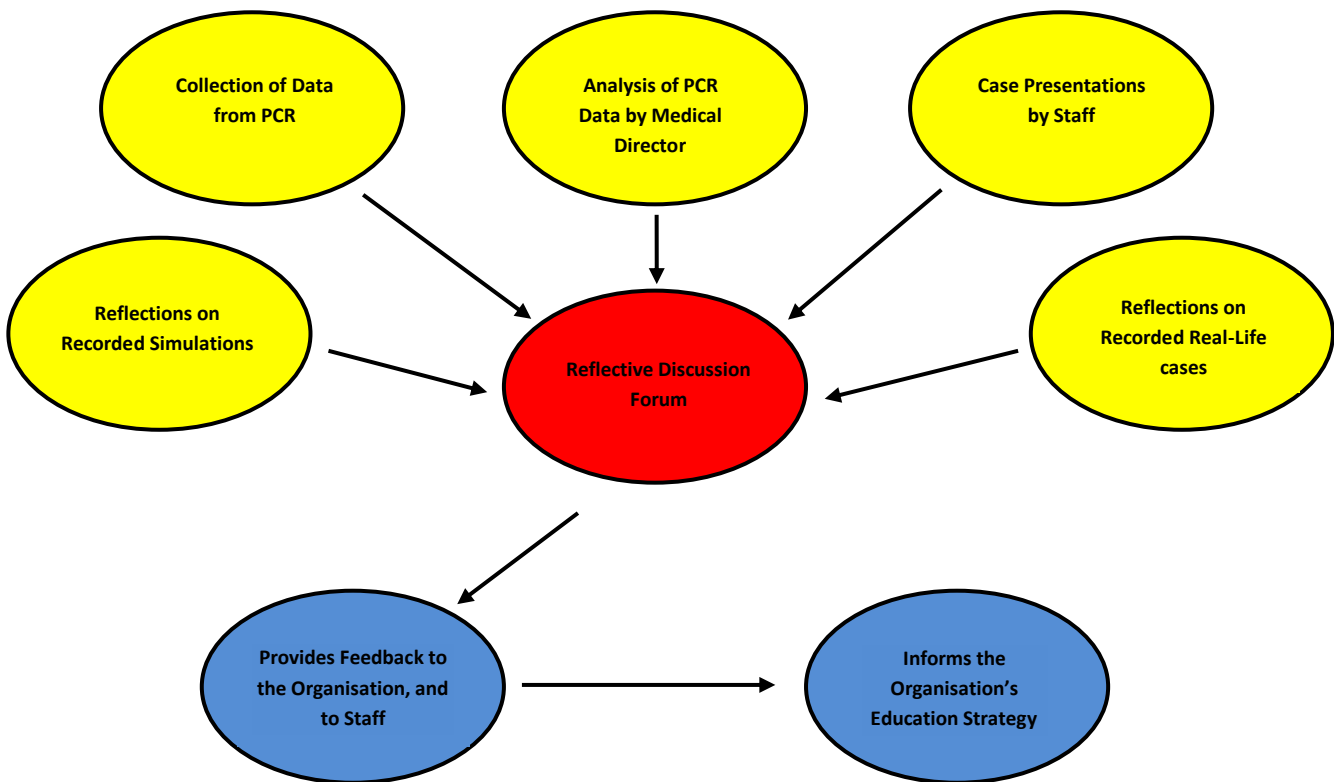
Figure 1.5. Proposed Model of Organisational Clinical Practice Evaluation.

1. 5. Summary.

This chapter sets the scene for the research as a whole by providing an insight into the background of my research project and describing the context in which it is set. In Chapter Two I will present a review of literature relevant to my research project.

Chapter 2

Literature Review

2. 1. Introduction.

In this chapter, I will present a review of academic literature relating to my research project. My research project has been informed by reviewing literature from a number of related areas including: Adult Learning, Reflective Practice, Simulation, Debriefing, and the use of audio-visual technology.

I have explored Emergency Medical Services (EMS) and Nursing journals and publications, Educational Research directly relating to EMS from organisations such as National Association of EMS Educators (NAEMSE) and the National Registry of EMT's (NREMT) in the USA, and the College of Paramedics (COP) in the UK, and scientific publications from the American Heart Association (AHA), European Resuscitation Council (ERC) and the International Liaison Committee on Resuscitation (ILCOR).

I have also drawn upon my own experience and referring to my own unpublished research in the area of using Reflection, Reflective Learning, and Reflective Practice as a means of evaluating and improving clinical practice.

2. 2. Experiential Learning.

In inviting pre-hospital emergency care practitioners to share their experiences of the clinical setting in an open forum I am offering them the opportunity to learn not only from their own experiences, but also from that of others, so that they may reflect upon this experience, and hopefully incorporate this new knowledge into their own clinical practice. Kolb (1984) developed a model of Experiential Learning, shown below in figure 2.1., based on the earlier work of Dewey, Piaget and Lewin. Arguably the model itself appears to be quite straight forward however it is noteworthy that student learning will only occur if they complete at least one full cycle. The first stage of the cycle involves an experience, which is followed by

a meaningful reflective observation, where the experience may be analysed and seen by the student from various different perspectives. Critical thinking and problem solving skills are required by the student, so that new ideas and concepts may be generated. These new ideas and concepts are then put to the test. Each subsequent cycle of learning is informed by the previous cycles of experience, reflection, thought and testing. Raynovich (2013) emphasises the crucial role in the learning process of the facilitator who promotes learning in both simulated and real-life experiential situations. This is a theme I will further explore later in this chapter.

Concrete Experience.

Active Experimentation.

Reflective Observation.

Abstract Conceptualization.
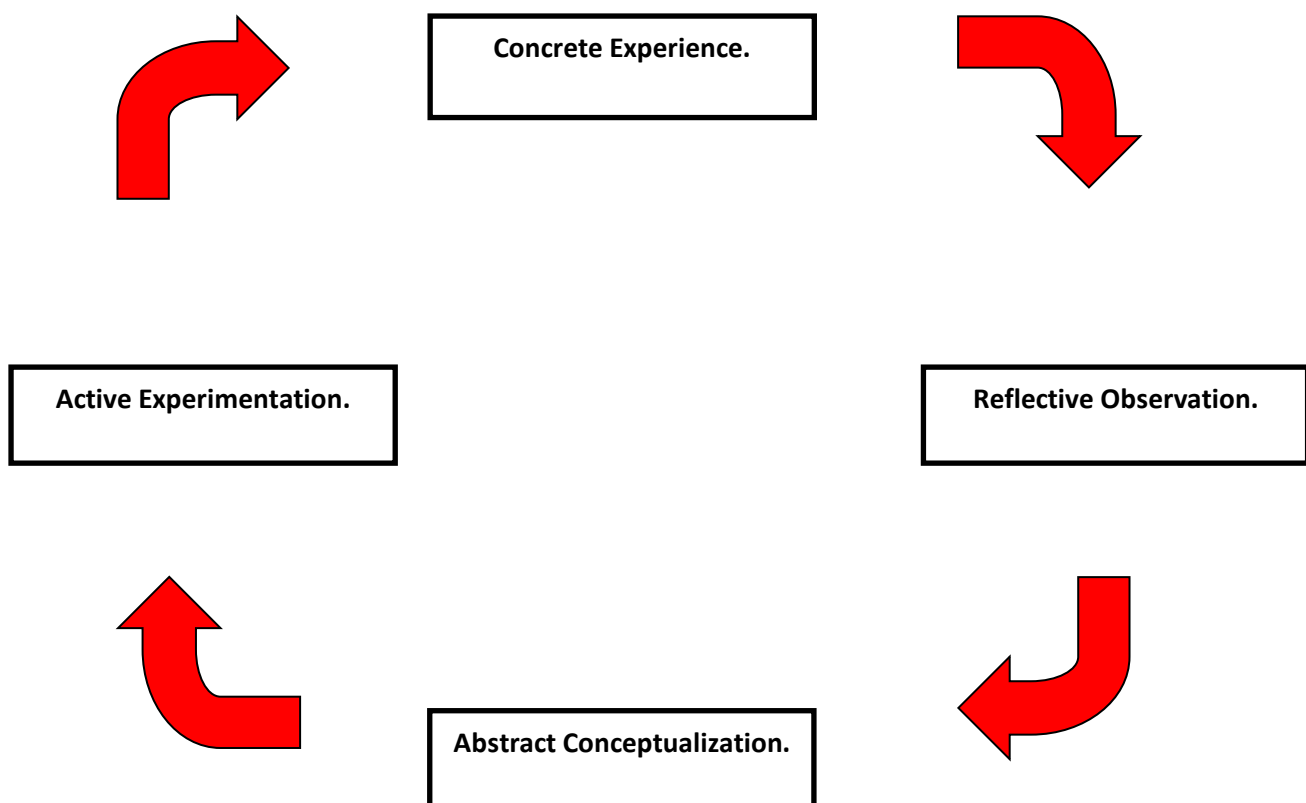
Figure 2.1. Kolb's Model of Experiential Learning (2015, p. 51).

2. 3. Reflective Practice.

The term 'Reflective Practice' has been around for a long time. However as Melanie Jasper (2006, p.41) writes, 'the overt use of reflection as a learning strategy only became formally

acknowledged in nursing education a couple of decades ago'. This movement was heavily influenced by the work of Schön (1983), who identified reflective practice as one of the main ways in which professionals learn. Schön (1983, p. 49-50) describes how the everyday life of the professional practitioner is dependent upon tacit knowledge. Tacit knowledge, according to Garavan, O'Brien and Kiernan (2017), 'consists of expertise, know-how, and information that employees have developed through experience'. This tacit knowledge, which has been accumulated through experience and reflection-on-action, enables the practitioner to think about their actions and if necessary adjust their performance, often while they are in the middle of performing complex tasks. Schön describes this ability as reflection-in-action, he writes,

> It is this entire process of reflection-in-action which is central to the "art" by which practitioners sometimes deal well with situations of uncertainty, instability, uniqueness, and value conflict. (Schön, 1983, p. 50).

He goes on to defend the legitimacy and the value of the knowledge generated by reflective practitioners,

> When someone reflects-in-action, he becomes a researcher in the practice context. He is not dependent on the categories of established theory and technique, but constructs a new theory of the unique case. (Schön, 1983, p. 68).

Garavan, O'Brien and Kiernan (2017) further emphasise the value of tacit knowledge in an organisational context when they argue that for an organisation to maintain a competitive edge it must fully utilise the tacit knowledge possessed by its employees. They suggest that this may be best achieved in a supportive working environment with a high level of organisational trust, good working relationships, and a good learning environment. They write,

> There is a significant imperative on organisations to leverage tacit knowledge to be competitive. Tacit knowledge is embedded in people, therefore to effectively utilise that knowledge requires facilitating organisational conditions. (Garavan, O'Brien and Kiernan, 2017, p. 18)

A key element of the reflective practice concept is that of reflective learning. Bulman (2013, p. 4) emphasises that learning is the central purpose of reflection and reflective practice. He comments, 'the exploration of experience, the analysis of feelings as well as oneself to inform learning'.

Boyd and Fales (1983, p. 99) offer this definition of reflective learning,

> Reflective learning is the process of internally examining and exploring an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of self and which results in a changed conceptual perspective.

Bulman (2004, p.1) writes,

> Nurses along with other professionals have been interested in and contributed to the growing body of literature on reflection because potentially it provides them with a vehicle through which they can communicate and justify the importance of practice and practice knowledge that derives from the realities of practice rather than traditional forms of knowing.

2. 3. 1. Models of Reflection.

Jasper (2006, p.43) writes, 'Reflective practice builds on the notions of reflection and reflective learning by adding some sort of action into the equation, thus: Experience + reflection + learning → change in behaviour or action'. Jasper (2003, p. 2) illustrates this, as shown below (figure 2.2.), in what she describes as the ERA cycle triangle:
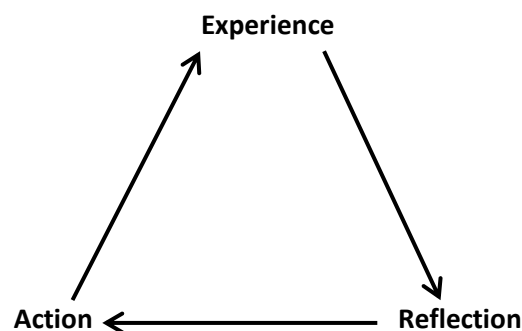
Figure 2.2. The ERA cycle (Jasper 2003, p. 2).

First there must be 'experiences'. Jasper (2006, p.43) notes, 'these form the fundamental building block of reflective practice and give us the topics to reflect on. Hence if we don't have experiences in practice we can't learn from them'. Secondly students need to reflect upon these experiences and try to identify lessons that may be learned from them. Finally, armed with their new knowledge, the students must take action and apply the new knowledge and skills in their everyday practice. The reason that Jasper's ERA cycle is presented as a triangle is, she insists, 'because if one of the three parts is removed it no longer exists; this acts as a reminder that if reflection is not followed through to action then reflective practice isn't occurring' (Jasper 2006, p. 44).

Jasper goes on to propose another model of professional development (shown below in Figure 2.3.), which very clearly illustrates the relationship between reflective practice, life-long learning and the on-going development of professional practice. This cyclical process of on-going learning, she argues, 'ensures that your practice doesn't stand still, and that you are unlikely to sink into routine practice, or that all too common trap of doing things because "that's the way we've always done it".' (Jasper 2006, p. 48).
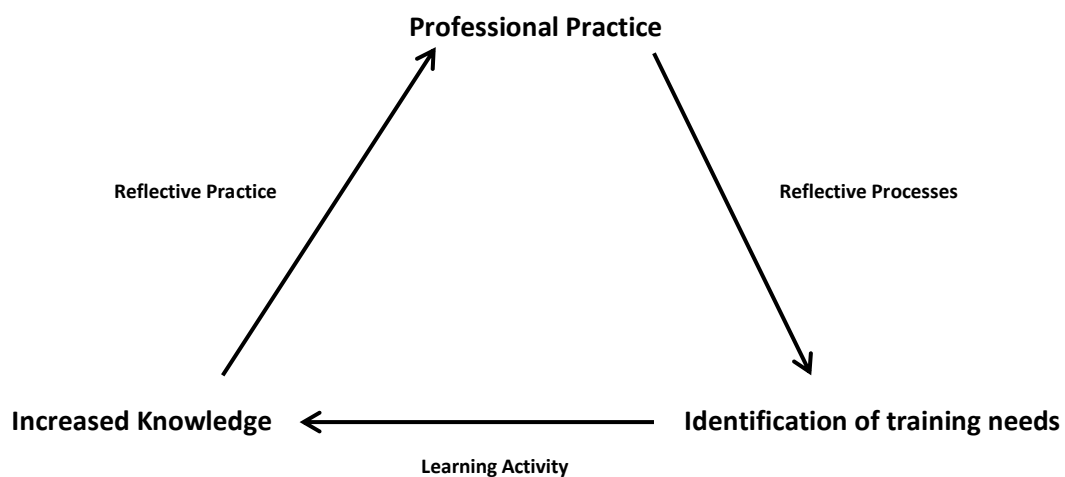
Figure 2.3. The Professional Development Triangle (Jasper 2006, p. 48).

Clearly then a key component of both Kolb's and Jasper's models is 'reflection', and in this regard, it can be argued that a structured model of reflection is helpful to the student or the

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seasoned practitioner alike. Since its publication almost three decades ago, the Gibbs Reflective Cycle (Gibbs 1988, p. 46) has become one of the most commonly used models of reflection among healthcare professionals. Many are attracted by its logical sequence. In fact Gibbs' model, which is illustrated below in figure 2.4., appears to be relatively straight-forward. However it challenges the user to think deeply and to reflect honestly about their experience in their description of the event (step 1), and particularly in relation to their feelings about the event (step 2). These steps provide the foundation so that the student may identify and evaluate the 'good' points of their experience, as well as the aspects which may require improvement (step 3).
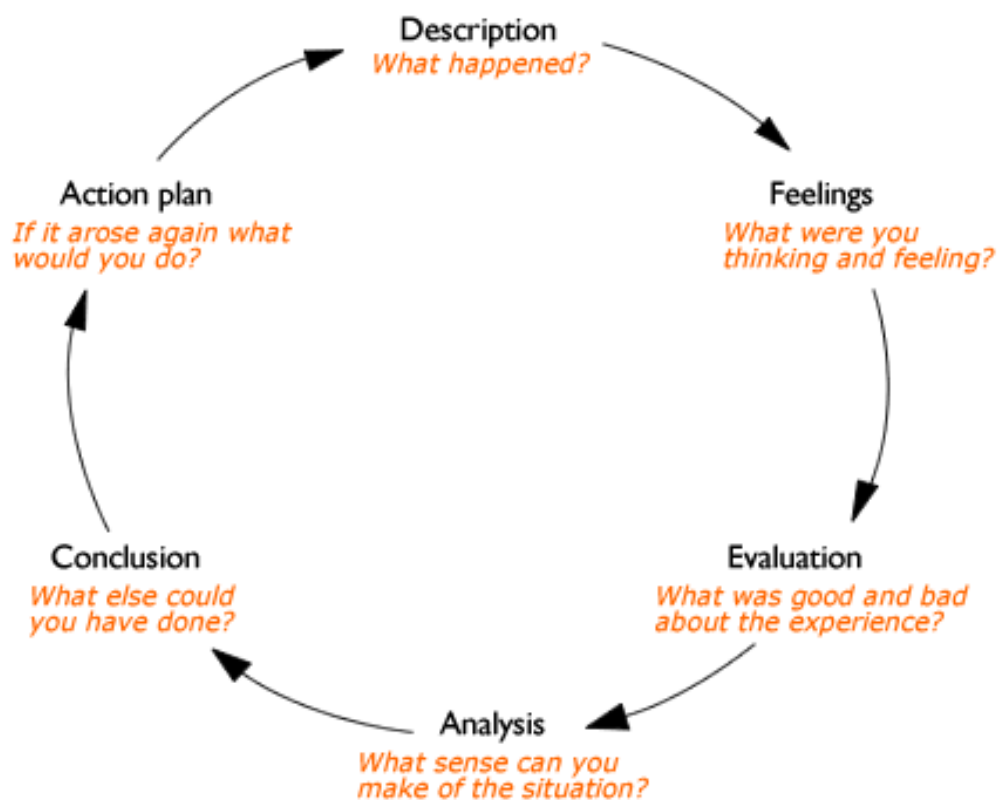
Figure 2.4. Gibbs Reflective Cycle (Gibbs 1988, p. 46).

While steps 1, 2 and 3 deal with the event that has transpired, steps 4, 5 and 6 attempt to make sense of this event, and to develop alternative courses of action designed to improve the

outcome should a similar event occur in the future. At step 4, analysis, the user attempts to understand any issues that have been highlighted. This may include reference to literature relevant to practice and consultation with colleagues, a preceptor or a mentor.

At this stage of the process the user ought to be able to draw logical conclusions (step 5) regarding their behaviour and actions, and possibly the behaviour and actions of others, both prior to and during the event, so that ideas for improvement and development can be proposed. Finally an action plan (step 6) outlining how a similar situation would be handled at a future date is developed. This plan would potentially include behaviour and actions which would remain unchanged, alternative actions, as well as actions would be performed differently.

2. 3. 2. Benefits of Reflection.

Reflective practice has been an integral component of nursing education and continuing professional development education for the last three decades. However in the pre-hospital arena it is only lately that the notion of reflective practice is being tentatively approached. Sibson (2009, p. 121) discussing reflective practice, suggests 'if undertaken well, it can enhance and develop knowledge, initiate changes to practice and ultimately, improve patient care'. In recent years, Paramedic students in Ireland have kept a reflective diary as part of their clinical internship. However, for a variety of reasons, the potential for either personal or collaborative learning from these reflective diaries has never been fully realised, and consequently it is arguable that nothing meaningful has ever become of this work by the students. Hopefully this will begin to change now that regulatory bodies, such as PHECC in Ireland and the Health and Care Professions Council (HCPC) in the UK, have begun to offer CPD points for case reflections and reflective journals. In the UK, Willis (2010, p. 212) writes,

Reflective practice is undertaken for a variety of reasons including self-development, and as a means of demonstrating accountability to the Health Professions Council (HPC). The HPC recognise reflective practice as one option that will contribute towards satisfying continuous professional development requirements for the paramedic.

Forneris and Peden-McAlpine (2009, p. 1721) point out the benefits of reflection, particularly, for newly qualified practitioners. They observe, 'Reflection encouraged questioning: the novice nurses learned to question the information they were being given'. Smith and Jack (2005, p. 37) found that reflection may not always necessarily suit every student's learning style. They warn,

> It became apparent that the student's learning style was pertinent to his or her perception of the usefulness of reflection. Those that found it useful were students who seemed to exhibit learning styles that were more inclined towards reflectors rather than any other.

Hiliard (2006) and Cooney (1999) emphasise the challenges of reflective practice to the practitioner. Cooney (1999, p. 1534) writes,

> Reflection is a beginning point with the potential to raise nurses' awareness and deepen their understanding of nursing practice. Reflection is not easy, it requires a strong commitment from the nurse.

Hiliard (2006, p. 40) agrees,

> The process of reflecting on practice to develop and maintain a professional portfolio is a time consuming but rewarding process. Reflection contributes to learning by exposing the knowledge embedded in daily nursing practice and by identifying areas of practice that require development.

However, Cooney (1999, p. 1534) concedes, 'it is contended that reflection can help nurses to learn from their experience and to critically examine and improve their practice'.

In summary therefore Wilding (2008, p. 724) draws together and highlights some of the main benefits of reflective practice to practitioners arguing that,

> Reflection occurs as a result of a critical thought process; the written word will not fade and can be consulted to aid learning or mark progress. Reflection is the perfect medium to evaluate the 'what and how' of nursing care and the wider implications of inter-professional relations; thus informing other discreet issues. Reflection can be written evidence and the product of an inquiring mind. The time needed to effectively reflect is immense, and not withstanding the energy invested in recalling the experience, writing, researching, reading, synthesising, thinking, followed with more writing, is significant. But it is a worthwhile exercise, considering the theory-practice gap that Kyrkjebo and Hage (2005) found students witness in practice. Reflection can be used as a quality assurance method to evaluate both effective and poor practice.

2. 3. 3. Reflection on the experience of others.

One might ask how much, if anything, will students learn from listening to, discussing, and reflecting upon the experiences of other practitioners? Thompson et al (2010) conducted a study during a series of three immersive 'simulated' patient-care scenarios. Students were allocated either a 'participant' or an 'observer' role. During the simulated scenarios, the observer group were facilitated by a faculty member. Following the scenarios, all students actively participated in the debriefing process. Evaluation of the post-course student interviews indicated similar learning perceptions and perceived benefit of the experience between those who participated in the simulated patient encounters, and those who observed the event and participated in the debriefing process. Peddle (2010) conducted a similar study with a group of second year nursing students. Once again, there was no difference in learning outcomes between those students who observed and those who participated in the simulation session. 62% of the observer group felt that their clinical decision making skills had improved and that they had learnt as much from the session as those who participated in it. This points to the importance of many potential learning opportunities for students that are

often undervalued and unappreciated by both students and faculty, and consequently these learning opportunities are frequently missed.

2. 3. 4. Critique of Reflective Practice.

While there is no doubting the popularity of reflective practice among students, practitioners and educators alike it is not without its detractors. While many practitioners are convinced of its value, Finlay (2008, p. 2) comments that 'others see it as self-indulgent naval gazing'. Sceptics, mainly from an empirical epistemological perspective, include Clinton (1998) who seriously questions the value of reflective practice as a learning method for nursing. He is supported by Newell (1992) who argues that reflection may be fundamentally flawed due to issues surrounding the accuracy of the reflection and the bias of the practitioner. Newell (1994) also laments that the lack of clarity of the process of assessment and evaluation of reflection may be viewed as an obstacle to its promotion. Schutz (2013, p. 192) admits that, 'this poses difficulties for those of us to whom assessment and evaluation of reflection is a necessity'. She continues,

> The current emphasis in healthcare on evidence-based practice makes this lack of evidence a pertinent issue . . . . Evidence, standards and targets are a constant pressure on health and social care professionals and can often be perceived as being counterforces to reflective practice. (Schutz 2013, p. 192).

2. 3. 5. Assessment and Evaluation of Reflective Practice.

Easterby-Smith (1986) proposes three main purposes of evaluation in any education process:

- *Proving (Summative Evaluation).* The justification of an education programme or organisation provided by summative evaluation is often seen as an ideal aim of

evaluation. This type of evaluation addresses the extent to which the stated goals of an organisation or education programme have been met.

- *__Improving (Formative Evaluation).__* This type of evaluation may be used as part of a process of development, or refinement, of an education programme while it is still in progress. This type of approach is popular with practitioners as they are directly involved in the process.

- *__Learning.__* This is evaluation integrating with the development of the learning process. Garvan, Costine and Heraty (1995, p. 619) write, 'This approach recognises that evaluation cannot be divorced from the process on which it concentrates i.e. learning'.

The assessment and evaluation of reflection is a controversial issue, in the sense that it is demanded by many authorities in order to establish the validity and the value of the process. On the other hand many authors view the assessment and evaluation of reflection as a contradiction in terms as it is asking individuals to make judgments about what is essentially a very personal process (Schutz, 2013). Davies and Sharp (2000, p. 70-71) agree, they write,

> Reflective processes and outcomes are still such intangibles, that attempting to assess them opens up a minefield of difficulties . . . . The idea of assessing reflection is fraught with potential problems relating to confusions, current climates and practical realities.

Schutz (2013, p. 210) suggests that an approach to evaluation such as Fourth Generation Evaluation, as described by Guba and Lincoln (1989), may be an appropriate methodology for the evaluation of reflective practice. Guba and Lincoln (1989) identify four generations of evaluation.

- *Measurement.* Basing many of their insights in an educational context Guba and Lincoln (1989, p. 23) argue that the first generation of evaluation as being dominated by the desire to measure. They describe the purpose of the school in this generation as being one that sought 'to teach children *what was known to be true'*. They suggest that success in this context was evidenced by a process where 'children demonstrated mastery of these "facts" by regurgitating them on what were essentially tests of memory'. The evaluator in this generation of evaluation was technical, and was required to know 'the full panoply of available instruments, so that any variable named for investigation could be measured' (Guba and Lincoln 1989, p. 26).

- *Descriptive.* The approach of this second generation of evaluation, of both students and curriculum, is characterised by 'description of patterns of strengths or weaknesses with respect to certain stated objectives' (Guba and Lincoln 1989, p. 28). Ralph Tyler had a major influence on this generation, which saw the evaluator's role as being that of 'describer', while still maintaining the 'technical' role.

- *Judgement.* This generation evolved following calls for 'judgements' of programme objectives themselves against external value-laden standards. Here, the evaluator became the 'judge' in addition to the technical and describer roles.

Guba and Lincoln (1989, p. 31) assert three major flaws in the first three generations of evaluation: 'a tendency towards managerialism, a failure to accommodate value-pluralism, and over commitment to the scientific paradigm of inquiry'. They go on to propose a fourth 'responsive' generation of evaluation.

- *Responsive.* This fourth generation of evaluation, unlike the previous generations, takes a post-positive approach. It is concerned with facilitating growth and developing people and organisations, rather than making definitive judgements. The role of the evaluator is to conduct the evaluation process in such a way as to enable

each group of stakeholders within an organisation to address the concerns and constructions of all of the others. Stakeholders relating to the area of pre-hospital emergency care include: patients, families, practitioner colleagues, other healthcare professionals, students, training officers, and mentors.

It is fair to comment that the first three generations of evaluation, in the main, continue to hold sway. The debate between fourth generation evaluation and previous generations has been contentious and been referred to as the so called 'paradigm wars' (Denzin, N. K., and Lincoln, Y. S. 2017a, p. 5) and it essentially follows along the lines of the positivism versus post-positivism, and quantitative versus qualitative debates. These issues are discussed in detail in chapter 3.

As always, in assessing and evaluating any educational intervention, the 'proof of the pudding is in the eating', and therefore in assessing the effectiveness of reflective practice, it is arguably appropriate to use Kirkpatrick's 4 Levels Model for the assessment of education programmes, paying particular attention to levels 3 and 4.

Since it was first published in 1959, the Kirkpatrick model for the evaluation of training programmes has become the widely used. Kirkpatrick (1998, p.19) proposes a four-level approach to evaluation of education programmes:

- Level 1 - Reaction.
- Level 2 - Learning.
- Level 3 - Behaviour.
- Level 4 - Results.

Level 1 measures the student's reaction to the educational intervention.

Level 2 measures the learning that has taken place.

At *Levels 3 and 4* we may analyse the changes in the student's behaviour and the overall results that have occurred following reflection, i.e. Have their skills, knowledge and attitude improved? Do they interact, and perform well as part of a team? Has their reflection resulted in better care for the patient, and improved patient outcomes?

2. 3. 6. Issues Relating to the Assessment and Evaluation of Reflective Practice.

Schutz (2013, p. 197-200) identifies a number of problems which may be encountered in the assessment and evaluation of reflective practice. These issues need to be considered by facilitators and assessors and be addressed at the outset.

Clarification of what is meant by reflection. In addressing this issue, Finlay (2003, p. 14) describes reflective practice as, 'a concept which can readily provoke cross-disciplinary miscommunication. It can be understood in a multiplicity of ways, according to the aims and functions of the exercise at stake and the theoretical/methodological traditions engaged'. Daly (1998) also comments about the overlap of terms such as reflective practice, reflective learning, critical thinking, and critical analysis, which are often used interchangeably. This is understandable given the fact that similar personal skills such as self-awareness and self-analysis are utilised in all of these processes. In addition, these processes have many common goals such as personal and professional development of the practitioner and improved clinical practice. Therefore it is vitally important that facilitators and assessors are absolutely clear in their own minds about what their expectations of their students actually are. These expectations must, at the outset of the process, be conveyed clearly to their students, so as to avoid confusion.

Assessing the process or the outcome of reflection. The question regarding what ought to be assessed, the process or the outcome has been debated by many authors over the years (Mountford and Rogers, 1996; Burns, 1994). Some authors question if reflective accounts of experiences amounts to actual learning and development of practice, or if, due to its compulsory nature, it merely becomes a cosmetic exercise in 'box-ticking' or a matter of 'jumping through hoops' for its own sake in order to satisfy course requirements (Burton, 2000). Schutz (2013, p. 197) suggests that both the process and the outcome ought to be assessed 'as they are both of equal importance'.

Developing reflecting levels. Finlay (2008, p. 13), and other authors including Hobbs (2007), Griffin (2003), and Burrows (1995), suggest that in order to undertake critical reflection students must first be what she describes as 'developmentally ready to engage'. Schutz (2013, p. 198) acknowledges that students approach reflection with different levels of maturity and life experience, and that the skills of reflective practice often take a long time to develop. She writes,

> Reflection is a complex activity and those new to reflection may have difficulty with it. Indeed, it is clear that some are more naturally reflective than others and many students struggle with reflective practice for a long time.

Barriers to honesty. Given that reflection is often a sensitive and highly personal process, many commentators are sceptical about students' ability to reflect honestly while having their work formally assessed. Schutz (2013, p. 199) feels that 'bringing personal feelings and judgements into the public domain may act as a barrier to reflection. Finlay (2013, p. 14) writes, 'reflections can end up being superficial and guarded. Where assessment lurks, any genuine, honest, critical self-examination may well be discouraged'. Schutz goes on to suggests that alternative activities such as individual tutorials, action learning circles,

reflective groups and personal journals may provide students with the opportunity to 'try out' reflection in a forum where they feel safe as they gain more confidence in the process.

The perceived lack of effective tools for assessment. Among the tools utilised in the assessment of reflection are: journals, reflective diaries, reflective essays, individual and group tutorials, and action learning circles. Once again, Schutz (2013, p. 199) points out the importance of clarity in relation to the assessment process. She writes, 'It is important to have criteria that reflect the skills and activities necessary for effective reflection and to build in room for development over time'.

Skills of facilitators. The process of guiding students in their journey in reflective practice requires a competent and capable facilitator. Schutz (2013, p. 200) writes,

> Facilitators need to have some experience of reflection and be able to offer students a balance between support and challenge. They also need to have expertise in the student's field of practice so that they can understand the contextual issues that influence the student experience.

Political and financial pressures. The emergency ambulance service is a busy working environment and consequently time consuming activities such as reflective practice may often find themselves relegated to the bottom of the list of priorities in the extremely busy clinical environment. While this issue is significant it is not insurmountable. Indeed in the following chapters I will explore how a structured educational intervention in an EMS context can provide opportunities to engage in reflection that are neither excessively time consuming nor costly.

In the next section we will examine the potential of simulation as an initiator of and a support of reflective engagement in an educational context.

2. 4. Simulation.

Simulation may be summarised as 'a technique, not a technology, to replace or amplify real experiences with guided experiences, often immersive in nature, that evoke or replicate substantial aspects of the real world in a fully interactive fashion' (Gaba 2004, p. i2). McKenna et al (2015, p.1) write,

> Simulation is an increasingly important strategy in healthcare education. The term simulation can be interpreted in a variety of ways, but in this context it is used to describe techniques that imitate prehospital patient situations and are designed to demonstrate procedures, decision-making, and critical thinking.

2. 4. 1. Benefits of Simulation.

There are many benefits to employing simulation as part of a clinical education programme. McKenna et al (2015, p.1) identify these benefits as follows:

- **'Simulation allows standardization and consistent replication of patient conditions'.** This becomes of especially important when a student or a practitioner's skills and performance are being formally assessed.

- **'It can provide a solution for overcoming limitations of clinical opportunities (e.g., low-frequency encounters)'.** When a trainee in any medical discipline attends clinical placements it cannot be guaranteed that they will gain experience of their full scope of practice. In fact, the scope and variety of clinical experiences for trainees during placements is very much a matter of pot luck. This is not only true for low frequency patient encounters such as the management of a tension pneumothorax or an obstetric emergency, but it is also true for 'routine skills' such as gaining intravenous (IV) access and administering medications. McKenna et al (2015, p. 1) comment that, 'traditional clinical learning experiences often rely on chance

encounters'.

- **'Simulation provides an opportunity for students to develop their skills without subjecting actual patients to risk'.** This is perhaps the most important benefit as it relates to the issue of Patient Safety. Reynolds and Kong (2010, p. 626) write,

> Medicine has traditionally approached the problem of the learning curve by supervising trainees' first attempts at new tasks and otherwise relying on them to call for help when they feel overwhelmed. But a growing movement within medical education argues that a better approach is to practice new skills in a realistic simulated environment before they are needed in a critical situation. The huge benefit of simulation is that it shifts the steep and dangerous part of the learning curve away from patients . . . . There always has to be a first time with a real patient so we must do all we can to ensure that these early encounters with real patients are as safe as possible.

- Burlacu (2010) agrees, and points out that in addition to a clinician's technical skills, their non-technical skills such as behaviour, communication, leadership, etc. can also be observed, assessed, and remediated as required.

> During full-scale realistic simulation, any shortfall in training becomes traceable, understandable and remediable in a safe and controlled environment, where knowledge gaps and procedural mistakes can happen and be corrected without inflicting any risk on real patients. Furthermore, acknowledging that human factors underline most medical errors, human behaviour in a crisis can be observed and taught appropriately.

- **'Evidence from several healthcare disciplines has shown that simulation can improve knowledge and skill performance'.** Wyatt, Fallows and Archer (2004) found a reduction in errors by paramedic students where simulation was utilised, while Studnek et al (2011) identified a relationship between a practicing paramedic's performance in simulated clinical patient care scenarios and improved performance on a cognitive examination.

McGaghie et al (2010) comment,

> Simulation gives the learner the opportunity to experience a learning environment that is immersive and experiential. Continuous practice involving medical simulations is linked with better quality learner outcomes, a finding noted amongst professionals with diverse levels of experience from a broad spectrum of clinical specialties.

In addition to this, Studnek et al (2011, p. 1178) also argue that simulation provides a reliable means of assessing a student or a practitioner's competency,

> The assessment of continued competence through the observation of field performance is impractical due to the extraordinary time commitment and resource utilization that would be needed to observe individuals in enough settings to render an adequate judgment. However, simulation provides for reliable and repeatable methods for measuring competency and may serve as a surrogate measure for field performance.

2. 4. 2. Establishing a Simulation Programme.

McKenna et al (2015, p.8) describe the establishment and development of a simulation as a three-legged stool. They comment,

> To ensure simulation is used effectively, programs must have the appropriate equipment, faculty training, and resources. If any of these elements is missing, the stool topples and programs are less likely to use simulation.

In their study of accredited paramedic education programmes in the USA, McKenna et al (2015) found that 31% of these programmes reported that they had simulation equipment laying idle and unused. Included among the unused equipment were hi-tech manikins, a simulated ambulance, a simulation laboratory, virtual reality simulation aids, and a wide variety of basic and intermediate manikins and task trainers. Simulation equipment is very expensive and this amounts to a significant waste of resources. Among the reasons cited for its lack of use included what many would consider to be the main barriers to the establishment of a simulation programme: inadequate faculty training, inadequate time and personnel resources, inadequate technical support and resources, lack of space, and faculty resistance which was often due to their lack of confidence.

Issenberg et al (2005) reviewed the existing evidence in educational science with a view to establishing what features and uses of high-fidelity medical simulations lead to most effective learning. They suggested that the weight of the best available evidence indicates that high-fidelity medical simulations facilitate learning when training is conducted under the following conditions:

- Feedback is provided during the learning experience

- Learners engage in repetitive practice

- Simulation is integrated with the normal training schedule

- Learners practice with increasing levels of difficulty

- Simulation training is adapted to multiple learning strategies

- A wide variety of clinical conditions are provided

- Learning on the simulator occurs in a controlled environment

- Individualised learning with reproducible, standardised educational experiences is provided

- Learning outcomes are clearly defined

- Ensuring the simulator is a valid learning tool

(Issenberg et al 2005, p. 21-24)

Bhanji et al (2015, p. S562) agree, they comment,

> Greater attention to promoting realism of the simulation scenario with respect to timing, duration and integration of tasks with accompanying feedback creates a learning environment best suited to improving learning outcomes.

2. 5. Debriefing.

Bhanji et al (2015, p. S562) suggest that, 'experience needs to be coupled with a constructive debriefing, allowing for guided reflection that can promote change in performance'. A

structured or semi-structured debriefing process conducted by a skilled facilitator can provide a powerful educational experience for all concerned parties. Debriefing is a learner-focused, non-threatening technique to assist individual rescuers or teams to reflect on and improve performance. (O'Donnell et al, 2009). Edelson et al (2008, p. 1068), outline the value of post-event debriefing,

> an educational intervention of post-resuscitation team debriefing using new CPR-sensing technology during actual cardiac arrest may improve objective measures of rescuer performance of CPR as well as initial patient outcomes from cardiac arrest.

Bhanji et al (2010, p. S923) agree, they write,

> Debriefing of cardiac arrest events, either in isolation, or as part of an organized response system, improves subsequent CPR performance in-hospital and results in higher rate of return of spontaneous circulation (ROSC). Debriefing of actual resuscitation events can be a useful strategy to improve future performance.

This is particularly true in the context of an organised team response (Weng et al, 2004), and it concurs with my own professional experience. In a previous professional role as a Resuscitation Officer, I found the process of weekly Reflective Discussion to be very effective both as a learning opportunity for staff and as a means of improving clinical practice in the management of Cardiac Arrest patients (Kennedy and O'Connor, 2010, 2011 and 2012). We found that with the combination of a robust education programme and weekly facilitated reflective discussion the overall team performances at cardiac arrest events were consistently of a high standard, and that many lessons relating to clinical practice were learned. Another benefit of the debriefing process was that any adverse issues could be immediately identified by the facilitator and addressed expeditiously through the education programme, or the appropriate clinical governance forum. Sinz and Navarro (2013, p.18) agree with this approach, they write that,

The team leader is also responsible for making sure that lessons learned, particularly recommendations for system improvement, are communicated and followed up in the local, continual, quality-assurance process.

In the facilitation of debriefing simulated scenarios, it has been my experience that many faculty members have difficulty adjusting to the process of 'facilitation' as opposed to the traditional 'lecture' based presentation format. Østergaard, Dieckmann and Lippert (2011, p. 243) illustrate this point,

The relationship between participants and trainers is different from that in the classroom. In simulation-based training, the simulation instructor's role is not to teach, but to facilitate learning.

These new challenges which may be faced by faculty who may be more accustomed to a traditional 'sage on the stage' style of teaching are well recognised. Thomseth (2010, p. 5) describes the approach taken in the TuPASS (Tubingen Centre for Patient Safety and Simulation) Simulation Centre, one of the leading Simulation Centres in Europe,

The focus is rather on facilitation than traditional instruction, as such. The why-why-why (why³) technique is used to identify root causes for errors. The facilitators encourage the participants to share their perceptions and experiences with the rest of the group, and moreover to reflect on their own performance.

Many authors and commentators recommend the use of a structured and scripted debriefing instrument, for example: the GAS Model (Cheng et al, 2013, and Cheng et al, 2012) or the PEARLS Model (Eppich and Cheng, 2015), and since 2010, the American Heart Association (AHA) has included structured debriefing as part of all its education programmes. However, it has been my experience working in many centres both nationally and internationally, that experienced faculty frequently ignore the structured debriefing instruments. This is, inevitably, not in the learner's best interest as Eppich and Cheng (2015, p.107) point out,

Novice instructors using a debriefing script were more effective at increasing learners' knowledge acquisition and team leader behavioural skills compared with those educators who did not use a script.

Bhanji et al (2015, p. S562), comment, 'AHA courses promote the use of the GAS (gather-analyze-summarize) model of debriefing paired with evidence-based scripted debriefing tools'.

Dieckmann et al (2012) identified the failure of the facilitator to follow a debriefing structure as a significant barrier to a successful debriefing session. They comment that rather than do all the talking the facilitator should act as a catalyst by posing questions, and allowing the group to reflect and inviting the group to do the vast majority of the talking. Other potential barriers included: An atmosphere dominated by a culture of 'shame-and-blame', a mismatch between course content and allocated time, and finally issues relating to the participants. For example, the participants may:

- Not reflect.   - Overestimate their performance.   - Be over confident.

- Be passive.   - Not speak up in the group.   - Lose confidence.

Many of these barriers may be overcome by establishing a supportive non-judgmental learning environment. This enables all participants to speak freely and express themselves in an atmosphere of mutual respect, thus enhancing the learning experience for all.

2. 6. Audio-visual Recording.

The use of audio-visual recording has become a widely accepted and widely utilised methodology to facilitate the analysis of the performance of professional practice for many years, in fields as diverse as elite professional sports (Carson, 2013, p. 111) aviation, surgical training (Issenberg et al, 2005, p. 11), and teacher training (Grossman, 2005, p. 431). In the

last two decades it has been used extensively to facilitate debriefing sessions following medical simulation-based learning scenarios. Eppich and Cheng (2015, p. 107) comment, 'The use of selected video sequences from the simulation scenario, time and technology permitting, may also promote learning'. Fanning and Gaba (2007, p. 122) agree,

> Video playback may be useful for adding perspective to a simulation, to allow participants to see how they performed rather than how they thought they performed, and to help reduce hindsight bias in assessment of the scenario.

In relation to students' perception of their own performance, Foraida, DeVita, and Schaefer (2006) found that students' ability to assess and evaluate their own performance, and that of their peers was unreliable. Although they do suggest that it is possible to improve this with expert guidance and supervision. This lack of reliability in relation to self, and peer assessment does not just apply to students. Davis et al (2006) found that qualified physicians fared no better in relation to their ability to reliably assess their own performance.

Scherer et al (2003) recorded and reviewed trauma resuscitations over a 6-month period. For the first three months team members were given verbal feedback regarding their performance. The trainees' behaviour remained unchanged following three months of verbal feedback. During the next three months new teams attended videotape reviews of their performance. After one month of videotape feedback their performance had improved significantly. This performance improvement was sustained for the remainder of the study. The use of audio-visual recording of real-life clinical situations in the pre-hospital arena is still a relatively new concept and consequently there is a paucity of literature. One notable exception is Lyons et al (2015) who successfully employed audio-visual recording technology to evaluate the quality of CPR during extrication and transport of patients in cardiac arrest.

The use of audio-visual recording is clearly beneficial in the assessment and development of clinical skills. It has also proven to be effective and is used extensively in the development of non-technical skills for medical teams such as situational awareness, communication, and team leadership. Savoldelli et al (2006) identified significant improvement in non-technical skills following oral feedback or videotape-assisted oral feedback. However, they found no significant difference between the oral feedback or the videotape-assisted oral feedback.

In a study of 523 nurses, 'being videotaped' was cited as the leading barrier to engaging with simulation prior to a simulation event (DeCarlo et al, 2008). Interestingly however, in the aftermath of the simulation session and debriefing process, the nurses appear to have been 'won-over', as 85% of the nurses either 'agreed' or 'strongly agreed' that the overall educational and training value of the simulation session were good despite their initial reluctance to participate.

Reviewing the footage from body-worn video cameras has been shown to improve the accuracy of practitioner's documentation in real-life patient care encounters (Ho et al 2017). In response to what they perceived was inaccurate documentation among EMS practitioners Ho et al (2017) conducted a pilot study where practitioners used body-worn cameras. They found that documentation was of poor quality in relation to completion, and accuracy regardless of the experience of the practitioner. However, they found that the use of the body-worn video camera technology significantly improved the accuracy of EMS documentation.

2. 7. The Flipped Classroom.

The use of video and other information and communications technology (ICT), has a central role in what has become known as the Flipped Classroom, or Flipped Learning. The approach taken throughout this research project provides a significant contribution to the

discussion in relation to the addition of the Flipped Learning process in EMS education.

Flipped Learning may be defined as,

> A pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transferred into a dynamic, interactive learning environment where the educator guides the students as they apply concepts and engage creatively in the subject matter. (The Flipped Learning Network, 2014).

In the Flipped Learning process, the student is placed at the centre of the learning experience and they may access course materials at times and locations that are at their own convenience. However, they are required to take responsibility for their own learning, so that when they come to attend the face-to-face classes, they are prepared, armed with their newly acquired knowledge, ready to engage, and apply their knowledge. Hessler (2017, p. 22) writes,

> In the flipped classroom model, the educator is still able to provide a lecture that is recorded and provided to the student online. When the students come to class . . . . the time spent on lecture-type material is replaced with time to help each student or group of students apply the material, ask questions about how the concepts can be applied to a patient care scenario, and provide a more active way to learn.

Missildine et al (2013) identified significantly improved nursing student performance, in terms of scores and overall pass rates, in the flipped classroom when compared with the traditional classroom. Hessler (2017, p. 37) comments, 'scores increased as the students were given more control over their learning'. However, O'Flaherty et al (2015) are more cautious in their commentary, they write,

> Whilst some studies referred to a modest improvement of academic performance, through outcomes of increased examination scores or improved student satisfaction, further research is required in this area, with longitudinal cohorts evaluating the learning outcomes of utilising flipped approaches compared with traditional teaching methods.

2. 8. Summary.

In this chapter, I have presented a review of literature relevant to the main issues surrounding my area of research, adult learning, reflective practice, simulation, debriefing, the use of audio-visual recording technology, and the flipped classroom.

In chapter three, I will outline the research methodologies I have employed, and discuss the rationale for their use, and their validity. I will also address the ethical issues which surround my area of research.

Chapter 3

Research Design and Methodologies.

3. 1. Introduction.

As I have outlined in Chapter 1, the purpose of my inquiry is to explore the potential benefits of using novel methodologies such as such as reflective discussion of real-life patient encounters, the use of audio-visual recording technology in medical simulation experiences, and in real-life patient encounters, to promote reflection in order to support reflective learning and reflective practice, both individually and collaboratively, among pre-hospital emergency care practitioners so as to improve patient care.

In this chapter I will describe the research methodologies I have employed and discuss my rationale for their use, as well as their validity. I will also address the ethical issues which surround my particular area of research.

3. 2. Paradigms.

'All research is based on philosophical beliefs about the world' writes Cohen (2002, p. 127). These philosophical beliefs are often described as paradigms, or as worldviews (Creswell, 2009). The concept of paradigm, which is derived from the Greek word meaning 'pattern', was first introduced by Thomas Kuhn in 1962 (Maykut and Morehouse, 1994, p. 8). Guba (1990, p. 17) describes a paradigm as 'a basic set of beliefs that guide action'. He continues, 'The net that contains the researcher's epistemological, ontological, and methodological premises may be termed a paradigm'. Denzin and Lincoln (2017a, p. 19) agree and suggest that 'All research is interpretative: it is guided by the researcher's set of beliefs and feelings about the world and how it should be understood and studied'. They identify four key areas relating to the researcher's beliefs which define a paradigm:

- Ontology: What is the nature of reality?
- Epistemology: What is the relationship between the knowledge and the researcher?

- Methodology: How do we know, or gain knowledge of, the world?

- Axiology (Ethics): How does the researcher act as a moral person in the world?

   (Denzin and Lincoln 2017b, p. 27).

Lincoln and Guba (1985, p.195) write,

> Questions of method ought to be secondary to questions of paradigm which are defined as the basic belief system or world view that guides the investigator, not only in choices of method but in ontologically and epistemologically fundamental ways.

I find myself in agreement with this statement. In everyday life we regularly encounter people who hold certain religious or political views and beliefs which significantly guide how they behave, interact with others and how they live their lives in general. In a similar fashion, just as these views and beliefs of the individuals who hold them often have an enormous influence their behaviour and lifestyle, the paradigm, defined as the world view or fundamental belief system of the investigator, will certainly influence every aspect of their inquiry.

Lincoln and Guba (1985, p.15) identify three 'paradigm eras' as follows:

- Prepositivist.

- Positivist.

- Postpositivist.

3. 2. 1. The Prepositivist Era.

The Prepositivist Era lasted from the time of Aristotle, fourth century B. C., until the early eighteenth century. Lincoln and Guba (1985, p.18) describe this era as 'both the longest and the least interesting from a modern perspective' mainly because of the lack of progress in the field of science during this period. It might seem unusual that so little scientific progress was made in this period which lasted approximately two thousand years. However it is argued that this occurred because prepositivists saw themselves as passive observers and felt that

any human intervention interfered with natural motion. Prepositivists regarded 'Attempts by humans to learn about nature were interventionist and unnatural, and so distorted what was learned' (Lincoln and Guba, 1985, p.18). It was only when scientists, inspired by notable exceptions such as, Copernicus, Galileo and Newton, began to adopt the role of active observers that science progressed.

3. 2. 2. The Positivist Era.

The term positivism was first used by Auguste Comte, the French Philosopher. Cohen, Manion and Morrison (2000, p.8) write that Comte's doctrine of positivism held that:

> all genuine knowledge is based on sense experience and can only be advanced by means of observation and experiment. Following in the empiricist tradition, it limited inquiry and belief to what can be firmly established and in thus abandoning metaphysical and speculative attempts to gain knowledge by reason alone . . . .

Cohen, Manion and Morrison (2000, p.9) go on to argue: 'Positivism may be characterized by its claim that science provides us with the clearest possible ideal of knowledge'.

Denzin and Lincoln (2017a, p. 13-14) comment on the re-emergence of scientifically based research since the turn of the century, suggesting that it has 'created a new and hostile environment for qualitative research' with the evidence-based medical model of research, particularly the random clinical trial, being touted as the most suitable model for educational research. Howe (2004, p 48) is also unimpressed and is quite robust in his defence of qualitative research,

> The random clinical trial - dispensing a pill - is quite unlike "dispensing a curriculum" . . . . . . nor can the "effects" of the educational experiment be easily measured, unlike a "10 point reduction in diastolic blood pressure.

McNiff and Whitehead (2006, p.40) are also unconvinced and guarded in their comments about the value of scientific research in the areas of human practices. They argue,

> Technical rational research is used throughout scientific enquiry, and has led to massive development in technology, medical care and space travel. However, many rational researchers assume that methodologies of the natural sciences can be applied to human practices, so they tend to view humans as machines, or as data. Stringent critics say that rational research is a myth (Thomas, 1998), and objectivity is unattainable. Some ask what is so special about objectivity anyway.

Personally speaking, just like Denzin and Lincoln (2017a, p. 13-14), Howe (2004, p 48) and McNiff and Whitehead (2006, p.40), I am not entirely convinced of the 'purity and impartiality' of scientific research. In fact, every time I hear the term 'evidence-based medicine' mentioned, the first word that enters my head is: 'Amiodarone'. Amiodarone is an anti-arrhythmic medication which, among other indications, is indicated in the treatment of refractory cardiac arrest where the heart rhythm remains in ventricular fibrillation(VF) or pulseless ventricular tachycardia (VT). Amiodarone was first included in the Advanced Cardiovascular Life Support (ACLS) algorithms for cardiac arrest in 2000, and then essentially replaced Lidocaine in 2005, based on the evidence of two studies, Kudenchuck et al (1999) and Dorian et al (2002), which showed an improved rate of return of spontaneous circulation (ROSC) and hospital admission following cardiac arrest. Significantly, however, neither study demonstrated any improvement in neurologically intact patient survival to hospital discharge. Clinical experience in the intervening years hasn't demonstrated its effectiveness either. The subject was revisited last year by Kudenchuck et al (2016) who compared the effectiveness of Amiodarone, Lidocaine and Placebo in the treatment of refractory VF or VT cardiac arrest. No improvement in ROSC or favourable neurologic outcomes were found when either medication was compared with placebo. One can only speculate why amiodarone remains a treatment recommendation in the ACLS algorithm for cardiac arrest, and how it ever got to be there in the first place. Writing in the Journal of Emergency Medical Services (JEMS) in 2002, one sceptical commentator speculated,

> Some felt that amiodarone was the centerpiece of a cumbersome and profiteering new approach by the AHA to the process of ACLS guideline development and education.

One of my paramedics said it well: "The best recommendations money can buy". (JEMS, 2002).

The beliefs of the positivist investigator may be described as follows:

Ontology. Positivists believe that there is a single reality "out there" which can be subdivided. They suggest that by studying the parts, the whole can be understood (Lincoln and Guba, 1985, p.37). Even in a relatively small study such as this one, it is hard to accept that only one single reality exists for all of the participants. The participants in this study, consisted of male and female practitioners of varying age, personality, clinical level, experience, and motivation. I would therefore propose that it is almost certain that many of them will have different perspectives on their own clinical practice and that of others. The reflection upon one's own practice is very much a personal issue. People are often complex individuals, each with their own ideas, opinions and perceptions of reality and truth. Cohen (2002, p.128) writes 'reality is constructed differently by different people'.

Epistemology. Positivists, write Lincoln and Guba (1985, p.37), describe the relationship between the inquirer and the object of inquiry as 'independent' and point to the value of its objectivism. McNiff and Whitehead (2006, p.40) comment, 'The researcher stays outside the research field to maintain objectivity. Knowledge generated is uncontaminated by human contact'.

Given my role within the organisations involved in this study, and my role as researcher, I am very much an active participant in the research process. Lincoln and Guba (1985, p.37) argue that the inquirer and the object of inquiry interact with and influence one another and therefore cannot be separated. Positivists may suggest that my values and beliefs may bias the research. However, I would argue that my knowledge of the situation as an 'insider' will

lead to a deeper understanding of the issues at hand than would be possible for an outside investigator (Cohen, Manion and Morrison, 2000, p.19-20).

Methodologies. Positivists see themselves as neutral, external observers and so they utilise only quantitative, empirical research methodologies. They begin with a definite hypothesis and seek verification or proof of the proposition. Morrison (2012, p. 18) comments, ' The relation between *concept formation*, observation and measurement is central'. Much of the research into the development of resuscitation guidelines is based on empirical scientific methodologies. The latest guidelines from The American Heart Association (AHA) in collaboration with the International Liaison Committee on Resuscitation (ILCOR), the 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care (Neumar et al, 2015) provides a very good example of this type of research.

However, as I seek to explore and understand the potential benefits of using novel methodologies to promote reflection it is clear that this scientific approach to the research process is not appropriate to my inquiry. As I consider my research methods I must be clear about the purpose of my inquiry. Quantitative research methods may be applied in many areas, particularly in areas where it is important to analyse figures. For example, when studying a group of patients with regard to their risk factors for coronary artery disease, it is important for a survey to record the patient's age, weight, blood pressure, heart rate, cholesterol level, risk factors, etc., as all of this will provide information which is extremely valuable to the physician. However, in this situation the question at the heart of my research is: How do I ensure that practitioners remain competent, and confident with their pre-hospital emergency care skills? To achieve this goal I need to engage with practitioners to discover their feelings in relation to their clinical practice and their perceived strengths and

weaknesses. Quantitative research methods will not provide me with these answers.   McNiff (1988, p.12) writes,

> Questions which attempt to answer subjects', including teachers', problems regarding practice and its effects on the clients are not usually formulated in this tradition. A question of the type 'How can I explain and improve this situation?' are not accommodated.

For this reason I have chosen to use mainly qualitative research methods as a means of evaluating and improving the performance of our pre-hospital emergency care practitioners, and therefore I will be employing mostly qualitative methodologies such as: observation and semi-structured interviews.

Axiology. Positivists believe that the values of the inquirer have no place in research and therefore should be excluded from the inquiry as they may detract from the aims. Maykut and Morehouse (1994, p.12) write that positivists feel that 'values can be suspended in order to understand'. Scott and Morrison (2006, p. 174) add, 'Secure knowledge of the world can be obtained free from any type of values'.

I must admit that I find it difficult to accept that the beliefs, experiences, prejudices and values of the inquirer can be entirely set aside. Morrison (2012, p. 19) agrees, 'Few educational researchers, whether disposed towards qualitative or quantitative research, subscribe to the view that research can be *entirely* value-free'.

Context. Context is not important in positivist research, the emphasis is placed on the creation of knowledge which is generalisable and therefore can be universally applied. Lincoln and Guba (1985, p.38) write, 'The aim of the inquiry is to develop a nomothetic body of knowledge in the form of generalizations that are truth statements free from both time and context'.

In relation to my inquiry context is both relevant and important, as findings relating to professional practice in a private ambulance service, or a voluntary organisation are likely to differ vastly from those in larger, more complex organisations such as the National Ambulance Service and Dublin Fire Brigade. Both of these organisations operate on a 24/7 basis, where there is a larger 'call-volume', a significantly larger cohort of staff, and a wider variety of different patient encounters, and ultimately a very different organisational context. There are also major differences in organisational culture, as well as many other influential stakeholders, such as Trade Unions, politicians, and regulators are heavily involved in larger organisations. Cohn (2002, p.129) writes 'differences may result from context'. Lincoln and Guba (1985, p.42) support this position, they write that the researcher 'is likely to be tentative (hesitant) about making broad application of the findings because realities . . . . may not be duplicated elsewhere'.

3. 2. 3. The Postpositivist Era

In the postpositive era, what have become known as Interpretive Paradigms or Interpretivism, have gained more traction and more widespread acceptance. The terms 'Interpretive Paradigms', or 'Interpretivism' (sometimes referred to as anti-positivism) may be described as umbrella terms that include a diverse variety of philosophical traditions (Morrison, 2012, p. 20). In their description of Interpretivism, then known as postpositivism, Lincoln and Guba (1985, p.29) note 'its basic tenets are virtually the reverse of those that characterized positivism'. In the postpositivist era many researchers are unconvinced that empirical scientific research can provide the answer to every question. However Denzin and Lincoln (2017a, p. 16) are keen to stress that,

> the interpretative camp is not antiscience per se. We do something different. We believe in multiple forms of science: soft, hard, strong, feminist, interpretative, critical, realist, postrealist, and posthumanist.

Cohen, Manion and Morrison (2000, p.19) write that opponents of positivism,

> are united by their common belief that human behaviour is governed by general, universal laws and characterized by underlying regularities. Moreover, they would agree that the social world can only be understood from the standpoint of the individuals who are part of the ongoing action being investigated.

In the world of qualitative research, Denzin and Lincoln (2017a, p. 19-20), and Lincoln, Lynham, and Guba (2017, p. 111) identify four main interpretive paradigms as follows:

- *Positivist and Postpositivist:* realist / critical realist ontology; objective epistemology; quantitative (usually) or rigorously defined qualitative methodologies.

- *Critical Theory (including Feminist, Ethnic, Queer Theory, Cultural Studies and Disability):* materialist-realist ontology; subjectivist epistemology; naturalistic methodologies.

- *Constructivist / Interpretivist:* relativist ontology; subjectivist epistemology; naturalistic methodologies.

- *Participatory / Postmodern / Poststructural:* participative, subjective-objective ontology; critical subjectivist epistemology; collaborative, participatory methodologies.

Denzin and Lincoln (2017b, p. 97) note that, 'within the past decade, the borders and boundary lines between these paradigms and perspectives have begun to blur'. Lincoln, Lynham, and Guba (2017, p. 109) also point to the 'blurring of genres' and the 'interbreeding' of various paradigms, and propose,

> to argue that it is paradigms that are in contention is probably less useful than to probe where and how paradigms exhibit differences, controversies, and contradictions. As the fields of qualitative research mature and continue to add both methodological and epistemological as well as political sophistication, new linkages will, we believe, be found, and emerging similarities in interpretive power and focus will be discovered.

In relation to my own particular study at hand it is clear from the discussion above that, given my own ontological, epistemological and methodological perspectives, this inquiry sits within the constructivist/interpretivist paradigm.

3. 3. Action Research.

I have chosen action research as the mode of research for this inquiry. I find myself drawn towards action research. Even its name, 'action research' implies 'action', and rather than creating knowledge 'for the sake of it', it is about creating knowledge and doing something useful with it. Cohen, Manion and Morrison (2000, p. 226) cite Kurt Lewin, one of the founding fathers of action research, who commented that research that produced nothing but books was inadequate. Jean McNiff (2004), in a lecture at DCU, described action research as being 'about changing situations for social betterment' and 'people taking control of their own lives and also taking responsibility for it'.

  Kemmis and McTaggart (1988, p. 5) describe action research as:

> a form of collective self-reflective inquiry undertaken by participants in social
> situations in order to improve the rationality and justice of their own social or
> educational practices, as well as their understanding of these practices and the
> situations in which these practices are carried out.

As a method of research, action research may be of great value in a variety of settings. For example, the improvement of teaching methods, the evaluation of procedures and the introduction of new work practices. Cohen, Manion and Morrison (2000, p. 226) write, 'Action Research may be used in almost any setting where a problem involving people, tasks and procedures cries out for a solution'. McNiff and Whitehead (2006, p. 14) add, 'it is necessary to go beyond fact-finding and into action'.
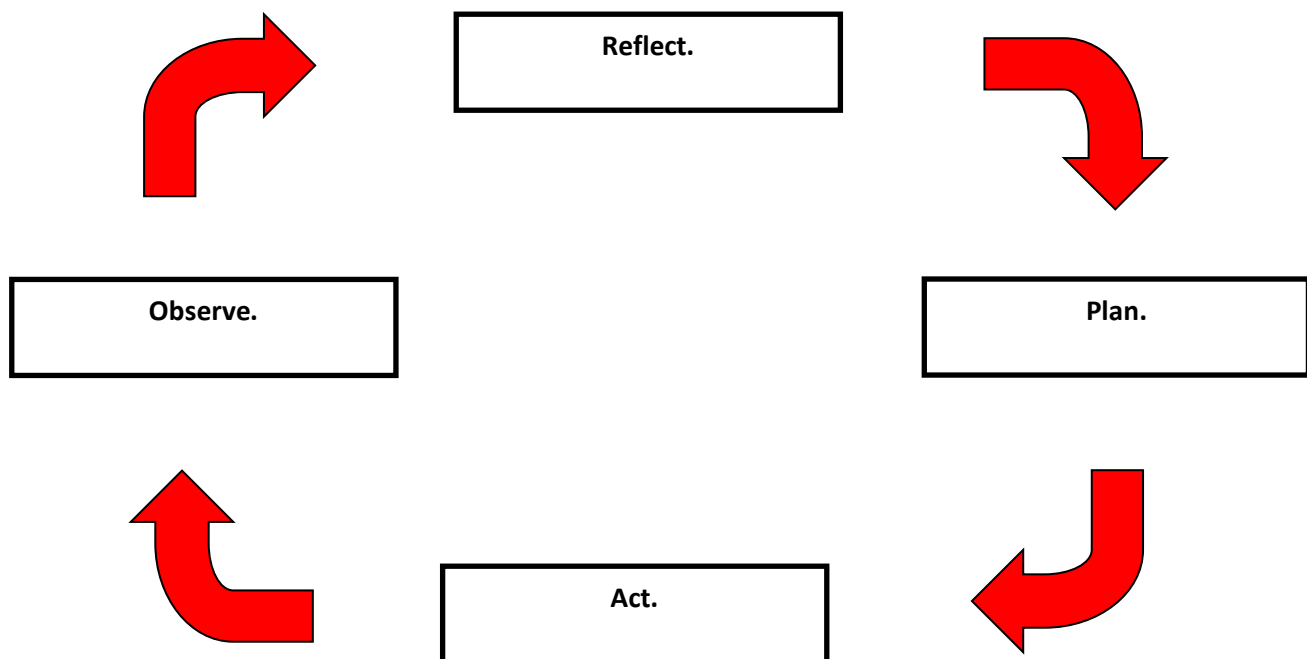
Figure 3.1. Model of Action Research. Adapted from Cohen, Manion and Morrison (2000, p.236).

Among the reasons I have chosen Action Research as the mode of research for this project is my belief that the 'Observe, Reflect, Plan, Act' (Cohen, Manion and Morrison, 2000) cycles of improved practice will appeal to many practitioners as they will be part of the process, and they will actually get to witness the results at first hand. It will also present them with the opportunity to take responsibility for their own clinical practice, to develop, and to see, themselves as practitioners and as researchers (McNiff and Whitehead 2006, p.16). With regard to this continuous cyclical process of improvement, Coleman and Lumby (1999, p.14) propose that 'there are seen to be two aspects of action research: one is to bring change, the other is to promote reflection among practitioners'. Schön (1983, p. 68) writes, 'When someone reflects in action, he becomes a researcher in the practice context'.

It is because of the collaborative nature of the process that I believe that action research is a powerful facilitator of change. It is recognised in the nursing and teaching professions, among others, that traditional empirical research methods, have not always been able to link theory with practice. Quite often this is due to the distance between the academic researcher and the practitioner, resulting in a theory-practice gap (Meyer and Batehup, 1997). McNiff (1988, p. 1) describes action research as 'a powerful method of bridging the gap between theory and practice'. Greenwood and Levin (1998, p.7) emphasise the collaborative and participatory nature of the process, they write,

> these people (practitioners) together establish the AR (action research) agenda, generate the knowledge necessary to transform the situation, and put the results to work, AR is a participatory process in which everyone involved takes some responsibility.

According to Coleman and Lumby (1999, p.14) one of the advantages of the reflective part of the action research process in the field of education is 'the potential that there is for the practitioner researcher to elucidate their understanding of processes in education and to enhance their own learning'. McNiff (1988, p.2) writes that action research encourages practitioners to 'become more involved in their own practice and to view themselves as researchers'. Bryant (1996, p.115) agrees, he quite clearly states, 'Reflective practitioners are *ipso facto* researchers in their own practice'.

3. 4. Project Overview.

The research process was divided into three distinct action research cycles as shown below in figure 5.

Cycle 1: Reflective Discussion Forum. As I have mentioned in chapter 1 a reflective discussion forum was convened to promote reflection in support of reflective learning, and reflective practice, and to allow for the sharing of knowledge among practitioners. While the

reflective discussion forum proved to be very successful, I was mindful of the fact that students' and practitioner's ability to assess and evaluate their own performance and that of their peers can often be unreliable (Foraida, DeVita, and Schaefer, 2006). So for cycle 2, I chose to use audio-visual recording 'to allow participants to see how they performed rather than how they thought they performed, and to help reduce hindsight bias.' (Fanning and Gaba 2007, p. 122).

Cycle 2: Medical Simulation with audio-visual recording. Practitioners participated in a series of simulated medical emergency scenarios which were recorded, so that they had the opportunity to review their actual performance, as opposed to their perception of their performance, as part of the reflective process.

Cycle 3: Real Life patient-care encounters with audio-visual recording. To gain insight into how practitioners performed on their own in a real-life situation practitioners were recorded audio-visually as they dealt with real-life patient-care encounters. Once again the practitioners subsequently reviewed the footage of the audio-visual recording individually while reflecting upon the encounter using the structured model of reflection.
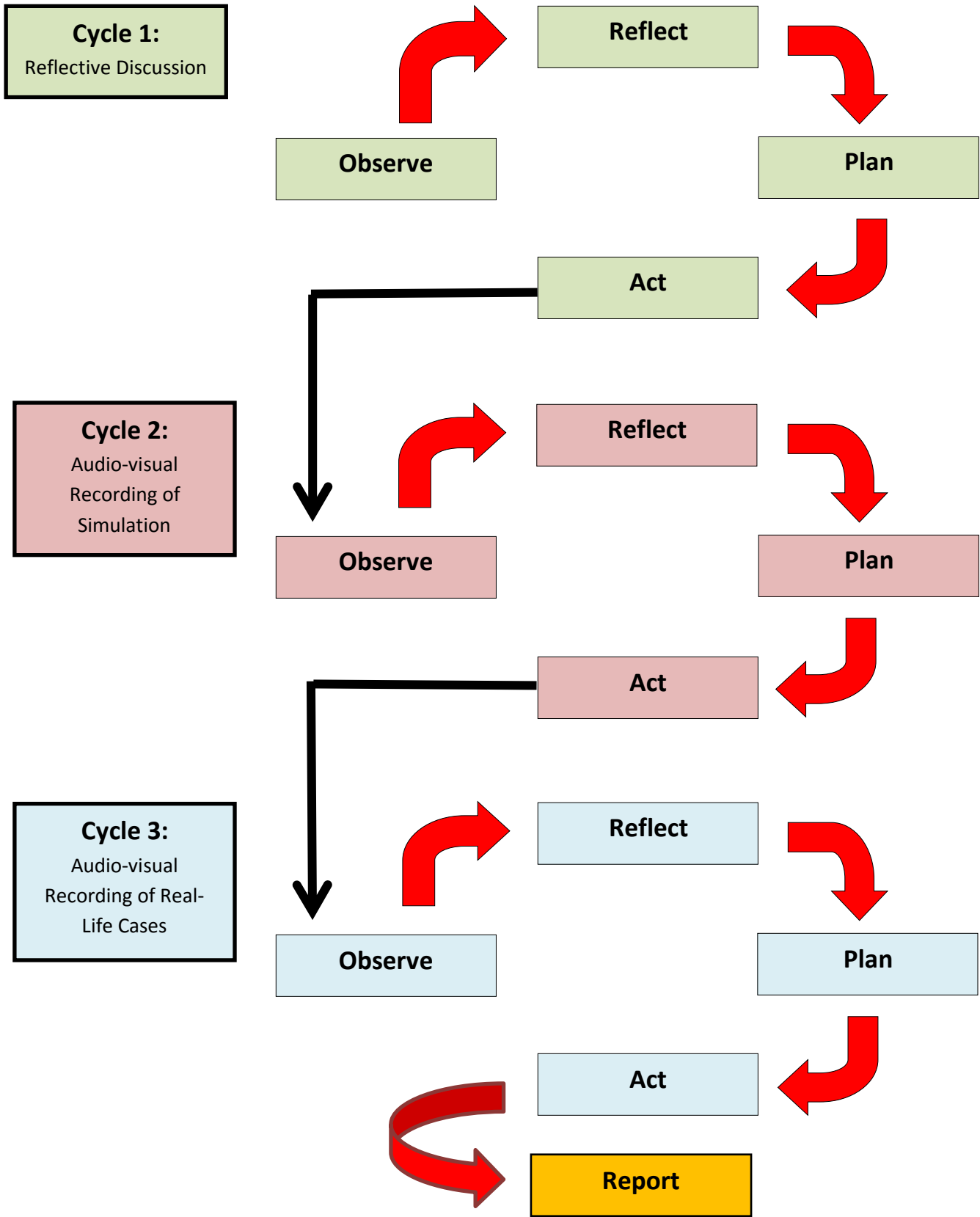
Figure 3.2. Overview of Research Project. Adapted from Cohen, Manion and Morrison (2000, p.236).

3. 5. Sample Selection.

In quantitative research, researchers typically select a random sample from the population of interest. This randomness of selection serves two purposes, firstly it gives all members of the population an equal opportunity to be included, and secondly it increases the likelihood that the sample will truly represent the population from which it was drawn. This allows for the results of the study to be generalised to the larger population.

In qualitative research, and in the context of this study, however generalisability is not the object of the exercise. In qualitative research the researcher is seeking to acquire a deep understanding of a situation or phenomenon. I will achieve this by using maximum variation sampling. Maykut and Morehouse (1994, p.56-57) write,

> the researcher attempts to understand some phenomenon by seeking out persons or settings that represent the greatest differences in that phenomenon . . . . it is not our goal to build a random sample, but rather to select persons or settings that we think represent the range of experience of the phenomenon in which we are interested.

Maximum variation sampling allows the researcher to view the situation or phenomenon from different perspectives and also contributes to the process of triangulation. Flick (2017, p. 445) writes that in its most basic form, 'the concept of triangulation means that an issue of research is considered - or in a constructivist formulation, is constituted - from (at least) two points or perspectives'. While Stake (2005, p. 454) comments that triangulation, 'has been generally considered a process of using multiple perceptions to clarify meaning, verifying the repeatability of an observation or interpretation'. Triangulation may also be achieved by using a variety of methodologies, data sources, theories, investigators, and levels (e.g. individual, group, organisational, etc.) (Cohen, Manion and Morrison (2000). At each stage of this project I have used triangulation by selecting participants of all clinical levels from different organisations, at various organisational levels, and from various professional contexts.

Cycle 1: Reflective Discussion.

Of the nine practitioners who attended the Reflective Discussion Forum I have chosen to interview five, who I believe adequately represented the complete range of opinions and perspectives of those involved. They are as follows:

- Operations Director (also an Advanced Paramedic).

- General Manager (also a Paramedic).

- 3 Practitioners (EMT's and Paramedics).

This sample represents all levels of practitioner and all organisational levels within the entity under investigation. It should be noted that in addition to their substantive roles, the Operations Director and the General Manager are both also seasoned practitioners with over twenty years of experience each.

At this stage of the process I also distributed an online survey, via the Irish College of Paramedics, which I will discuss in detail later in this chapter.

Cycle 2: Medical Simulation with audio-visual recording.

12 practitioners participated in the simulation exercise:

- 3 Advanced Paramedics (all professionals, frontline emergency practitioners).

- 2 Paramedics (both professionals, employed by a private ambulance service).

- 7 Emergency Medical Technicians (3 professionals, employed by a private ambulance service, and 4 from a voluntary organisation).

This sample represents all three levels of practitioner, and three professional contexts (frontline emergency practitioner, private ambulance practitioner and volunteer).

Cycle 3: Real Life patient-care encounters with audio-visual recording.

6 practitioners had the opportunity to record real life patient encounters:

- 1 Paramedic (professional, employed by a private ambulance service).
- 5 Emergency Medical Technicians (2 professionals, employed by a private ambulance service, and 3 from a voluntary organisation).

6 Educators were also interviewed in relation to all three cycles of the research project:

- 3 Education Leaders. Two of whom are from frontline emergency services and are also Advanced Paramedics, while the other is from voluntary organisation, and is also an Emergency Medical Technician.
- 1 Educator from a frontline emergency service, also an Advanced Paramedic.
- 1 Educator from voluntary organisation, also a Paramedic.
- 1 Nurse Educator.

This sample represents all three levels of practitioner, three professional contexts (nursing, frontline emergency practitioner, and volunteer) as well as the perspectives of educators and education leaders from both professional and voluntary organisations.

3. 6. Data Collection.

During the course of this research process I have employed two primary sources of data collection: interviews, and an online questionnaire survey. Triangulation, as discussed above, is the first of four key principles of data collection identified by Yin (2014, p. 118 - 129) which, if used correctly, will help to establish the validity and reliability of collected data. These four principles are as follows:

- Use multiple sources of evidence (Triangulation).

- Create a study database.

- Maintain a chain of evidence.

- Exercise care when using data from electronic sources.

3. 6. 1. Interviews.

The interview, writes Brinkmann (2017, p. 577), 'has become one of the most common ways of producing knowledge in the human and social sciences'. Ribbens (2007, p. 207) describes interviews as 'conversations with a purpose'. He writes,

> The purpose of interviewing is to find out what is in somebody else's mind but not to put things there. We interview people to explore their views in ways that cannot be achieved by other forms of research and report our findings in as near as we reasonably can their own words.

There are essentially two modes of interviewing, the 'one-to-one' interview, and the group interview or focus group. The interviews may be conducted either face-to-face in person, or by telephone, or online using email or a video link such as Skype or Facetime. My personal preference is to conduct interviews in person as, 'a face-to-face interview enables the interviewer to observe visual clues' (Coleman, 2012, p. 254). Some visual clues which would most likely be missed by the interviewer in a telephone or online interview include posture, body language and non-verbal communication. Observation is a key element of the interview process. Angrosino (2005, p. 729), describes it as 'the fundamental base of all research methods in the social and behavioural sciences'. He goes on to add,

> Even studies that rely mainly on interviewing as data collection technique employ observational methods to note body language and other gestural cues that lend meaning to the words of the persons being interviewed.

The face-to-face interview also give the interviewer the opportunity to build a rapport with the interviewee which will increase the likelihood of a successful interview.

Conducting interviews by telephone, or via an online platform such as Skype, may provide a solution in situations where it is proving difficult to arrange a face-to-face meeting. However, in addition to the limitations mentioned above, there are technical difficulties to be overcome in relation to the recording of the interview, not to mention the issue of broadband quality when conducting interviews via Skype.

Group interviews and focus groups may be useful interview formats as they bring together groups of participants with potentially diverse perspectives and opinions. The interviewer's main role is to generate discussion among the participants, from where the data will emerge (Cohen, Manion and Morrison, 2000, p. 287-288). For these type of fora to be successful, it is essential that the interviewer must also be a highly skilled moderator, as these groups can be complex to manage (Coleman, 2012, p. 254). In addition, there are also challenges to be overcome in relation to the accurate recording of group discussions of this nature. These challenges are all made more difficult in the event of the group interview or focus group being conducted by telephone or online.

I have deliberately chosen to conduct all of the interviews in this process as one-to-one face-to-face interviews, for the sake of consistency, at times and locations of convenience to the participants.

Brinkmann (2017, p. 578-579) describes a continuum of interview strategies, that ranges from relatively structured interviews, to relatively unstructured interviews and somewhere in the middle of this continuum lies the semi-structured interview.

I have chosen to use a semi-structured format for my interviews. The advantage of this approach over relatively structured, and relatively unstructured interviews, is that it allows me to use a pre-prepared list of questions. This gives consistency to the process, and also

gives me the freedom to allow the conversation to develop through the use of open-end questions, and to probe deeper with follow-up questions when appropriate.

All of the interviews were recorded with the written permission of the participants, who all reconfirmed their consent to participate, verbally, at the commencement of each interview. All of the participants were offered the opportunity to review the transcripts of the interviews prior to the data analysis stage, however, none of them felt that this was necessary.

For the recording of the interviews, I used a Sony Digital Dictaphone, and the 'Voice Recorder' on my iPhone 6S+ as a 'back-up' recording. Once recorded the digital recordings were stored in my iCloud account, which is securely password protected and subsequently transcribed. Upon completion of the transcription process, the transcripts in 'Word' format, were stored securely in my iCloud account along with all material relating to this study.

3. 6. 2. Questionnaires and Surveys.

Following the analysis of the data from Cycle 1 of the research process I wanted to gain an insight of the general feelings of emergency care practitioners throughout the country, in relation to reflective practice. For this reason I decided to conduct a survey of practitioners using an online questionnaire. My original intention was that the results of the survey would provide me with information which would be useful to me while composing the list of questions for Cycles 2 and 3 of the research process. However the survey produced some very interesting results which, as well as informing my interview research, were worthy of being reported as part of the study.

Questionnaires are widely used in scientific research but they also have a place in qualitative research. There are many types of survey items which a researcher may use, depending on the nature of the inquiry. Included among these are: dichotomous questions, multiple choice

questions, rating scales (for example: Likert scale), and open-ended questions (Cohen, Manion and Morrison, 2000, p. 248).

In constructing my questionnaire, I was mindful of the experiences of colleagues who had distributed lengthy questionnaires, only to receive a poor response. Therefore, I quite deliberately decided to make the survey as brief as possible, so that it could be completed in less than five minutes. In the questionnaire, which survey was created using 'Google Docs', I asked mainly dichotomous questions which required either a 'yes' or a 'no' answer. Depending on the respondent's choice, they were either directed to the next question or invited to comment briefly.

'Google Docs' is an extremely versatile tool with many applications, it is also relatively simple to use. In creating a questionnaire for online distribution an unlimited amount of survey items are permitted and there is a wide variety of item types (dichotomous questions, multiple choice questions, rating scales, etc.) to choose from. The online survey remained 'open' for three weeks and following the closing date, all data was exported on to an Excel spreadsheet which was stored securely alongside all of the other data in my iCloud account.

With the questionnaire created I now needed to distribute it. I wanted to distribute it to as many practitioners, both volunteers and professionals, from as many different organisations as possible. With this in mind, I approached the Irish College of Paramedics (ICOP) who were very happy to support my project. I chose to approach ICOP for the following reasons:

- They are an independent organisation who represent the paramedic profession.
- They represent practitioners of all clinical levels.
- They represent practitioners from all organisations who provide emergency medical care in Ireland.
- They represent both volunteer and professional practitioners.

3. 6. 3. Data Analysis.

Coleman (2012, p. 262), suggests that, 'Analysis of data is ongoing from the start of the interview process as the interviewer reflects on what they are hearing'. Cohen, Manion and Morrison (2000, p.147) describe the analysis of qualitative data as,

> Organising, accounting for, and explaining the data; in short, making sense of the data in terms of the participants' definitions of the situation, noting patterns, themes, categories and regularities.

Maykut and Morehouse (1994, p.121) describe it as 'fundamentally a nonmathematical analytical procedure that involves examining the meaning of people's words and actions'. For me, analysis of the data generated from the interviews was a slow process. It involved listening to the audio recordings of the interviews and reading the transcripts a number of times. This was followed by a process where reading and listening occurred simultaneously until the major common themes emerged. Data relating to each theme was arranged thematically on an excel spreadsheet and assigned a unique code. Each code is made up of three elements as follows:

- the participant reference number.
- the theme number.
- the number within a theme (row number on the excel sheet).

For example, for the data contained in row 3 within theme 2, involving practitioner 1, the code would read: P1-T2-3.

As I have previously mentioned the data gathered from the online survey was exported directly on to an excel spreadsheet where it could be analysed and coded. A similar coding reference number was created, using the letter S (for survey) followed by the clinical level of

the practitioner (EMT, P, or AP). So in the case of data from an EMT, contained in row 2 within theme 4 from the online survey, the code would read: S-EMT-T4-2.

The findings from this process are presented in chapter 4.

3. 7. Validity.

Action research, and qualitative research in general, is not without its detractors with many dismissing it as not being 'real' research. McNiff (1988, p.131) writes,

> A common challenge to action research is that it is subjective and therefore unreliable, that is, the solutions that it claims to generate cannot be universally tested and are therefore invalid.

Lincoln, Lynham, and Guba (2017, p. 137) assert, 'Nowhere can the conversation about paradigm differences be more fertile than in the extended controversy about validity'. McNiff and Whitehead (2006, p.157-161) describe validity as, 'establishing the truth value of a claim, its authenticity, its trustworthiness'. I have already mentioned Yin (2014, p. 118 - 129) earlier who identified triangulation as one of four principles which would help to establish the validity and reliability of collected data. Cohen, Manion and Morrison (2000, p.112) agree, they write, 'Triangulation is a powerful way of demonstrating concurrent validity, particularly in qualitative research'.

McNiff and Whitehead (2006, p.157-161) propose that in order to validate a claim to knowledge, one must seek critique of their work from supervisors, peers, critical friends and validation groups.

According to Liehr and Marcus (2002, p.157-158) the **rigor** of qualitative research is judged by 'by unique criteria appropriate to the research approach. Credibility, Auditability and Fittingness are scientific criteria proposed for qualitative research studies'. These criteria were first put forward by Guba and Lincoln in 1981, however they are still regarded as the

appropriate criteria for the evaluation of qualitative research. Credibility refers to the truth of the findings as judged by peer practitioners. Auditability is judged by the way that the information brings the reader from the initial research question, through the various stages of the process to the interpretation of the findings. Fittingness asks the question: does this relate to practice in real-life?

3. 8. Ethical Issues in Research.

The importance of maintaining high ethical standards in the research process cannot be over emphasised. Haber (2002, p.266) writes that the purpose of a code of ethics is:

> to protect patients from harm; the codes are not only rules and regulations regarding the involvement of human research subjects to ensure that research is conducted legally and ethically, but also they address the conduct of the people who are supposed to be governed by the rules. . . . The principle "the ends justifies the means" must never be tolerated.

One of the key ethical issues which must be addressed early in the research process is that of access. Cohen, Manion and Morrison (2000, p.53) cite Bell (1987) who advises,

> Permission to carry out an investigation must always be sought at an early stage. As soon as you have an agreed project outline and have read enough to convince yourself that the topic is feasible, it is advisable to make a formal, written approach to the individuals and organisations concerned, outlining your plans.

In addressing any ethical issues in my research project, I have taken the following steps:

- I sought, and was granted, ethical approval from DCU's ethics committee.

- I sought, and was granted, permission to carry out my investigation from the organisations involved.

- Participants had all aspects of the study explained to them, both verbally and in writing.

- Written consent was obtained from all participants.

- Participation in this process was entirely voluntary.

- Participants were given the opportunity to withdraw from the process at any time.

- Participants were provided with the opportunity to review the transcript of their interview so that they could verify its accuracy.

3. 9. Summary.

In this chapter, I have outlined the research methodologies I employed throughout this project. I have discussed my rationale for the choices I have made, and their validity. I have also addressed the ethical issues relevant to my project.

In the next chapter, I will present my research findings.

Chapter 4

Research Findings

4. 1. Introduction.

This chapter details the findings from the research process. I will first present my findings in relation to the attitudes to, and the experience of reflective practice among pre-hospital emergency care practitioners in Ireland. Next, I will present my findings relating to each cycle of the research process. As I have already outlined in chapter 3, the research process consisted of an action research model involving 3 cycles, as outlined below in figure 4.1.
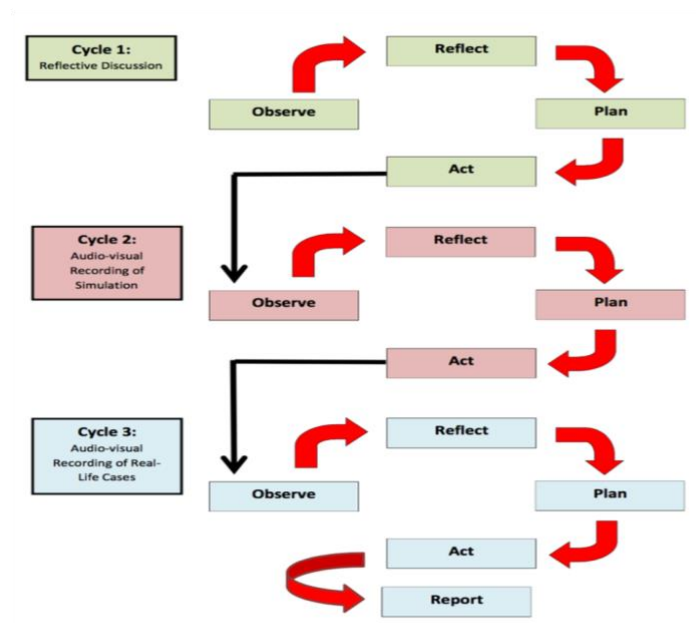
Figure 4.1. Overview of Research Project.

Adapted from Cohen, Manion and Morrison (2000, p.236).

Cycle 1 of the process, which examined the value of Reflective Discussion, was located within the context of Medicall Ambulance Service a private ambulance service which I have described in chapter 1. During this element of the process, data was gathered using semi-structured interviews with five practitioners who, as was discussed in chapter 3, I believed adequately represented the range of opinions and perspectives of the whole organisation.

In cycle 2 twelve practitioners of varying clinical levels, from a variety of different organisations participated in an immersive simulation experience where they were required to work in teams to assess and initiate treatment to simulated patients in a realistic environment. The simulation experience was recorded audio-visually and made available to the participants on Moodle, to enable them to review the footage while reflecting upon the event using Gibb's model of reflection. For cycle 3, 6 practitioners were recorded during real-life patient encounters. Each of the participants reviewed the footage while reflecting upon the event using the structured model of reflection. Once again, during cycles 2 and 3, data was collected using semi-structured interviews. Practitioners who participated in the research process are shown below in figure 4.2.

Code Number	Clinical Level	Substantive Role	Cycle
P 1	Paramedic	Practitioner	1, 2 & 3
P 2	Advanced Paramedic	Company Director & Practitioner	1
P 3	Emergency Medical Technician	Practitioner	1
P 4	Paramedic	Practitioner	1
P 5	Paramedic	Senior Manager & Practitioner	1
P 6	EMT	Practitioner	2 & 3
P 7	EMT	Practitioner	2 & 3
P 8	EMT	Practitioner	2 & 3
P 9	EMT	Practitioner	2 & 3
P 10	EMT	Practitioner	2
P 11	EMT	Practitioner	2
P 12	EMT	Practitioner	2
P 13	Paramedic	Practitioner	2
P 14	Advanced Paramedic	Practitioner	2
P 15	Advanced Paramedic	Practitioner	2
P 16	Advanced Paramedic	Practitioner	2
P 17	Paramedic	Practitioner	3

Figure 4.2. Participants - Practitioners.

Contributors to the online survey questionnaire also made some very interesting comments in relation to all 3 cycles of the process, which will be presented later in this chapter.

In addition to the practitioners, 6 educators of varying clinical levels from a variety of different organisations and backgrounds were also interviewed in relation to all three cycles of the research project. These are shown below in figure 4.3.

Code Number	Clinical Level	Substantive Role	Cycle
E 1	Advanced Paramedic	Education Manager, Educator & Practitioner	2 & 3
E 2	Advanced Paramedic	Education Manager, Educator & Practitioner	2 & 3
E 3	EMT	Education Manager, Educator & Practitioner	2 & 3
E 4	Paramedic	Educator & Practitioner	2 & 3
E 5	Advanced Paramedic	Educator & Practitioner	2 & 3
E 6	Registered Nurse	Educator & Practitioner	2 & 3

Figure 4.3. Participants - Educators.

4. 2. Reflective Practice among Pre-Hospital Emergency Care Practitioners in Ireland.

As I have outlined in chapter 3, I distributed an anonymous online questionnaire with the assistance of the Irish College of Paramedics (ICOP) so that I might be able to gauge the interest in, and engagement with reflective practice among Pre-Hospital emergency care practitioners in Ireland.

ICOP distributed the survey to the 1,096 practitioner email addresses on their database. 624 (57%) of these emails were opened by the recipients. 270 (24.7%) clicked on the link to access the questionnaire and 186 (17%) completed the questionnaire (See figure 4.4. below). I should point out that of the 472 emails which remained unopened, ICOP could not be certain of exactly how many of these email addresses were still 'active' email accounts.
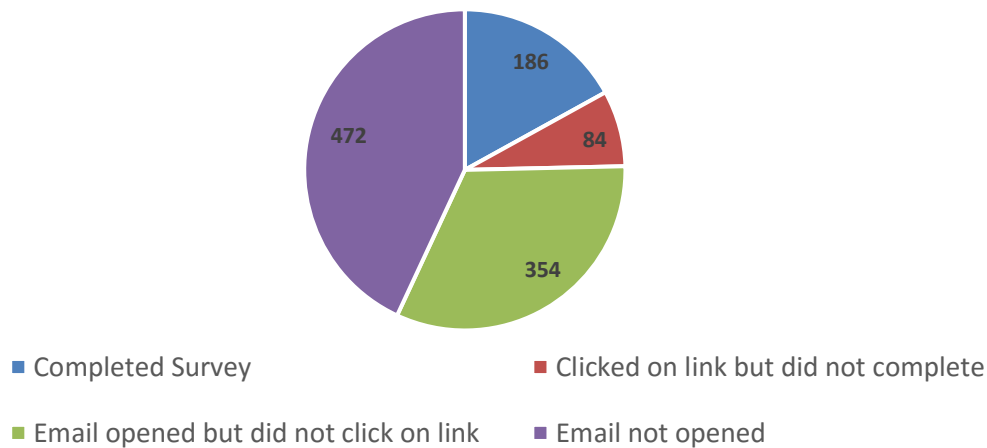
Reflective Practice Survey (1,096 surveys sent)		
	Surveys	%
Completed Survey	186	17%
Clicked on link but did not complete	84	8%
Email opened but did not click on link	354	32%
Email not opened	472	43%
Total	1,096	100%

Figure 4.4. Overview of Online Survey Response.

As can be seen in figure 4.5. the survey respondents came from all parts of the EMS spectrum, and represented all clinical levels (figure 4.6.). In total 86 came from the State Funded Ambulance Services, 60 from Voluntary Organisations, 11 from Private Ambulance Services, 4 from Military Organisations, and 9 who identified themselves as 'Others'. It should also be noted that there are 16 practitioners who, in addition to their substantive roles within the state (10), private (4), or military (2) services, are also associated with a voluntary organisation as practitioners in their spare time.
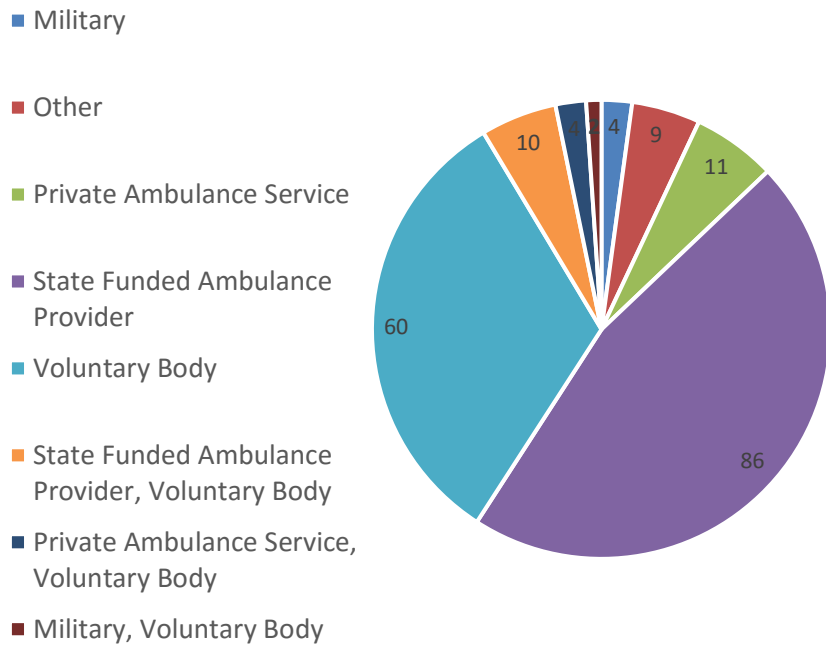
Figure 4.5. Types of Organisations Represented.
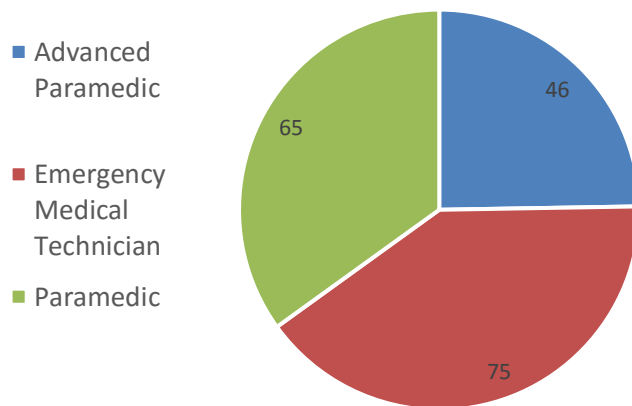
Figure 4.6. Clinical Levels Represented.

Practitioners were asked if they considered themselves to be reflective practitioners. 122 (65.6%) indicated that they considered themselves to be reflective practitioners, while 13 (7%) said that they did not, with 51 (27.4%), indicating that they were unsure. This last figure was made up of 23 EMTs, 23 Paramedics, and 5 Advanced Paramedics (See figure 4.7. below).
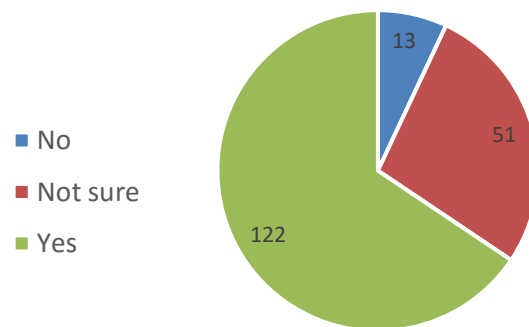
Figure 4.7. Do you consider yourself to be a reflective practitioner?

Of the 122 practitioners who indicated that they considered themselves to be reflective practitioners, 56 (45.9%) reflected alone while 66 (54.1%) reflected collaboratively with colleagues (See figure 4.8. below).
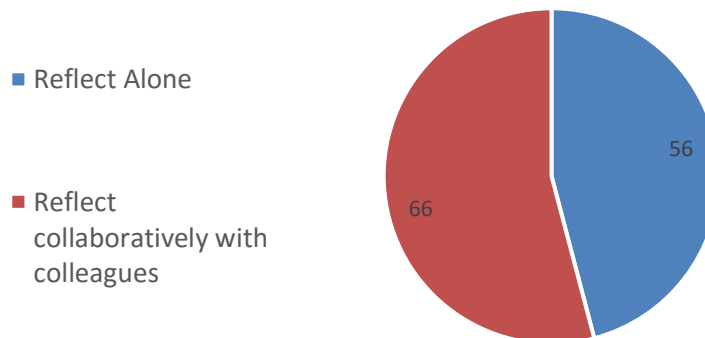
Figure 4.8. Do you reflect alone, or collaboratively?

When asked if reflective practice was encouraged within their organisation practitioners were practically split down the middle, with 95 (51.1%) indicating that it was and 91 (48.9%) disagreeing (figure 4.9.). However, when I examined the responses of the volunteer practitioners compared to the professionals, a significant divergence of opinions emerged. 70% of practitioners from the voluntary organisations felt that reflective practice was encouraged by their respective organisations (figure 4.10.), compared with only 42% of professional practitioners (figure 4.11.).
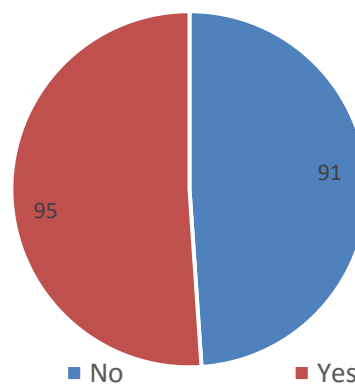
Figure 4.9. Is reflective Practice encouraged? (All Practitioners).
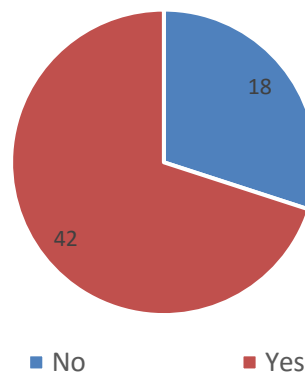
Figure 4.10. Is reflective practice encouraged? (Volunteer Practitioners).
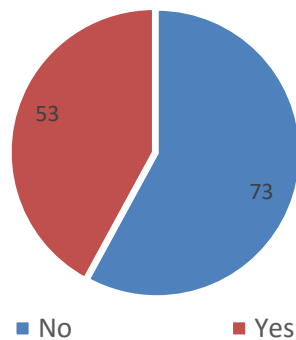
Figure 4.11. Is reflective practice encouraged? (Professional Practitioners).

When asked if they felt that it would be beneficial to discuss the events surrounding real-life patient encounters in an open forum, 93% of all practitioners were in agreement (figure 4.12.) that it would be beneficial in terms of helping them of reflect and 88% of practitioners (95.6% of APs, 92% of EMTs, and 78.5% of Paramedics) indicated that they would be comfortable discussing real-life patient encounters with their colleagues in an open forum (figure 4.13).
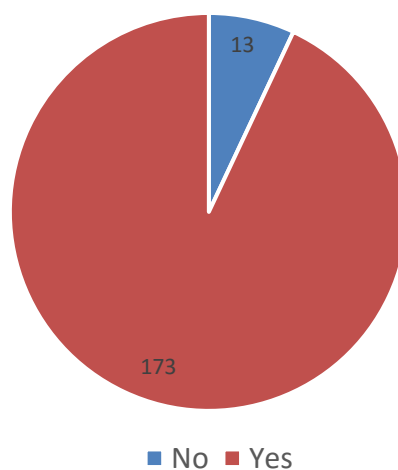
Figure 4.12. Is reflective discussion beneficial?
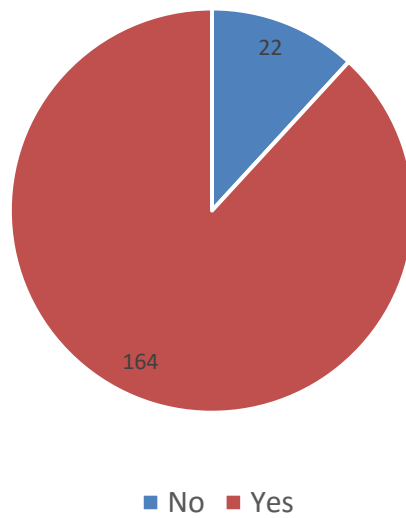
Figure 4.13. Would you feel comfortable discussing real-life cases with colleagues?

In relation to the review of audio-visual recordings of real-life patient encounters, 151 (81.2%) practitioners felt that it would be of benefit to them in their efforts to reflect upon real-life experiences (figure 4.14.) and 147 (79%) stated that they would be willing to participate in the audio-visual recording in order to facilitate reflection (figure 4.15.).
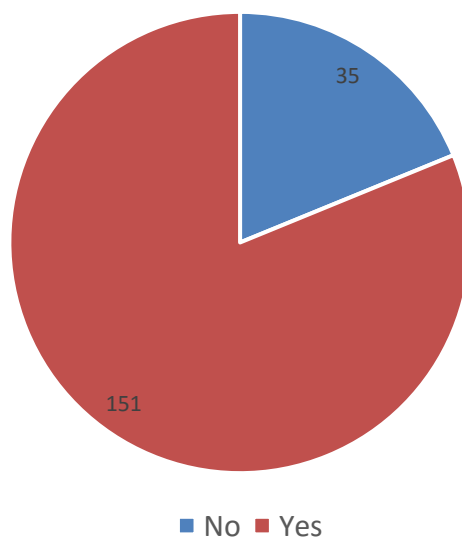
Figure 4.14. Is reviewing an audio-visual recording beneficial?

39

147

■ No   ■ Yes
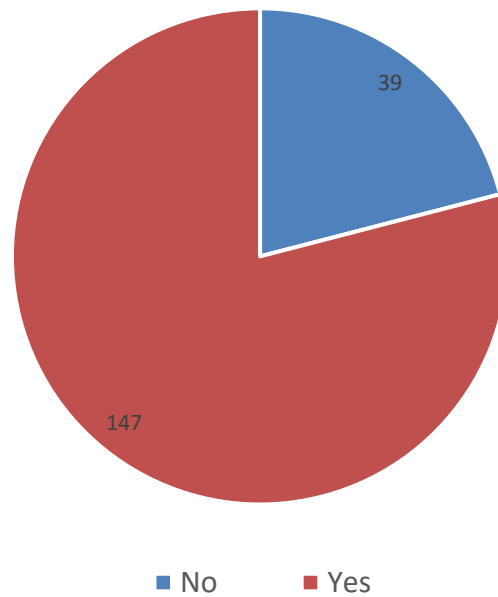
Figure 4.15. Would you participate in the audio-visual recording of real-life patient encounters?

Contributors to the online survey also made significant comments relating to all three cycles of the action research process. These contributions will be presented within the context of each relevant theme in the following sections.

4. 3. Reflective Discussion Forum.

As described in chapter 1 a regular Reflective Discussion Forum was convened within the context of Medicall Ambulance Service and all practitioners from the organisation were invited to participate. Data collected from the Patient Care Report (PCR) forms was presented and discussed. Following this specific cases involving high acuity patients were selected for presentation so that knowledge relating to these cases could be shared among practitioners who hadn't been regularly exposed to similar high acuity patient care experiences. Participants were encouraged and given the opportunity to speak freely in a supportive and non-judgmental atmosphere, in order for the facts surrounding each case could be established.   This process also sought to ensure that any lessons learned, and any new knowledge created might be shared among the group.

To evaluate the experience of the Reflective Discussion Forum, I gathered qualitative data by conducting a series of semi-structured interviews with five practitioners (see figure 4. 2.), who represented all clinical and organisational levels. The following themes emerged from these interviews: 'Everyday Experience and Skills', 'Benefits of Reflective Discussion', 'Collaboration', 'Informal Reflection', and 'Barriers to Reflective Discussion'.

4. 3. 1. Everyday Experience and Skills.

At the outset of each interview I asked each practitioner to describe their patient contacts in the previous twelve months. In particular, I enquired about the nature of these patient contacts. For example: Were there many 'emergency calls? Had they dealt with a wide variety of patients? Had they used their full range of skills?

In the interviews practitioners, all of whom are employed within the same clinical context, described a surprising variation of day-to-day experiences. P1 told me,

> We have everything from ICU transfers to Paediatric patients. Adults, emergency
> calls from home into A&E, to inter hospital transfers with patients who are stable
> going from one hospital to another for a CT or another investigation. (P1-T1-2).

P2 and P3, both felt that they had dealt with a wide variety of 'medical' patients, but relatively few trauma cases while P4 and P5 had dealt with very few emergency situations. One participant summarised this by stating that 'I would see minor trauma in the home. Like, "elderly falling", but I would not see high velocity trauma, as in road traffic accidents. Medically, I would be well experienced' (P3-T1-3). Definitely, a case of being in the 'right place at the right time'. Or perhaps the wrong place, depending on one's perspective. P4 also emphasised the need to remain competent in the performance of practical clinical skills,

> I think in order to maintain your skill level you need to be practicing your skills and you need to be administrating medications . . . . I think there should be some sort of minimum requirement for that. I don't mean you have to have a cardiac arrest every couple of months or anything like that, but you are more likely to see that if you are doing emergency work, and I think that it would be more beneficial if you did because there is nothing to say now that I am at the same skill level as I initially was when I did my exams, but yet I am still recognised at the same level when I may not necessarily have the same skills. (P4-T1-4).

She continues,

> I think you need to have hands on in a lot of these things. So whether it should be done with an odd placement here and there in the likes of ICU, where you can practice using your iGel or your LMA, or even an afternoon where you get . . . . . even in things like setting up drugs. Things like that, that you are not getting to do but should still be proficient in. So obviously (placements) in A&E or ICU, where you do get those skills I think would be beneficial. (P4-T1-5).

4. 3. 2. Benefits of Reflective Discussion.

The initial reaction to the Reflective Discussion Forum was extremely positive. This was the first clinical reflection forum any of our staff had ever participated in and they were genuinely enthusiastic about many perceived benefits of the reflective process. Staff were delighted to have the opportunity to draw upon the experiences of their more experienced colleagues. 'It is really good that someone who has been there before, had that problem but got it sorted. So it is good to draw from that experience' (P3-T2-2).

'I think sharing experiences is a benefit as I think that few minutes you take to make a decision like with the traction splint . . . . . . so if you can eliminate that minute because you have previously had all these discussions before, then you saved a minute of what is possibly a critical patient'. (P4-T2-3).

What also made the discussion process stand apart from a standard case presentation was the fact that practitioners not only presented the 'cold hard facts' of the case, they also outlined their thought processes at every step, discussed how they felt in the situation they had been presented with and invited comments and discussion from the floor. 'Overall it was good from the point of view of understanding what happened at the incident, and interesting to see people at different levels, to see how they reacted in that situation' (P5-T2-4). 'One of the examples was a ROSC patient, and the paramedic who was there discussed how they felt as well as the clinical outcome. It was a good discussion actually (P2-T2-5).

All present were given the same opportunity to comment or ask a question regardless of their practitioner grade or position within the organisation, which resulted in a genuine sense of empowerment. One of the more junior staff members commented, 'I thought it was brilliant . . . . . . It was a very relaxed environment . . . . there was no curtailment on what you wanted to say'. (P3-T2-6).

It was nice and casual, and the fact that it was so casual (meant) that some people would not have previously joined in the conversation did do. And some who normally, when you were having a conversation about the likes of a treatment, that they would not normally partake as much. So I think it is nice that people are more comfortable in a setting like that. (P4-T2-7).

The Reflective Discussion Forum also provided the opportunity to develop critical thinking skills by adding in a number of 'what if' scenarios.

'There were some things I suppose that were discussed as well that maybe would not be discussed and maybe it was just the case presentation . . . . with a good debate in what direction this patient's contact could have got in so it was not specifically about the patient, it was an overall discussion. (P2-T2-8).

'It really has you thinking, and trying to figure out the differential diagnosis . . . . You would see something and say that this person has chest pain, and would commence Aspirin and GTN, and suddenly you would think that it is not as black and white, and you really are thinking and standing back and taking a bigger look at everything and thinking what could this be?' (P1-T2-9).

The mentoring of new staff in the Ambulance Service is one of those areas that, in the past, has had more than a little bit of 'pot luck' about it. One of the managers felt that the mentoring experience for a newly qualified EMT or Paramedic can often be 'hit or miss' depending on the mentor. He proposed that this process offered an opportunity of some positive mentoring for newly qualified staff.

We have a number of different levels, and different people who come in, and I think that they are all very good but we don't tend to train them in what they need to know when they come in. Sometimes we have adopted the attitude that they are EMT's, so they know what to do, or they are paramedics so they must know what to do, and we just accept that. I think that experience is a great tool, and it is one of the problems, but I am not saying necessarily saying that it is a problem with the Private Ambulance Service, but I think that it is something in the Public Ambulance Service, which is passed (on to the next generation). It can be a good thing and it can be a negative thing (depending on the mentor) . . . .' (P5-T4-2).

4. 3. 3. Collaboration.

When I was facilitating the Reflective Discussion Forum, I was struck by everybody's willingness to engage with the process by adding their experiences into the discussion. It is this spirit of collaboration that makes me hopeful for the future role of this forum. EMT's and Paramedics tend to work as part of a two person crew and there is no tradition of sharing experiences or feelings in a group, or for collaborative learning such as this. I believe that I have identified a need. Practitioners, I believe, need the opportunity to be able to speak openly about their experiences without fear of judgement, criticism, ridicule or sanction. When I asked P1 what one thing he took away from the discussion he said,

'The one thing is that we are all in this together supporting one another and it is not a quizzical thing. "You did that wrong, you did this wrong, you should have tried that'.

It is different peoples variations, different peoples experiences thrown in . . . . . .' (P1-T3-2).

Another positive aspect of the process was the fact that managers, directors and staff sat among one another and discussed the issues in a spirit of mutual respect.

> I think to a certain extent I got a kind of comfort out of it. Because the crews, when they were discussing their experience, there wasn't that "we were there to judge them", and the construction was very constructive. I took away something as there was just that level of engagement which I think is very good. (P2-T3-3).

> I think the fact that it was an open forum with the EMT's, Advanced Paramedics and Paramedics, people who would be responsible for the clinical governance within the company as well were sitting at a round table form . . . . I think the fact that it was that round table form, and it wasn't across a desk or a pedestal (helped). (P2-T3-4).

'It is an excellent format, and very relaxed, and very open, and that is why it worked so well'. (P5-T3-5).

4. 3. 4. Informal Reflection.

Already in this chapter I have referred to the enthusiasm for the Reflective Discussion Forum. I believe that this is partly due to the fact that all of the EMT's, Paramedics, and Advanced Paramedics I interviewed all engage in a certain amount of reflection, usually informal, relating to their work. Some reflect privately, others with a trusted colleague. P1 places great value on discussing cases with his regular work partner, he says, 'I enjoy that sort of thing I have to admit. Sitting around listening to other cases. I would question myself what would I have done . . . . .' (P1-T5-2). He continues,

> Often we would (discuss cases), especially with the emergency calls from house to home, or something that we would be much more hands on, and highlighting 'how did this go, and what we could have done differently'. We try and learn from one experience to another . . . . It would not be very formal, but we would question each other (on) how did this case go, and what else could we have done. (P1-T5-3).

P5, a practitioner with over 20 years of clinical experience, believes that there is no such thing as a 'perfect ambulance call' and that there is always room for improvement.

> There is never a single case that I have done when I would think that I couldn't do that better. That is honest to God. Never with one single patient would I say, "well, I have done a great job there". Subconsciously and unknowingly I suppose I think that (on) every case when you are coming back (to the base), particularly in the early days you would talk about the case and try and judge it by how you did and what would you have done differently. (P5-T5-4).

Some of most significant findings of this study came in the area of reflection. As we have already seen of the 186 practitioners who completed the online survey questionnaire, 122 (65.6%) responded that they considered themselves to be reflective practitioners, while 7% indicated that they weren't. 27.4% were unsure. Of these 122 practitioners who indicated that they considered themselves to be reflective practitioners, only 13 (10.6%) indicated that they used a structured model of reflection. When this was probed further, 8 respondents indicated that they had experience of using the Gibbs Model while 2 practitioners used the CRASHED Model. Other structured models mentioned used by participants were the What, Now What, So What Model, Action Research, Kolb, Schön, Johns, Borton/Driscoll, and Brookfield's Four Lenses.

While it is important to note that there was an awareness of the range of structured models for reflection among at least part of the participant cohort it must be acknowledged that the vast majority of practitioners surveyed tended to reflect in an unstructured, and mainly informal manner. Among the strategies cited were, case debriefing, conversations and discussions with colleagues, reading journals, research, attend clinical audit meetings, online education programmes, and general personal reflections. The following quotes from the online survey summarise this approach:

'I ask myself what could I have done better. Anything I'm not sure of I look up'. (S-AP-T5-5).

> (I) notice if something is not correct or could be better - analyze why it happened - find a solution (thinking myself, checking guidelines or relevant literature, talking to colleagues or other experienced practitioners) - keeping the case in the mind and prepare myself and colleagues for new approach (before next duty, training...). (S-EMT-T5-6).

> I regularly reflect on calls I have attended and ponder how I could have approached the call more efficiently, safely etc. I also regularly research terms, conditions, medication etc. that I was previously unaware of. (S-P-T5-8)

'Case reviews and follow ups. Reading journals and listening to international podcasts'. (S-AP-T5-12).

> Usually, after a call or interaction with a patient I think back on the information and actions etc... I like to understand the various factors that made up that situation so that I might refine and improve dealing with a similar situation in the future. (S-P-T5-13).

One of the respondents commented on the benefit of having access to CCTV footage in evaluating performance,

> I reflect on each patient I attend by writing down the details of the call and comparing the interventions made against the time on scene to the time leaving scene. The majority of patients I see have been involved in major trauma at motorcycle racing. Looking back at the call I see what I/we could have done better, this is then discussed with the group and I also make notes for myself on how to improve for the next similar incident. Sometimes we have the benefit of CCTV at incidents so we can accurately reflect on the case at hand. We also put any tricky or testing cases to ourselves again during training to ensure we all are learning from reflective practice. (S-AP-T5-11)

In my introduction I mentioned that the notion of reflection, reflective learning, and reflective practice are still relatively new concepts within EMS in Ireland, and that they have yet to be universally embraced. This was also reflected in the comments, 'Would not use a specific model, would welcome guidance in this in future' (S-EMT-T5-14).

4. 3. 5. Barriers to Reflective Discussion.

Respondents to the survey identified some barriers that would have to be overcome before a reflective discussion forum could be successful. Two of the respondents plainly were not in favour of the idea at all feeling that it may be inappropriate to discuss patient care encounters with people who were not actually present.

> Discussing a call/s with your partner (or work colleagues and training officer if concerned/annoyed about a call) is good practice and we all do it at some stage, as is looking up further information on the internet or books about injuries or medical conditions that we come across and then put the call behind us, especially if it is anyway traumatic. With a forum, as the saying goes "doctors differ and patients die", even knowledgeable Drs, instructors differ about diagnosis n treatment the whole time, so I do not feel that by discussing calls on a forum would be anyway helpful. (S-P-T6-9).

> If I have any issues you would normally discuss the call with the person or crew that did the call. I feel that discussing what was done or not done to somebody who was not on the call would be a negative effect. (S-P-T6-19).

Some respondents expressed concern in relation to ***patient confidentiality***, emphasising the necessity to anonymise any patient records or any reference to the patient's identity. 'Isn't the patient history supposed to be confidential' (S-EMT-T6-17). 'I would be concerned about confidentiality' (S-P-T6-12). 'I would have concerns over data protection' (S-EMT-T6-10).

> The big issue is patient confidentiality. We have a duty of care to our patients. We only need to look at the incident of the ambulance crew breaking the news of Gerry Ryan's death to the media before the family were informed. The EMS circle is quite small and it is easy to identify incidents and patients from the talk. Also, there is a major risk in the forum becoming a forum for war stories which serves no major purpose. We have a robust CISM system to talk through traumatic events in a limited arena. Perhaps this is the way to go. (S-EMT-T6-16).

Other respondents were cautious, and articulated reservations about participating in a group forum. 'I'm not comfortable talking in front of people' (S-EMT-T6-6). 'Some practitioners prefer to talk with 1 person and not a group, especially if a traumatic or paediatric call' (S-AP-T6-3). 'They may not have the same reflective practices that I am comfortable with' (S-

P-T6-14). 'Laying myself open to criticism that may or may not be objective or constructive'
(S-EMT-T6-13).

However, some felt that if concerns were addressed, that the reflective discussion forum may
very well be a good idea. 'I may feel comfortable if the circumstance were correct' (S-AP-
T6-8).

> I find that in groups you always have one who tries to take charge and dominate and
> that just drives me mad so if the forum was chaired then yes, I would like to take part
> and feel it would be of huge benefit. (S-P-T6-2).

Perhaps the most significant barrier to the reflective discussion forum identified was that of
trust. Some respondents who identified themselves as being from a 'State Funded
Ambulance Provider' were quite forthright in their assertions relating to trust in both their
colleagues and the organisation in which they are employed. I believe that the issue of trust
is significant as it is raised in all three cycles of the action research process. I will discuss
this further and propose ideas of how this issue may be addressed in chapter 5. As trust is
such a fundamental part of any collaborative process, it is essential that this issue is dealt with
from the outset otherwise the process is highly unlikely to be successful.

'Because in my place of work some colleagues are very fast to run to management with
stories some may not be actually full content' (S-P-T6-20).

> There is a particular privacy between pt and practitioner. There is also different levels
> of trust between colleagues. I would only personally discuss with whom I deem to be
> trusted implicitly. (S-EMT-T6-18).

'The concern about reflective practice is that management may use this practice to discipline
staff members. This may happen or not but the concern among members will still be there'
(S-P-T6-15).

'You don't get the time to do anything like this the HSE is all talk about what they are doing
to help you in your job but it's just all talk' (S-P-T6-11).

> While I respect most of my colleagues there can be an element of "why didn't you do this or that" in a more belittling way than a learning process. I would like to point out that I do discuss calls with other colleagues when I meet up with them. (S-P-T6-7).

> Often used not a a learning tool but as an opportunity for management to reference when dealing with minor transgressions. Used by some workmates to attempt to undermine your confidence. (S-P-T6-5).

'Any sort of admission of wrong doing or mistakes carried out will be punished rather than used as a learning experience to others' (S-P-T6-4).

4. 4. Audio-visual Recording of Simulated Patient Encounters.

As I have outlined in chapter 1, simulation has become an important teaching methodology in healthcare education. To give the participants a truly immersive experience I staged a simulated patient-care encounter as close to real-life as possible using actors, high-fidelity manikins, and other props in the simulated apartment in the DCU School of Nursing. The simulated scenarios were recorded audio-visually from multiple angles. Once recorded, the recordings were made available to the participants via Moodle in order to allow them review the footage while reflecting upon the event using a structured model of reflection (Gibbs). The experience was evaluated by conducting a series of semi-structured interviews with all participants (see figure 4.2.), and six educators (see figure 4.3.). Participants in the online survey also made significant contributions to the discussion in relation to this section, especially in relation to their attitudes towards the audio-visual recording aspect of the process.

4. 4. 1. Initial Reaction to the Simulation Experience.

For the participants in this project, the simulation event held in DCU was their first exposure to a truly immersive simulation experience and for many of them it was their first experience of audio-visual recording. So it was a major step outside of their comfort zone, and understandably, they admitted to feeling a little apprehensive prior to the event.

it was very different to anything I ever would normally do because first of all, it was actually, it wasn't just in a room pretending, it was actually in a room that was set out to be like a sitting room or a kitchen, so it added a degree of realism. (P1-T7-2).

I thought it was really good. I was very nervous when I first got asked did I want to take part in it. Just the fact that I was going to be videoed and that people would be looking back on what I do, and maybe see would people comment too much on what I do and not do. (P11-T7-13).

it was good. It was something I was a little bit apprehensive about but kind of saw it as a challenge, you know, to be viewed by other people in a simulation situation, by people I didn't know and people that weren't my own colleagues or trainers so to be viewed by total outsiders to me was going to be a little bit different than anything I'd done before. (P12-T7-18).

Both practitioners and educators alike were impressed with the staging of the event, and they

identified three critical factors that were key to the overall success of the event.

- The credibility of the scenario.

- The physical environment.

- The actors and the use of a high-fidelity simulation equipment.

   the actual scenario was all relevant. And it seemed to be quite lifelike and realistic. Actors were actually very good. I suppose it was useful that they had some kind of experience in the past from a medical standpoint, and it kind of showed that they knew what signs and symptoms to play, and what to do and what not to do. (P16-T7-20).

   they played the part well. They were worked up. They were anxious. They were worried about their son. It was what you would expect walking into a house and seeing somebody that wasn't well. How the parents would actually react to their own son or daughter and to expect that anxiousness and stressed out. (P10-T7-12).

   The major difference to it, the previous simulations was the use of the advanced mannequins, and the advanced equipment, it sort of increased the realism of it. So, it was almost like treating an actual patient, as opposed to the simulated concept that you normally have. So, it allowed for more realism. (P12-T7-14).

   Well the environment is very life-like. You went in, it was like an apartment, and I know of other types of training where, you know, simulation, sim labs and so forth which I think are far more better because your typical scenario is a room, (with) loads of space, 360 degree access to the patient lying in the middle of the floor, and most

people know as practitioners that most patients don't end up in a big wide open space, they're under the table or beside a toilet or in an attic bedroom or stuck in a place. So, to actually arrive into a scene that was very much set like a real-life call and not just have a mannequin sitting there that you had to deal with was very beneficial. You had the furnishings etcetera in the room and, you know, you had to manoeuvre around them things and so forth. So that made things more realistic which, that's what we need to be doing. (P15-T7-19).

The educators also expressed their enthusiasm for the event. One pointed to the staging of the event in such a way that once the students had finished, they were free to congregate over a cup of coffee. This inevitably led to a lot of discussion, which provided further informal learning opportunities.

> I thought it was very professionally done from the outset. I think from an education point of view the concept of it was very interesting. The dynamic of it was very interesting as well. I think the learning obviously starts with clarity, and the clarity was provided to the participants with the written information they got in advance, if you like, the joining instructions. So, I think that was very clear, so the context was very good. The staging of it was very professional, it was very clear, it was very clear what it was all about. The actors were first class, first rate, well briefed I would say, and the environment it was done was very conducive to the objective of the exercise which I understand was for learning, and key learning to be observed. (E3-T7-22).

> That was good. I suppose the whole apartment setting within the college was very good. And then having the space outside for everybody to hang around and wait, just to kind of...because I think even having them all together waiting around generated a lot of discussion as well, so even when they weren't involved in the actual scenarios there was a lot of discussion happening outside as well. (E6-T7-21).

4. 4. 2. Initial Reaction to the Audio-visual Recording.

Most of the participants admitted to feeling a little apprehensive about being recorded, reviewing the video of their own performance and at the thoughts of having others review their performance. However, it's fair to say that they all completely forgot about the cameras once they became immersed in the patient-care scenario. 'On the day, I never ever thought about it, completely forgot there was even cameras there when the event was going on'. (P1-T-8-2).

you know the video is up in the corner. But after a couple of seconds or so, you kind of just get into doing what's laid in front of you, the tasks that are set out for you, and you kind of forget about the video. You know what I mean, there's so much going on in the room at the time that we didn't actually pay much attention to the cameras or the speakers, or whatever was up in the corners . . . . . . if we were to concentrate on the cameras being up in the corner, we wouldn't have done what we had to do. (P6-T8-3).

To be honest I was nervous before I went in, more worried kind of about the video and the mistakes I was going to make and be seen, but once I went in and got into the scenario I didn't think about the video at all. I wasn't paying any attention to the fact that it was being videoed. (P9-T8-9).

I found it frightening before I went into it. It was . . . . The fact that I knew cameras were watching every move and that it was going to be looked at by other people afterwards. So, I found that a wee bit frightening. What if I make a mess of the whole thing and look at it afterwards and say, 'Jesus I should never have done that'? But when I look now, after it, it was really, really good to actually see myself in action and I was able to see both the good points and the bad points of all the scenarios and I learned a lot more from actually seeing myself working at a scenario. (P10-T8-11).

'I find it, it can be quite off putting, because the sort of, like, "Jesus, you know, is that how I look doing it" . . . . nobody likes to see themselves'. (P12-T8-13). 'It was a good learning experience, getting to see how I, and the rest of the people that were with me, performed; and then comparing it and contrasting it to the other teams'. (P12-T8-12).

I suppose, a bit nervous in some part about being videoed . . . . I have reasonably good skills, but I suppose the fear of actually watching yourself and realising, "Oh God, I don't have those skills", or "that's a lot worse than I thought". (P13-T8-15).

I got highly involved when another individual in the scenario arrested. So I think once that point came on it was just, I think I kind of forgot about the cameras to be perfectly honest with you . . . . I think I was just concentrating on the job. (P13-T8-16).

Some of the more experienced, and higher clinically qualified practitioners, were enthusiastic about the opportunity to observe their own performance.

Obviously if I'm interpreting my own work I'm like minded with myself so my interpretation will suit me to a degree and I will see things from a different angle that obviously, I don't see when I'm down there doing the work and participating in the simulation itself. So, I think that's good. (P14-T8-17).

I found it very beneficial to be able to self-critique. I'm quite open-minded that nobody's perfect, and I find critiquing myself is a good thing, because the day you know everything is the day should stop practicing. I think, so every day's a school day. (P15-T8-18).

4. 4. 3. Initial Reaction to Own Performance.

It is fair to say that most of the practitioners initially found it a little strange watching audio-visual footage of themselves. However, once they had overcome their initial discomfort, they all reported that they found it to have been a beneficial and an interesting experience, 'the first time I looked at it all I could see was me and hear my voice and I didn't like it, so it took me a second time to actually review the video' (P9-T10-6). 'To be honest I found it quite interesting, and this is the first time I was recorded'. (P6-T10-1).

There was a tendency among the practitioners to initially focus on the negative aspects of their performance. However, following subsequent viewings of the footage, they expressed pleasant surprise at noticing their performances contained many more positive points than negatives.

reflecting on any scenario that we have gone through . . . . . . I would say to myself, and so would the rest of the team, we should have been quicker on that or we should have done that better. (P8-T10-5).

I'm very good at critiquing myself . . . . . . unfortunately all I'm going to see is errors, I'm not really noting anything that was done well, I just saw errors . . . . Then when I went back and watched it a couple of times and I turned the volume up a bit, I was able to pick up one or two things, said, well OK that wasn't so bad. (P13-T10-9).

it is good because you see strengths that you mightn't know were there and you see weaknesses obviously that you mightn't know were there but, you know, I think in my case I saw a few things that came across better than I would have expected in both cases . . . . I think I came across a lot more in control than I would maybe I feel

am, sometimes on the road. So, I think, I maybe, to an outsider look stronger than I actually feel, and I actually am stronger than I feel I am sometimes. (P14-T10-10).

4. 4. 4. Previous Experience of Scenario Training.

For many practitioners, their initial exposure to OSCEs or scenario based training has been as part of one of the main voluntary organisations, or through the course of their basic training as an EMT or a paramedic. 'the practice OSCE's for the EMT . . . . . . I do some scenarios with the St. John's in Walkinstown as well'. (P7-T9-5).

> I have done a good bit in the past . . . . with the voluntary organisation . . . . . . for example if we were doing OSCEs for certain levels, or if we were doing competitions . . . . . . even just training at unit level, there was a lot of scenarios. (P6-T9-4).

Practitioners pointed out that their previous experiences of scenario training were often poorly prepared and staged, which gave them an unrealistic feeling that they felt left them unprepared for real-life patient care situations. P1 comments, 'Very "cardboard" is probably the best word I could use'. (P1-T9-2). He continues,

> There's no makeup, the person who is acting as the patient often doesn't really understand what's going on. They'd be given some information and they just act out as they're told. They really don't understand what's going on and it's not as fluid as what we had there that day. (P1-T9-3).

> A lot of the time either evaluated by somebody more senior or your peers, staged anything from very little planning to elaborate planning to, from, you know, sitting in the corner of the training room going what will we do next. (P14-T9-12).

> when I first started, it was a scenario possibly dreamt up in the minds two minutes before the exam was going to take place. It was based on one person's experience. Maybe even from previous real life experience. And they would set the scenes the best that they could, but ultimately when they were examining us, it would be one individual examining possibly one, two, three or four persons and trying to observe all of that was always quite difficult . . . . it would be quite difficult to keep an eye on everything. (E5-T9-20).

The educators felt that the lack of preparation, and the poor quality of the staging of clinical scenarios in the past, made life quite difficult for the student in terms of distinguishing

between the reality of what they are presented with and the details of the patient condition being verbalised by the instructor. E1 comments,

> That's difficult from the student's perspective I would imagine and having been involved in that myself as a student many years ago. That was difficult because the problem is you're turning to the instructor asking for vital signs, and you're asking for parts of the scenario that are unreal. So even though I may check a pulse appropriately, I'm checking a normal pulse and you'd expect that pulse to be normal, when all of a sudden the trainer says "Actually no. It's tachycardic. It's over a hundred" or whatever. So, it throws you. So you have to be able to determine what is real in the scenario and what is not real in the scenario . . . . That's a difficult scenario to run, both from the student's perspective to be involved, and I suppose a bit for the trainer too, that he has to keep or she has to keep on top of those parameters, and change those as they go along. So, it's not real life. (E1-T9-15).

The subject of excessive use of 'verbalisation' was mentioned frequently by both practitioners and educators. It has been common practice for students to 'verbalise' their intentions during scenario training in terms of their clinical assessments and treatment strategies. In addition, instructors frequently 'verbalise' a patient's medical history, signs and symptoms. Consequently it is possible for a student not to carry out a proper clinical assessment, obtain a full medical history, or initiate any actual treatment in what is meant to be a practical assessment.

> the only scenarios that we've done is with another instructor in the room and while it's beneficial, it's not entirely realistic. It's more role play. it would be down to the instructor's individual experience to devise a scenario and give what they would, I suppose what a realistic scenario would be to them so they'd be drawing from their own personal experience of cases they've actually been at, but they'd be very much verbalising the vital signs, verbalising the scenario to the students as the students ask questions. So, they're relying on the instructor to provide the information rather than do the actual clinical assessments themselves. (E2-T9-16).

> sometimes with the exams when you don't have anything to back it up you are relying on the student saying this is what I'm doing or that's what I'm going to do. (P1-T13-2).

> we verbalise stuff an awful lot. Like "I'll put on the defibrillator", or "I put on an ECG". I put them on. And then suddenly you have to deal with a mass of wires and your blood pressure cuff and moving the patient with a monitor and moving the

patient with oxygen. And then it… I won't say it sorts the men out from the boys, but you realise then that if you verbalise stuff too often, you're not doing it. (P17-T13-3).

4. 4. 5. Evaluation of Previous Experience of Scenario Training.

Evaluations of these type of assessments are typically performed by an examiner who is usually an experienced clinician or an educator, using an objective 'tick-box' assessment sheet.

> Previously, as they're still evaluated today, it's normally somebody standing there with a clipboard or an iPad ticking boxes and pushing little buttons as they see something happening or if they don't maybe asking somebody did they do that. (P1-T11-2).

> everybody went in and did their scenario . . . . And at the end there was boxes ticked, if you ticked the boxes or you didn't tick the boxes. It was given back to a class, a presentation at the end of the day. (P7-T11-6).

Several limitations of this process were identified by both practitioners and educators.

▪ Subjectivity of the examiner. In these situations, there is little opportunity to question the examiner's decision, as it is usually final. P15 comments, 'if there's any conflict over the scenario where one person says something was done or not done, it's very difficult to check that in an old system'. (P15-T12-25).

> It was evaluated by the instructor with a tick sheet. Obviously people have to reach a certain standard and so there's a tick sheet and the instructors tick them off as you go along. Feedback, I think is a bit hit and miss a lot of the time. You kind of either get somebody, either "Oh, that was really brilliant, brilliant, brilliant" or it's kind of "OK that was grand" but there's no actual structured feedback really, although we probably should do that a bit better . . . . . . there's one instructor, or two instructors. One instructor is giving the scenario, the other one is ticking the boxes - they could miss something out, it's very subjective as well. It's kind of what they feel, as opposed to what's actually happening sometimes. I think a lot of the time the instructors are a little bit blinkered and don't see the whole picture. (E6-T11-16).

▪ This lack of proper feedback for students significantly reduces the opportunity for the student to learn from the scenario experience.

I've done a lot of scenarios over the 16 years and even with my own doing the EMT scenarios and going into a room where you have, not inspectors, but people that's going to mark you on . . . . . . they're there (the evaluators) and they're ticking off boxes to see have you covered everything on your scenario and when you leave that room they can tell you "Well you missed this. You missed that". But it's… you hear it once and you never hear it a second time and you can't go back and look "Well, where did I go wrong there? I don't understand". So that was missing . . . . . . I think you would learn a lot more by actually seeing what you've done wrong, (rather) than somebody telling you "Well, Michael you missed this", and you may be thinking, "I thought I'd actually got that", but it's his word against your word. (P10-T9-8).

▪ Even the most experienced of examiners cannot always be in the correct position to see everything that is happening, particularly in a complex scenario, and as a result it is possible that they may miss a vital piece of action.

it is difficult and the more complicated the scenario becomes the more difficult it is because there's so much going on and often, you're just trying to watch technical skills. (P1-T11-4).

It often happens it's the student has their back to the examiner, they might actually do something but not verbalise it and as the examiner you just can't see that. (P1-T12-4).

I think with instructors, they're standing in a place and they're trying to watch. It's very hard to just pick up on everything and they may miss some little things, or maybe if there's a lot of stuff to be ticked off, it ends up being a 'ticking of boxes' and maybe somebody has said something, and they missed it because they're watching something else, and they can be distracted as well. (E4-T11-14).

The negative, is down to that they don't see everything or hear everything. So having some sort of a support mechanism to reaffirm what was or wasn't done or said. (E5-T11-15).

▪ It is rare that the assessment sheets take account of how well a skill is performed, or if the skill was performed in the correct sequence.

you'd try and use a skill sheet… so basically… but one of the issues that I have with skill sheet based training is the tick-boxing. It's not about the actual doing of stuff, it's about, can you tick a box. So, you're not learning the skill; one example that I tend to refer back to is, the skill sheet says apply a bandage, it doesn't say, apply to properly or that it does its job, so long as they… if they literally take a bandage and put it on, they've gotten that mark. But it doesn't mean that they're going to actually stop somebody's bleeding. So, I'm not a fan of tick-boxing. (P12-T11-8).

- The assessment sheets tend to concentrate on technical skills, while the non-technical skills such as: communication, leadership and teamwork are often reduced to one tick-box at the end of the sheet, or ignored altogether. P1 comments, 'The communication side there's often in the exams there's one little box at the end'. (P1-T11-4).

the educators very often are focused, as I said earlier, purely on the hard skills and the clinical skills that they're trying to prove the learning mistake and place around and very often, depending on the skill, there's a dependency on the softer skills and unless something is very obvious then the evaluator is, A, not trained to spot them or to comment on them or B, tends to miss them because they're working to a prescribed list. (E3-T11-13).

when you look at, we'll say some of the OSCE sheets, any scenario training sheets that come up and they have a tick box exercise and it's marked, you know, you get a point for this and a point for that, in my mind it's… I understand the need, you have to have some way to evaluate students and trainees . . . . Because every practitioner, everyone that's ever done any kind of first aid on a regular basis, be it at a practitioner level or advanced practitioner level or whatever, realises, you know, there's lots of stuff goes on that you're assessing your patient from the door, so as soon as you see your patient, you're looking at the scene, seeing what's going on. And all that information, it's not necessarily a tick box thing. (P17-T11-10).

4. 4. 6. Comparing Previous Experiences with Simulation and Audio-visual Recording.

When comparing their previous experiences of OSCEs and scenario training with the recorded simulation experience, the participants were unanimous in indicating that they preferred recorded simulation experience. There were three main reasons for their preference. Firstly, considering the comments in 4. 4. 5. regarding possible bias on the part of the examiner, or a genuine oversight or error on the part of the examiner, participants felt that the audio-visual recording offered clear independent verification of skills that they had performed. 'Well at least with the video you could watch it and say, "Right well yeah, that did happen or it didn't happen"'. (P7-T12-10).

The video one does give, I think, a greater sense of fairness. If you do have a problem or an issue, an independent person can go back, look and say well listen you did do it or you didn't do it, it's fact, it's there, there's evidence if, and just being one examiner and one student your word against mine, you know, so if you do have a personality

clash or you feel the examiner didn't see something because they were distracted or something was done. (P1-T12-3).

better for, yeah, for me to see how I work think and, you know, being told something after a scenario by the man with the clipboard is not the same as actually seeing it for yourself. (P14-T12-21).

if there's any conflict over the scenario where one person says something was done or not done, it's very difficult to check that in an old system, whereas on a video recorded system it's there for everybody to see. Even the likes of having multiple cameras, things that may have been missed will now be picked up. (P15-T12-25).

Secondly, the participants felt that by reviewing the footage of the simulation experience themselves, it provided them with a better learning experience than if they had received verbal feedback from an examiner.

I thought it was helpful. It was actually more helpful to see it played back because you could look back on a video, rather than somebody marking you on a piece of paper. (P7-T12-9).

Faculty (debrief), it's not fool proof. Where, if you're under video, you get to see it yourself. You get to see your own mistakes and it's good that you can . . . . There's no getting away from it. It is what it is and you can spot your own mistakes and that's a learning experience in itself, so I think for a student to be able to turn around, if you have the experience and knowledge and you know what's supposed to be done, you know your algorithms etc. then and you've to point out your faults I think is more, I definitely think is more effective than being told by a faculty. (P13-T12-20).

It was also felt that the recorded simulation experience offered the opportunity to assess performance and learn from the experience, with much more complex tasks such as the sequence of events, critical thinking, clinical judgement, and clinical decision making. It was considered that this is practically impossible to do without the option to review the footage of the audio-visual recording. It also affords participants the opportunity to learn more about the importance of the non-technical skills such as team dynamics, leadership, communication, and scene management.

Well the video doesn't lie. At the end of the day there is human error there. On an OSCE or a standard scenario type of examination the assessor's looking for a specific thing, did he perform it, yes or no? It doesn't say how well he performed it or when he performed it. Should you have done it earlier, should you have done it later on? You know, it was done in timeframe so you achieved the mark and the score . . . . But in regards to the scenario when you critique it by video you should have said, 'Well do you know what, I should have picked up that the blood pressure was lower earlier'. He didn't look too well; I probably should have put the line in before we moved him to the trolley. You don't get that information back from a standard scenario because you did it or you didn't do it. (P15-T12-24).

I would say the advantage of video is, that when people look over it they see the slight little things that they may be doing, maybe not just wrong, but just maybe doing them out of sequence. I think once they would watch them along with a facilitator or a tutor or somebody who was with them, that it actually would give them the (opportunity), that they could maybe just change or help them do better the next time. (E4-T12-32).

I suppose we're only really assessing one single practitioner at a time when we're doing these types of scenarios. Whereas the video based scenario here has a look at how they come to the clinical decision making process, how they interact with other professionals. (E2-T12-27).

in an environment where you have interaction going on so where you have transactions between people, very often there's a huge dependency on the intercommunication between people and on the softer skills. So, the first strength of looking at something on video is that you can evaluate those objectively afterwards. You can't, if you were to do it purely on reflection from an evaluator it becomes subjective, because it's their opinion. If you do it according to a video you can broaden your criteria and your parameters, and you can have a lot more objectivity in there, so that's the first thing I would say it has as a strength. Moving on from that, you can focus on a much broader set of skills, because if you have time. You have time, and from a student, or a learners point of view, if somebody has been asked to reflect, even if you've used the term reflective learning, and you've been asked to look at it. If you've been asked to look at it clinically, or even with a broader, from a broader perspective afterwards, you're going to very much depend on the learner, and my experience is the learner reflects on what their intentions were. (E3-T12-29).

4. 4. 7. Reflective Practice.

As I have previously mentioned, it is only in the recent past that the idea of reflection,

reflective learning, and reflective practice have been tentatively approached by EMS

professionals in Ireland. Educators and practitioners have been slow to engage with it as a learning strategy so it hasn't come as a surprise to find that for most of the participants in this study it would not be seen as being a core part of their learning culture. Having said that, many of the participants were aware of the concept, and perhaps tended to reflect informally upon their experiences. I also believe that it is fair to say that the majority of participants were convinced of its value as a learning strategy following their participation in the study, and enthusiastic about utilising it in the future.

'From an ambulance point of view no not really . . . . . . From previous work yes, we would have done a lot of reflection'. (P1-T14-2).

'this was the first time I've come across it'. (P6-T14-3).

'I found it excellent. I think it's really, really important to do and I've actually learned a lot from it. I think we should do more of it'. (P11-T14-6).

'we'd normally debrief informally at least after certain cases. Probably not every case, but any of the kind of bigger, more interesting cases'. (P16-T14-10).

> They just probably didn't know they were doing it (reflecting). And without even the formalities of it, go back to when I was a baby EMT, even going back before baby EMT, and just the First Aider. You did a call, what did you then do for 20 minutes or a half an hour after the call, even if it was just buzzing and the adrenalin of it, you're talking about it, you're talking about what you did, you're talking about what you didn't do, you're talking about how you did it and how it made you feel so they may not have known that they were actually reflecting. They may not have known that they were learning from that reflecting, but in reality they were reflecting. (E5-T14-17).

> Well I don't know what really what you mean by the term 'reflective practice'. Do I think about every interaction I have with a patient? Probably. Do I criticise myself? Absolutely. Do I come back and hour later and say, 'I never did xyz'. Absolutely, I do. Do I hope I learn from it? Absolutely. (P17-T14-11).

> I found it quite interesting to be honest and the reason being as I said, it's not very often you have your work dissected and broken down into different areas whether it be communication, whether it be your skill, your scene management, whatever it could be, and you're kind of weighing up the pros and cons of what you've just done,

and when you do reflect on it like that it, it simplifies it, going forward to do it the next time. (P6-T14-4).

One practitioner pointed out that while he had no doubt of its value the process of reflection could be quite time consuming, and therefore may be impractical in a very busy clinical environment.

> I'll be honest with you, I kind of hate the word, I don't like the word because it involves an awful lot more work. To be honest, to go back and reflect, quite often, you'd be asked to reflect on an experience, and that involves going away and writing reports etc. and it takes time and sometimes it's time you don't have. So, it's definitely a useful tool, but unfortunately it involves a lot of extra time in order to do it. There's no doubt about it that it's effective, it's absolutely effective but in order for me to go off and do this constantly and to have self-improvement, it takes an awful lot of time that we don't necessarily have. (P13-T14-8).

The educators reported that reflection is currently being encouraged among students at paramedic and advanced paramedic levels.

> For the paramedic programme it is, because we have to encourage them to reflect on scenarios. We're not doing it to the degree that we should be doing it, I would honestly say. It is encouraged, and it forms part of the AP program, but again not to the extent that it should be. (E1-T14-12).

> At the moment, it's very much used in the undergraduate or post-graduate internship, when practitioners go to actual cases that they can reflect on how their practice went. One of the big problems there is that they don't actually find out what the final patient outcome was. They're getting part of the story so they can't, I suppose, properly quantify what part their role had to play in the whole process, and whether or not they contributed enough or sufficiently, or whether or not they could add more from the pre-hospital point of view. (E2-T14-15).

One of the educators described an extremely positive experience about the introduction of a collaborative reflective discussion as part of the AP programme,

> we actually started it on an AP programme several years ago, where we got them to get a case study and they must present it from their own syndicate. So, we put them into groups of six, and the point of it was, they must identify say at least three key points that they would change. So, it wasn't about them coming in telling us "We went out to this guy. He had a STEMI. I played a blinder. Yer man's ended up with stents and he's great and it's all down to me". Which is typically what you would

expect to hear and no disrespecting APs. So, what we're saying (to them) is "We want you to come in the safety of a closed room environment, and give us something to learn from", and I have to say, sitting in the class and listening to feedback, it was outstanding . . . . because it wasn't us coming in and telling everybody how brilliant I am, it was actually coming in and saying "Look, I did this, but I could have done this, this and this, which might have been better". And we all learned from that, and it's about getting them, giving them the confidence and the security of being able to sit in a closed room and say, "Right. Gloves are off, but nothing leaves the room". (E1-T14-14).

4. 4. 8. Structured Reflection.

It was their first time that most of the practitioners involved in this study used a structured model of reflection. I asked them to employ Gibbs' Model of Reflection, and the response was overwhelmingly positive. Most were attracted by the logical sequence and felt that the structured approach was helpful in the sense that it challenged them to think deeply and not be tempted to 'gloss over' details.

'I think it is very good, I think it puts it into kind of a procedure there, step after step after step'. (P8-T15-7).

'Well it's something I would never really have looked at too much but having gone through it with yourself I pulled it out and used it a few times and it's very effective'. (P1-T15-2).

> The whole process. The "feelings" part in particular. It was the only one I'd come across that kind of focused on feelings as an element of it. It's usually it's just very empirical fact, this is the evidence, that's what happened, but the feelings that run in behind it, it's a different way of doing it. And I think, as you said there, it does make you a little bit more honest, you know, hide behind pieces of paper but what were you thinking, what was going through your mind. (P1-T15-3).

> It's more structured; and that structure can help, because part of the issue is that, if we reflect on something we go, "right, what would I change, I'll change this". But the cycle actually gives it structure, so you can actually… "right, what was I going through at the time, was there anything I'd change? If so, how would I go about changing it? and then, do I have the opportunity to test that change?" So, it's about continuing through it. It's not, here's an issue, here's a correction – it's following that process through. (P12-T15-10).

it was a lot of use. Again, having the structure to it, it just means that certain things aren't missed or left out during the reflective process, and it gives you something to aim for, that if you follow the structure then you may have something at the end of it as opposed to just discussing it and hoping for the best basically at the end of it. (P16-T15-12).

I would prefer the structured approach but I still think there maybe be place for the more informal discussion. At the moment, we don't have any formalised structure for reflective processes or debriefing. We have the 'over the cup of tea' kind of scenario and I think the formal, having something formalised would be of benefit. (P16-T15-13).

One of the more experienced practitioners had developed her own procedure which was based on the foundation of the Gibbs model. She explains,

I suppose I have kind of developed my own one where I look more specifically at safety and legality and things like that so I've developed that a little bit myself, but kind of based on the Gibbs model anyway . . . . . . if I go to a call and want to reflect on it I break it down into different headings and one would be a safety aspect which would be obviously very important. Then maybe legalities and protocols . . . . . child protection laws or health and safety laws, things like that. And then I'd look at it under communications, was I clear with my communications, were they adequate, anywhere for improvement there, and then I'd look at the clinical side of the scenario. (P14-T15-11).

The educators were unanimously in favour of using a structured model of reflection, many feeling that the structure added rigour and credibility to the process and increased the likelihood of learning and improved clinical practice.

when you talk to people about reflection as a practice, they don't necessarily have a format or a structure themselves to do it. So that's why people kind of think it's all a bit soft and fluffy. Airy fairy, exactly, that's the word. But if you give people a structure to work within, it's like anything, if you give them a kind of a framework or a scaffold it helps. (E6-T15-17).

it gives you a framework in how to approach reflection. In other words, how you're going to evaluate your own practice. (E2-T15-14).

when you put a structure on something then you tend to get a better outcome . . . . because (without a structure) you're in danger of possibly missing something or losing some of the quality of it. But I think the one that you used was generic, ... it fits everything, but the headings and each of the stages in the model that you used,

in Gibbs, were broad enough to cover the learning experience for a whole range of people . . . . What very often isn't the case though, is they don't learn from their own experience and that's where I think the value of the reflection with the prompts that you've given them comes in. (E3-T15-15).

4. 4. 9. Benefits of Simulation with Audio-visual Recording and Structured Reflection.

Both the practitioners and educators found the process to be very beneficial as a learning experience. Among the key factors that contributed to this was the realism and the staging of the scenario, P12 explains,

> when the shit hits the fan, it's your training that comes through, not what you'd normally do. You fall back on what you've practiced; you fall back on what you've trained as. So, if you are used to practising in a jovial setting or you know, not taking it seriously and messing about a bit, that ends up being what you do in the real situation. (P12-T18-10).

> It was a realistic as you were going to get it, not out on the road . . . . . . it was as close to actually what you were going to deal with if you did come across a situation as possible in a simulated situation. (P6-T7-6).

The obvious benefit of the process is the facility to observe practical skills, health and safety issues, etc. Many of the practitioners reported that they identified issues which they were able to assimilate into their real-life clinical practice, and improve as clinicians.

> I thought the management of the scene with the cardiac arrest, that it was, I thought it wasn't managed well because there was so much stuff on the floor, it was in everybody's way. I think if there was a procedure there that somebody goes to the head and does one thing, somebody goes to the other side and uses the AED and somebody goes to the other side and uses the suction. And that kind of thing. They were crossing over the patient and handing stuff across to one another. (P8-T19-4).

> Yeah, when I looked at the video I did pick up on a couple of things initially and then I was able to watch it back again which was a big benefit and I said, yeah maybe I should have done this there, held off a bit late on this. (P15-T19-7).

> the older gentleman. I found when he went into cardiac arrest; one of the things I noticed on mine was that I went directly for IO access quite quickly. By the time I nearly had it set up he had gained ROSC and just something for my own practice, I seem to have been rushing into gain IO access as opposed to looking for, maybe having a look for IV access, or even seeing if it was necessary at that very moment.

So yeah, it's something, it's actually something that's been brought back to my own practice, of just kind of looking for IV access now first as opposed to rushing in. (P16-T19-8).

I watched my chest compressions, I felt it was the right, you know everything was grand except the rate, I timed it . . . . So I sat back there today and I timed it. (P13-T19-5).

When using an audio-visual recording it is also possible to observe teamwork, group dynamics, and all of the other non-technical skills, such as communication, leadership, and interactions with the patients, etc. As I have previously mentioned these skills are extremely difficult, if not impossible, for an examiner to observe and evaluate in real-time. Once again, the practitioners and the educators found valuable lessons within the audio-visual footage.

the evaluator . . . . they can't really identify, they can't really impart that back to the participant, whereas where they can physically see how things were done, how things were said, how they were perceived, how they were engaged, the video just encapsulates that a hell of a lot more. (E5-T20-31).

I think it's important to listen. You go in and you're treating what you see rather than what you hear. So rather than listening to what's going on with everybody else, and maybe what the other practitioners are being told, or what they're saying to you, it's important to learn from that rather than just get your treatment done. (P11-T20-12).

I ignored the other patient and the people who were dealing with it. And I think sometimes we tend to do that because you get engrossed in what you're doing yourself maybe. And forget that there is somebody else with another patient. (P8-T20-5).

we had taken a SAMPLE history, and then the same questions were being asked again . . . . . . But then when the paramedics come in, instead of getting the handover from us and asking us the relevant questions, they started asking the patient again . . . . . as a patient, I would say I would get very pee'd off about that. (P9-T20-9).

So we're looking at, you know, leadership and management of resources. Stuff like, "do we need additional resources? How we actually perform?" Like the crew resource management, or how we perform. It's very difficult, and it's almost impossible on reflection without video. Because we can look at that video and say "Actually do you see what happens here? You have one person doing this.' Or 'You should have had two; maybe two people might have been better". (E1-T20-27).

we're doing this and we're doing it to the best of our ability, but, on reflection, do we actually utilise the team appropriately? Had we people divvying up the right jobs there? Did we do that right? Had we people doing the right things at the right level? Are we communicating? Biggest, you know yourself, biggest issue is communication.   We can review that in your video. (E1-T20-28).

I suppose the use of language, communication skills, empathy with the patient, communications with your colleagues. I suppose not using technical terms for explaining to the patient and to the, I suppose the relatives that were there as well, how do you deal with them. I suppose it's a lot of different areas are being measured that maybe ordinarily you wouldn't be able to measure in a classroom based scenario. (E2-T20-29).

Participants also found the audio-visual recording beneficial when it came to learning from watching other practitioner's performances. It should be noted, however, that some of the educators felt that facilitation from a tutor would enhance the potential for learning by identifying examples of good and bad practice as well as preventing embarrassment for students who might not have performed so well.

Very interesting, very interesting watching how other people tackle something that you've gone through . . . . . . so seeing how they do it slightly differently, or do they follow the same way of doing things, no it's interesting. (P1-T22-2).

Stephen got the line in quite quickly into the seizure guy, which I didn't as far as I remember. That would make sense if somebody with an altered level of consciousness, a good idea to get an IV line in him. (P14-T19-6).

I would personally think, for me anyway that I would learn from others, positives and negatives. So, if I see them doing something different to mine which I think might be good and benefits, but if I see them doing slightly something different that is also beneficial but might work better. (E5-T22-12).
I think from the time we're born we're learning from watching other people's experience, that's happening all the time. I mean, there's lots of studies on that, the whole concept of transactional analysis is based on people learning from experience, and we're constantly doing that, so consciously and unconsciously we're learning from other people's experience. What we do with the learning, and how we apply it, and how we contextualise it, I think is the issue here. So, by putting it into a structure, we contextualise so people associate the learning and the outcomes of the learning with what they're trying to learn. (E3-T22-11).

I think for a lot of the more junior people, when they can see how the senior person comes in and they can very quickly take control of a situation, and manage it well, then I think that for a more junior person to see that, even to look back on it, they can learn loads from it. But I think it has to be, maybe, guided a little bit as to what was good and what wasn't. Because I think sometimes people might pick up on things that maybe aren't so good. (E6-T22-13).

certainly, if somebody has an excellent way of communicating, or putting patients at ease or can go through an assessment process in a very understated way that other people can see the benefit of that, and that they can then emulate that. Conversely, as well if somebody has a very bad way of dealing with people other people can say, well I'm going to stay away from that. That can be embarrassing for the practitioner who hasn't performed and that's where the issue may be with everyone being able to view your material. (E2-T22-10).

In addition to observing other practitioner's performance, participants had the opportunity to observe and work alongside practitioners of all three clinical levels. The EMTs, understandably, have great respect for their colleagues with the advanced clinical skills and enjoyed the opportunity to work closely with them. However, some of the advanced providers expressed pleasant surprise at the level of competency demonstrated by their junior colleagues, and showed them professional respect, which was appreciated.

being able to watch the different levels of practitioner in it was excellent, because you get to see what maybe is coming next, or what else has to be done. (P11-T21-3). We weren't just put to one side and . . . . . . "Well look, ALS is here now, and you just move to one side". We were allowed to continue on doing what we were doing. The guys were happy with what we had done, and they just carried on from there, and if we were stuck we could have asked them. They were happy the way the whole thing was progressing, and if there was any interventions to be done, they were going to do them. (P10-T21-2).

I suppose in my normal practice I'm used to working with paramedics and advanced paramedics, but having the EMTs in there as well just kind of added to the mix. I must admit it worked very well, staring at the, for want of a better word, the bottom of the rung and then working up as needs be. As I said I'm not used to working with them but it does show their...it kind of showed their skill and how well they operate. (P16-T21-5).

I know how our EMTs here work. I know how well they've been trained. And I have full confidence in them. And to be honest with you, the way I always judge it is,

would I be happy letting that person work on me or a member of my family? [Laughter]. And, that is the ultimate, you know. (P17-T21-6).

The educators also felt that having a mix of clinical levels was of benefit to both basic and advanced practitioners alike.

> What I very much like there is that because it was three different levels on the register that was being involved, you're also being exposed to other people's self-evaluation or other people's comments on how you performed or how they thought you performed as well. (E2-T15-15).

> I think that for the junior people, that they'll learn from the seniors, but I also think that the senior people can learn from the more juniors as well, and remember where they've come from and how they can help them out and teach. (E6-T21-8).

> I always think that for those people in a more senior position they should go back and see and watch the more juniors, because I think that they can learn. I think that we forget what it was like to be back there and I think that you can always learn from a bit of humility, to remember that we all started somewhere. (E6-T21-9).

Another benefit identified was the facility to review the audio-visual footage as many times as desired, from any location, at the student's convenience via the Moodle platform. This also dovetails very nicely with the concept of the 'flipped classroom', as described in 2. 9, where part of the learning experience is moved from the group learning environment to the individual learning space. This arguably gives the student more autonomy and more responsibility in relation to their learning.

> there's a lot more… getting it on the camera and then doing the Gibbs and the learning outcomes and things like that afterwards, you're able to go back over the scenarios, watch it and write about what happened at the scene, what you've seen, and you can still go back over the video and it's there and even if you went back to it a week later, it's still there, and you can still continue with it. (P10-T18-6).

> I think that's excellent. I think, we all know the basic principles of adult learning is people learn at different times in different ways. So, if you allow people the facility to do that, then you're obviously enhancing the learning experience, and also then the quality of the learning itself. So, I think it's an excellent idea. I think that learning can't be isolated to one form, so I think every single option, and I think the combination of debriefing and personal reflection is always very good. (E3-T24-3).

E3 described how he had used facilitated audio-visual playback in another professional

learning environment almost twenty years ago. However, due to the technology available at

that point in time, it could not be stored for subsequent review and so a vast bank of

experience, knowledge, and potential learning was lost.

> they would have seen it immediately afterwards in a group environment, but one of
> the things that we didn't, they didn't have was, they didn't then subsequently have
> access to that for personal reflection, and that's something that we talked about but we
> weren't in a position to do. It was the technology at the time, because it happened a
> few years back, and the technology at the time was that the video…. That we played,
> we are, it overwrote every time we did it. So we didn't have that available, and it was
> hardwired into the simulator. So it wasn't available after and we had no way of
> transferring it. But had we been able to do that we'd have been able to build a bank of
> learning. (E3-T24-2).

4. 4. 10. Hindsight Bias.

One of the most significant benefits identified with the potential for audio-visual recording to

support reflection was the fact that it eliminated what Fanning and Gaba (2007, p. 122)

describe this as 'hindsight bias'. Both practitioners and educators were in agreement that

immediately following any acute incident, it is often very difficult to clearly recall specific

details and that quite often when reflecting upon these incidents people tend 'fill in the gaps',

and reflect upon their intentions, or their perceptions of what events may have transpired.

With access to the footage of the audio-visual recording, all doubt about what actually

transpired is removed, allowing practitioners to reflect accurately and honestly.

> we have an opportunity to reflect on video, to show here or put it to discussion to the
> class. They might have better suggestions altogether. But the video is vital for that,
> because, we go into blinkered mode. You know what its like on an RTC. You, even
> though you know all types of cars available on the road and you worked in that car for
> an hour at an entrapment, and someone says to you afterwards 'What type of car was
> it?' You hardly remember the colour. (E1-T17-7).

> the playback in your mind, especially over time, you only really seem to remember all
> the good bits or the really, really bad bits. You don't normally remember the OK bits
> or the not so bad bits. Whereas the video just gives you a true reflection of absolutely

everything, even your mannerisms, the way you stand, the way you're communicating with other practitioners and with patients, it just gives a true reflection of it. (P16-T17-6).

It went so fast to be honest with you and there was so much going on in that room . . . . . . Yeah because there was so much happening at once. (P7-T17-5).

And in an environment where you have video based reflection then it's very hard to shy away from the reality. So, you can actually measure the impact people have on the environment, on the scenario, and on the outcome, that you don't necessarily have if you just rely on their own reflection. Because they will reflect on what they intended to do, and that can become the reality and in some cases it's not. So there's the benefit of learning because you can show them that, you can't hide from it. (E3-T12-30).

it's real time, it's instantaneous feedback and it's – perception is one thing, you might have perceived that you performed very well and you carried out all the tasks that you are required of you. But sometimes you may miss something, so by looking at your performance on video it's a very realistic way of saying oh . . . . . . A very accurate way, yeah. So, I suppose it would adjust your perceptions. (E2-T18-18).

I think it gives them the factual information, and not the perceived information. Now they can actually look at what the action actually was. (Rather than) What they perceived. So, you know it gives them the pure facts as opposed to the perceived facts. (E5-T18-20).

4. 4. 11. Hot Debrief.

Once all practitioners had completed the simulation experience, I immediately convened a 'hot debrief' of the event. My goal was to clarify the clinical aspects of the scenario, some of which were beyond the scope of most EMTs and some paramedics so that they would leave in no doubt about the facts of the case, thus facilitating their ability to reflect accurately upon the case. The practitioners felt that this assisted them in their reflection, while the educators expressed that such a debrief was essential to the process.

I thought a little bit of it was above my head . . . . . . because you're dealing with all different levels. But that was my first time ever participating in something like that, so it was good to hear the feedback from everybody involved. But I thought it was very good then that we were able to look at the video ourselves and it all made more sense then. (P11-T23-7).

I think it did help because we were getting feedback from yourself, who had set the thing as to what you expected of (us). What your learning outcome was from it. (P8-T23-4).

You really helped summarise the whole scenario for us, what was done, what wasn't done, what may have needed to be done afterwards, which was very useful. And then combining that debrief with the videos was very useful, you could go back and see if you would change anything, or what went well and what didn't. (P16-T23-11).

It was good to get a small bit of feedback even though it was just short and hot just to sort of put your mind at ease. (P15-T23-10).

Yeah I think I had a fair idea of what was going on but that would be very helpful for a group with different levels of knowledge absolutely. I think, yeah and I think the sooner you do it the more you're going to pick up from that. (P14-T23-9).

I think it's critical. I think it's important at the time. I think you can't lose the opportunity at the time to make those points . . . . . you need the experience of an educator to guide somebody when there's learning to take place but you also need the reflection then for that to bed-in. (E3-T23-13).

Oh, I think it definitely helped, I think for people who've never been involved in reflective practice it's difficult to get the concept. And I think to be able to be in the room and discussing it with people of a more senior level and with yourself to kind of give them that structure and to work with as well. (E6-T23-14).

4. 4. 12. Potential for use of Audio-visual Recording in Real-Life situations.

79% of participants in the online survey questionnaire said that they would be willing to participate in the audio-visual recording of real-life patient encounters for the purpose of reflection. Of the 21% who were unwilling to participate, some cited a lack of confidence, shyness, and nervousness about being recorded for their reluctance. However, once again the issue of trust raises its head. It is obvious that this is an important issue as a significant number of respondents from voluntary organisations and state funded ambulance providers expressed reservations based on a deeply felt mistrust of their organisation. 'Possibly held against you. Who would have access to it'? (S-EMT-T25-22). 'I feel as this could be used

against you' (S-P-T25-20). 'Some practitioners use this forum to criticise colleagues (in a very 'nice' way) and I'm not talking about objective criticism. I'm speaking in a non-beneficial way' (S-EMT-T25-14). This issue will be discussed in chapter 5.

All of the participants in the simulation experience expressed not just a willingness, but an enthusiasm, to participate in the audio-visual recording of real-life patient encounters emphasising its potential benefits. Perhaps this is as a result of their recent positive experience in front of the camera.

> it would be very beneficial, because I know of many cases I've been involved in. You know, scenarios are scenarios, but when you're out there, you practice to your best ability, but challenges that present, whether it be access, weather, day, night, in the back of the vehicle, things don't always go according to plan, but you're still trying to apply the same standard of patient care, and it's in the real-life scenarios is where you actually see how you perform because that's where it matters. So, I would have no issue in looking back on a case from a body-cam or inside a vehicle where we were trying to apply the exact same standard of care to what we were in a classroom environment a month ago. (P15-T25-37).

> Yeah, I would go for that. I could see a benefit, you know, and it's reassuring as well to see how well we do come across and how clear because communication is such a massive part of the job. I think it's a good way of reinforcing what we do, and picking up something that we didn't do. (P14-T25-36).

> it would be beneficial in real life from the point of view, you can see having a video recording of it...you can see the difference that an intervention has made, or the difference that a non-verbal cue or a verbal cue has with the patients, with family members, with other members of the public. Which at the time you may not have picked up on. And then obviously being able to reflect on it, having that recording that you can look at any time, to be able to look back on stuff is useful. (P16-T25-38).

> Yeah, definitely. I think it's really important. Now, from looking back on the video, and what I've learned from it, that it's a good form of training to be able to look back, constantly look back, and...a bit like footballers, they constantly look back on their mistakes. (P11-T25-32).

> I did some time in Mass. General in Boston, and in the hospital based scenario there in the A&E, they videotaped all their major traumas or cardiac arrests, and they played it back as a team to reflect on how they performed. And that was very

beneficial to them as a team, because they could all improve their performance then for future work. (E2-T25-40).

4. 5. Audio-visual Recording in Real-Life situations.

As I have previously discussed in chapter 1, even in the very best simulated environments, the students and experienced practitioners alike are aware that the situation isn't 'for real'. So, to gain insight into how practitioners performed on their own in a real-life situation, six practitioners were recorded audio-visually as they dealt with real-life patient-care encounters. Once again the practitioners subsequently reviewed the footage of the audio-visual recording individually while reflecting upon the encounter using the structured model of reflection. It should be noted that many of the issues referred to in the previous section are also pertinent to the real-life experience.

4. 5. 1. Reaction to Audio-visual Recording in Real-Life situations.

In a similar fashion to the recorded simulation experience, some of the participants admitted to feeling a little apprehensive prior to being recorded. However, once they made contact with the patient and became involved in their assessment and treatment, they completely forgot about the presence of the cameras and went about their business as normal. In fact, the participants felt that the audio-visual recording had no influence on their interaction with the patients whatsoever.

> I was a bit more nervous when I put it on, thinking that I was going to be conscious of it on. But once I started treating the patient, I actually became unaware that I had it at all. I forgot all about it. (P9-T26-7).

> Well I suppose everyone finds it a bit strange to see themselves on tape and on video, especially in an interaction like that where normally the only people involved are the patient and the initial bystanders or the other practitioners. (P17-T26-10).

it puts you under pressure (audio-visual recording), but it's not the same or equivalent pressure, there is . . . . . . like, the pressure with somebody's life hanging in your hands is slightly different to the pressure of, "Oh shit, I hate cameras". (P12-T27-6).

very useful especially when you're dealing with patients who have . . . . . . a more serious patient, maybe he's unstable. There's a lot more going on, it may be very useful to look back on what skills they've used, how you use them. (P1-T26-2).

I find it very useful and to be honest it is something that I think everybody should be involved in at some stage'. (P6-T26-4).

You're aware it's there, but, you just get into your way of doing the job. So, it just, it kicks in. You just do it the way you always do it . . . . . I think at this stage now, I'm kind of into my way of doing things, and camera or not, you just fall back into that way of processing the patient, talking to them, evaluating them. (P1-T27-2).

I was just aware initially of the camera being around Jan's neck as such, earlier on. And once we started I didn't notice it at all, it didn't even dawn on me, really, that I was being recorded. (P17-T27-7).

4. 5. 2. Compare Simulated Experience with Real-Life Experience.

Both practitioners and educators felt that both the simulated and the real-life experiences when recorded offered excellent learning opportunities. As a learning strategy, it was felt that whether the clinical scenario was real-life or a staged simulation mattered very little, so long as the clinical scenario was realistic. However the real-life footage offered a far greater insight into a practitioner's actual performance in a real clinical setting.

I was more conscious (of the camera) for the simulated . . . . I was more conscious of the camera than I was for this (real-life) because it just went into… like this was a real person, it was a real patient, it was a real injury, real feelings. Rather than the simulated, which was… I was conscious of the camera, conscious of checking myself before I was doing things, while I was doing them and after I was doing them. Whereas (in real-life) you just kind of do it on autopilot. (P9-T27-4).

does it matter whether the video experience is a real life experience or a staged experience if the learning outcome is the same? However, once you inform a student that what they're about to see is either a real scenario or based on a real life scenario, that interest goes (gestures 'UP'). And if you get the interest increased, then what they

see and learn is committed to memory, and they learn. The learning quality is better is my experience. (E3-T27-3).

I think that from the point of view of the scenarios, you can only learn so much because you know you're being monitored, you know you're being tested. But, if you're going about your daily business, you forget that the camera is there and you're just going to get on with it, and then I think that's a really good opportunity then to see what actually happens and what people actually do, and for them to be able to look back on that as well. (E6-T-28-4).

4. 5. 3. Potential for Inappropriate use of Audio-visual Recording.

Once again the issue of trust emerged from the data with contributors to the online

questionnaire survey raising the potential for the footage from the audio-visual recordings to

be used maliciously against an individual, or in a manner other than its original intended use.

For example, some practitioners expressed the opinion that the footage could be used by

'management' as a stick to beat employees with as part of a quasi-performance management

process or as evidence in a disciplinary procedure. Others had reservations about its misuse

by other practitioners to humiliate their colleagues. One of the educators opined that the

audio-visual recordings offered protection to both examiners and students in the event of any

differences of opinion relating to student performance.

> once you have body worn cameras, or you're recording scenarios, or you're doing it, there's always the potential for abuse. You can take a video, you can edit it, you can crop it and make it look much worse than it is. Or make a scenario or situation look completely different. (P17-T29-8).

> there is always going to be people trying to get you for something, for any reason, trying to get rid of you be it out of the job, try to discredit you as a practitioner or just trying to belittle you or make fun of you. There are lots of different reasons that people do it. You know, I don't understand it, but there is, it happens all the time. (P9-T29-5).

> it shouldn't be used I think as a tool to beat you down . . . . . . if it can be looked at as an adult, and not by a manager to hit you with it. Absolutely, if you can learn from it, and you're willing to learn, it's a great tool. (P1-T29-2).

IR issues could be a problem. If it was used for adverse clinical event reporting, or if it was used as a stick to beat practitioners with. (E2-T29-9).

in my experience, it hasn't been a problem but…I can see the potential, and I could see the argument for it being a protection, rather than used maliciously. Because where you have, again this is all about this element of subjectivity and feedback, and objectivity. So, if the scenario and the learning is supposed to enhance, to help somebody to improve, then the feedback and the reflection afterwards should be designed to do that as well. But where someone doesn't agree with it, it can become a very subjective argument that they weren't being treated fairly. Or that it's very much the subjective opinion of the evaluator. However, when it's done in an environment where that's videoed, that can always be objectively reviewed afterwards and evaluated, even independently. So, I would see it as a protection for educators, and for the process of learning, and for the system of learning. (E3-T29-10).

Participants expressed that before they would be prepared to 'show off their mistakes' in a public forum, they would need to trust both the process and the other members of the group. It was also suggested that any group sessions be facilitated by a person who is highly skilled in terms of both knowledge, and in the management of the group dynamics. This was felt to be particularly important in ensuring that any vulnerable students would feel safe.

if it was something that somebody could learn from and I was happy enough to show them. But, yeah, like everybody makes mistakes and that's okay, I accept mistakes, hands up both times, or every time. But, I wouldn't be sharing my mistakes with absolutely everybody. I would use them as a teaching tool okay but not with some certain people or all people . . . . if it was something I felt other people could learn from, and I was in a trusted group, maybe, but it would have to be my decision to show it. (P9-T32-3).

personally I'd rather always have someone else involved . . . . Because, if I'm sitting there watching a video myself, I'm not going to find many faults, like, most people right, they're too vain, they're too set in their ways, "oh no, that's fine". Whereas, let's say, for example, if I do a video and you're sitting here and you're going, "well you know maybe I think you could have just improved here or you didn't need to do that for this kind of patient". It's always good to get someone else's opinion about your skills. (P6-T31-2).

I think that's most important and somebody who is competent to be able to know how to deal with people who are learning. (E4-T31-4).

I think you need a very skilled facilitator, when actually facilitating the evaluations and the reflective practice, and in that case I think that it's how you structure their criticism, and criticism should always be structured in a way that's there for everyone's learning as opposed to downgrade somebody . . . . . . and that's quite a that's a skill in itself. So, if you're going to have an instructor or a tutor who's going to facilitate these processes, they'd want to be expert. In other words they need to know in-depth how this scenario should have been run. They want to have excellent communication skills, and plus how they interact and critique is vitally important as well. (E2-T31-3).

In general, participants felt that inappropriate use of footage from the audio-visual recordings could be avoided by putting proper procedures in place prior to any recordings taking place. In this context the idea of the development and use of a learning contract was seen as being important. Once again, the importance of the role of a highly skilled facilitator was also emphasised.

if they were used that way, that people that are able to watch something that happened in real life on board an ambulance, and they were viewing it, that they signed a confidentiality form preventing them from talking about it, or saying it or mentioning it, that, it's protected. (P10-T30-5).

I suppose policies and that would need to be put in place regarding, number one, who can view the videos. It may not be appropriate that everyone has access to everyone's videos. They would obviously need to be personalised from a managerial standpoint. It may not be appropriate to have even operations staff, managers, having access. If it's a clinical scenario, it's clinical staff should be looking at it. And then policies, obviously, be put in place to formalise what the recordings can actually be used for, so everyone knows exactly what they can be used for. (P16-T30-8).

I understand exactly where people are coming from, that people are looking for other things in it or errors and so forth. At the end of the day it's training, it's to improve practice, and basically, we have to sort of push on through that, otherwise we'll never get over that boundary. There has to be a no blame culture involved in that. So, if somebody does see somebody making an error, if it was something as serious as drawing the medication, or doing something clinically wrong, that they learn from it, and it's pointed out to them, and they learn not to do it again. (P15-T30-6).

Provide the safe and secure environment. Provide the environment that, "we're not here to get into someone, we're not here to be critical, we're here to critique", which is entirely different processes. So, we want the feedback, and learn from it. "So, don't be getting into personal attacks and putting people down. This is about

learning". Being able to walk out afterwards and say "That was good. I really benefited from that". And that's down to the facilitator, to be able to communicate the rules of the session with the student group, and for the student group to accept that, and then for the facilitator to ensure that that happens. (E1-T30-11).

if you were doing something like this you'd have to be very clear about the criteria. This is to be used in a learning environment, for learning, as a learning opportunity. If it was to be done in real life, and therefore was not to be entered into, or else entered into only by a very strict agreement into that performance management environment. But I think they are two very different worlds, and two very different scenarios, and the risk would be that one, one area of people management would use that as a performance management tool when it was never designed for that. So, if it's designed as an educational tool, then it should only be used as an educational tool, and should not be used (for anything else). So, you would have to put measures in place . . . . a psychological contract will happen anyway because the trust issue will come up, so you'd have to have some kind of an explicit contract around it to say that it would not, and cannot, and that it's not intended to be used. And I think the intention is very important there, that it would never be intended that it would be used for performance evaluation or performance management, it's as a learning tool. (E3-T30-15).

4. 6. Summary.

In this chapter, I have presented the findings from my research project. Firstly, in relation to the attitudes to and the experiences of reflective practice among pre-hospital emergency care practitioners in Ireland. I have also outlined my findings relating to each of the three cycles of the action research process. The next chapter discusses these findings, and proposes recommendations for future actions and further investigations.

Chapter 5

Discussion of Findings, Conclusions and Recommendations

5. 1. Introduction.

Chapter 4 presented the major themes which emerged from this research process. These issues will now be investigated in greater detail. Firstly, I will examine the issues surrounding reflective practice among pre-hospital emergency care practitioners in Ireland. I will then proceed to address the issues raised in each of the 3 cycles of action research. I have chosen to discuss the 3 cycles of the process chronologically as the findings from each cycle inevitably have relevance in each subsequent cycle.

It should be noted that the question at the heart of my research was: How do I, as Education and Practice Development Manager and Area Training Officer ensure that practitioners who have a relatively low exposure to high acuity situations, remain competent and confident with their pre-hospital emergency care skills? I will therefore be proposing a number of key recommendations which I believe will assist pre-hospital emergency care practitioners to maintain their skills competence, and so improve their clinical practice.

5. 2. Reflective Practice among Pre-Hospital Emergency Care Practitioners in Ireland.

As I mentioned in my remarks at the beginning of chapter 1, although the term 'reflective practice' appears to have been around for a long time it is only in the last decade that the notion of reflective practice has been tentatively approached in EMS. Indeed, until recently it has largely been ignored as practitioners and educators alike have been slow to engage with this new way of learning. From my engagement with practitioners and educators over the course of this project there is little doubt that the idea of being a reflective practitioner is seen as desirable, it is also clear that quite a lot of confusion exists among practitioners and educators about what it actually means to be a reflective practitioner. 65.6% of respondents to the online survey questionnaire, who represented the full spectrum of Irish EMS contexts and all three practitioner clinical levels, indicated that they considered themselves to be

reflective practitioners, while 7% said that they did not. The remaining 27.4% indicating that they were unsure and data imported to the excel spreadsheet revealed that this latter group was made up of 23 EMTs, 23 Paramedics, and 5 Advanced Paramedics. It is my belief that at the core of this issue is the fact that there is no mention of reflection, reflective learning, or reflective practice in the PHECC Education Standards. Consequently until very recently the concept hasn't featured in any of the PHECC accredited education programmes for EMTs, paramedics, or advanced paramedics. In chapter 4. 4. 7., educators commented that while the concept of reflective practice is now included on paramedic and advanced paramedic programmes, it is not emphasised to the extent that it should be. There is no doubt that its inclusion is an important step in the right direction, however, a significant gap in education still remains for existing practitioners at all clinical levels.

Of the 65.6% (122 practitioners) who indicated that they considered themselves to be reflective practitioners, only 13 indicated that when reflecting on their practice they used a structured model of reflection.   Many practitioners who responded to the online survey described various informal strategies for reflection either collaboratively or alone, citing methodologies such as case debriefing, conversations and discussions with colleagues, reading journals, research, attend clinical audit meetings, online education programmes, and general personal reflections. In the interviews other practitioners describe informal debriefings with their partner 'over a cup of tea'. While all of these strategies are helpful and beneficial, and I would not question the sincerity or the motivation of the respondents, educators in chapter 4. 4. 8. were unanimous in their preference for the use of a structured model of reflection as they felt it added rigour and credibility to the process. Schutz (2013, p. 197) also favoured the structured approach, emphasising that the process and the outcome were of equal importance. Practitioners in 4. 4. 8. also indicated that they had felt the benefit

of using the structured model of reflection as opposed to reflecting informally as they would have previously done.

In the organisational context, there appears to be a clear distinction between volunteer organisations and professional organisations in terms of their encouragement of reflective practice among their practitioners. Respondents from all organisations were practically split down the middle when asked if reflective practice was encouraged within their organisation (51.1% yes, versus 48.9% no). However when I examined the responses of the volunteer practitioners compared to the professionals, a significantly different picture emerged. The results showed that 70% of practitioners from the voluntary organisations stated that they felt that reflective practice was encouraged by their respective organisations, compared with only 42% of professional practitioners. It is difficult to explain why there should be such a difference, however one possible explanation is the fact that ambulance services have evolved from a relatively small population where there hasn't been a tradition, or a culture of reflection. By way of contrast the voluntary organisations are typically made up of people from a more diverse population, and a wide variety of professional backgrounds. It is possible that the volunteers have been engaged with reflection in their professional careers and are more comfortable with both the concept and the process. I feel that this is a significant issue that requires further exploration.

Conclusions:

- Many practitioners consider themselves to be reflective practitioners. However very few of them use a structured model of reflection.

- Reflection, reflective learning, and reflective practice are not included in the education standards for practitioners in Ireland, and as a result, their importance hasn't been emphasised in most accredited EMS education programmes.

- There is clear disparity of opinion between volunteer and professional organisations regarding the encouragement of reflective practice.

Recommendations:

- Reflective practice to be included in the education standards for all levels of practitioners in Ireland.

- Provide education for all EMS course faculty regarding reflection, reflective learning, reflective practice, and structured models of reflection.

- Develop and roll-out an education programme for existing practitioners regarding reflection, reflective learning, reflective practice, and structured models of reflection, as part of their CPC requirements.

- Although it is outside the scope of this study, a further research inquiry to explore the reasons for the disparity of opinion between volunteer and professional organisations regarding the encouragement of reflective practice is recommended.

5. 3. Trust.

One of the most significant issues to have emerged from this research process has been the role of trust, or perhaps I could say, a lack of trust in the professional lives of practitioners of all clinical levels. What I feel makes it significant is the fact that it has repeatedly raised its head at every stage of the research process. While the majority of practitioners indicated that they would be happy to participate in collaborative reflective discussion and audio-visual recording of simulations and real-life patient encounters, a significant number of practitioners were quite frank and forthright in describing their perceptions of how these learning situations could be open to misuse, and how knowledge shared in public could be potentially used maliciously. 3 main areas for potential abuse were identified:

- Some practitioners were fearful that colleagues would use open forums to publicly humiliate other colleagues.

- Others suggested that colleagues may use the opportunity to 'carry tales' back to line managers to ingratiate themselves with their superiors, and to highlight what they perceive as the weaknesses of others.

- It was also suggested that 'management' could potentially use information shared at an open forum to 'target' individuals, and use any information shared in a disciplinary process.

Clearly these are serious issues and are almost certainly indicative of problems relating to organisational culture. As Dieckmann et al (2012) pointed out, an atmosphere dominated by a culture of 'shame and blame' is likely to be a significant barrier to open forum reflective discussions and knowledge sharing within a group, and ultimately, the organisation. So how, one might ask can these challenges be overcome? It can be argued with some certainty that unless these issues relating to trust are dealt with to the satisfaction of all participants prior to any collaborative reflective forum, it is highly unlikely to succeed. While it's not entirely out

of the question, it is hard to believe that this is an issue unique to the Irish context. Having said that, this issue of trust did not appear anywhere as a significant theme in my review of the relevant literature. During the interview process some excellent proposals were put forward to reduce the potential for abuse, or malicious behaviour (see chapter 4. 5. 3.). Many practitioners felt that if a Learning Contract, which would also include a confidentiality agreement, were to be established prior to any collaborative forum it would allay many of the fears expressed. It was also felt that key to the success of any collaborative forum would be the facilitator. Establishing a credible collaborative reflective discussion forum would require an experienced and accomplished facilitator, one with the emotional intelligence to manage the group dynamics, and to deliver feedback appropriately in the public forum.

Conclusions:

- Many practitioners enthusiastic about participating in collaborative reflective discussion, and audio-visual recording of simulations and real-life patient encounters

- It is perceived that collaborative learning situations could be open to misuse and that knowledge shared in a public forum could be potentially used maliciously.

- These perceptions are related to issues surrounding trust, or a lack of trust, in colleagues and managers.

Recommendations:

- A Learning Contract, including a confidentiality agreement, must be established prior to the establishment of any collaborative reflective discussion forum.

- Any collaborative forum must be chaired by an experienced and highly skilled facilitator.

- Although it is outside the scope of this study, further research exploring the reasons for what appears to be a breakdown in trust within certain organisations is strongly recommended.

In the next section, I will discuss the findings in relation to the establishment of a reflective discussion forum, some of which, I believe, will contribute to addressing the issues relating to trust and organisational culture discussed in this section. This will embedded in a thematic analysis of the findings that emerged from the three Action Research cycles with a view to exploring potential insights and recommendations relevant to the study.

5. 4. Cycle 1 of the Action Research Process - Reflective Discussion Forum.

As I have reported in chapter 4, the reaction of participants to the reflective discussion forum has been extremely positive. I believe that the following factors contributed to this positive educational experience. Furthermore, I believe that these factors would go a long way towards addressing the issues relating to trust which were discussed in the previous section.

- **The 'Openness' of the forum.** Staff, I believe, were genuinely surprised at how 'open' the forum actually was. Company directors, senior managers and practitioners all sat in an open circle with no hierarchy.

  To create a safe environment I presented the first two clinical cases, both from my dim and distant past, for discussion and accepted questions and comments from the floor. Both cases were unusual in the sense that in each case the 'ideal' course of action was not available to me and so I put forward the actions I performed under less than ideal circumstances and invited comments. Consequently practitioners felt empowered to say whatever they felt like saying in relation to the cases under discussion. Participants commented that there was no feeling of 'us and them', it was more like 'we're all in this together learning', which created a healthy learning environment.

- **Non-Judgemental Atmosphere.** The forum was conducted in such a way so as practitioners felt free to express their opinions without fear of judgement, criticism, or sanction.

- **Confidentiality Agreement.** At the outset all participants agreed to maintain details of the reflective discussion confidential.

To an outsider, these points may very well appear to be rather obvious, however this is not necessarily how things are in all ambulance services. I have personal experience of organisations where clinical cases are rarely discussed, apart from in the context of a

disciplinary hearing. For example in 2012 I attended a Fitness to Practice hearing involving practitioners from another organisation. I was in attendance as an expert witness for the defence, as one of the practitioners was a friend of mine. The hearing took place in a large room where three legal teams (each made up of a barrister, a solicitor, and a junior solicitor) and the Adjudicating Panel sat. The whole experience of the two-day hearing was incredibly stressful for all concerned, and it has ended up costing the taxpayer something in the order of €100,000. The only lessons that any practitioner would have learned from watching this fiasco was: 'in the event of any errors, or adverse events: say nothing, tell nobody, cover it up'. The problem with situations like this, as I have said earlier, is that errors are covered up, and no learning takes place, and inevitably, errors of this nature continue to occur.

That is why I believe that my open forum, with a supportive, non-judgemental approach will help to improve practice. If practitioners are made to feel safe, and are happy to engage in the process, then vital lessons relating to clinical practice may be learned and ultimately lives may be saved.

5. 4. 1. Skills.

The potential for skills deterioration is an important issue for me. Indeed it was arguably the trigger for my original concern which led to the genesis of this enquiry. I would argue that the process of reflective discussion has helped to identify areas of skills deficit. From my findings it was quite clear that there was quite a variation in the experiences of the previous twelve months among the 5 clinicians I interviewed as part of my investigation. Some had experienced what they felt was a wide variety of patient contacts, while others had not. All respondents had very little exposure to trauma patients, in particular major, or multi-system trauma. So the question is: 'how can this issue of skills maintenance be effectively addressed when opportunities to practice these skills in real life situations are limited?'

R4 suggested that it would be a good idea to arrange for staff to attend clinical placements in the Intensive Care Unit (ICU) or Emergency Department of an Acute Hospital. She explained,

> I think you need to have hands on in a lot of these things. So whether it should be done with an odd placement here and there in the likes of ICU, where you can practice using your iGel or your LMA, or even an afternoon where you get . . . . . even in things like setting up drugs. Things like that, that you are not getting to do but should still be proficient in. So obviously (placements) in A&E or ICU, where you do get those skills I think would be beneficial. (P4-T1-5).

While I believe that clinical placements are excellent for gaining experience in specific clinical skills, such as endotracheal intubation, which can only be experienced in the operating theatre, I'm not so sure of their benefit in this instance for a number of reasons. Firstly, there is never a guarantee that a paramedic will be able to fulfil all of the expected learning outcomes even in the emergency department of a busy hospital. Even the busiest of hospitals have quiet days too, and there is never a guarantee that the paramedic will get to experience a wide variety of patient contacts. Secondly, dealing with patients in a controlled hospital setting is entirely different to the 'pre-hospital' arena. In the pre-hospital setting, there are so many variable factors in play at any given moment, all of which must be considered when managing a patient-care situation. Finally, the cost of rostering every practitioner for clinical placements is very expensive, particularly when staff replacements are taken into account, and there is no guarantee of a good return on that investment.

Another option to be considered as a surrogate for clinical placements is Simulation as proposed by Studnek et al (2011). Simulation is where clinicians are placed in an environment as close to a 'real-life' situation as possible. This is achieved by staging emergency situations in 'mocked-up' domestic settings, offices, public places, car crashes, etc., and using actors or high fidelity manikins to create a real-life experience. Audio-visual recording also gives the simulated scenario a 'high-stakes' feel. One of the major advantages

of Simulation is that not only does it give clinicians the opportunity to practice their skills in a safe environment, but it also requires to them use their critical thinking skills, such as, analysis, synthesis and evaluation just as they would in their 'real-life' practice. Upon conclusion of the simulated scenario the clinician can avail of a facilitated de-briefing session, with access to the audio-visual recording of the scenario. This de-briefing also offers another opportunity for reflective discussion. These Simulation sessions can be facilitated during downtime while the crew are on duty, thus eliminating the need for staff to sacrifice their time off, and also eliminating any additional costs to the organisation.

Following reflection upon the findings of this cycle of action research, simulation with audio-visual recording became cycle 2 of the action research process. This will be discussed in section 5. 5.

5. 4. 2. Benefits of the Reflective Discussion Forum.

In addition to the benefits relating to addressing the issues surrounding the building of trust, and the highlighting of skills deficits to identify learning needs, the reflective discussion forum provided other benefits to both practitioners and to the organisation.

Sharing of knowledge and experience. All practitioners felt the benefit of listening to each other's experiences. Some of the more junior practitioners found it particularly useful to hear how their more experienced colleagues may have dealt with a situation in less than ideal circumstances, and why they may have chosen a course of action which may have differed from the textbook, or the Clinical Practice Guidelines (CPG).

Collaboration. The collaborative nature of the forum appealed to all of the practitioners. As I have alluded to in chapter 4. 3. 3., there has never been a tradition of sharing experiences or feelings in a group, or for collaborative learning such as this. The collaborative process may also have a role in the mentoring of new staff which is another area where we in the Ambulance Service have not excelled in the past.

Motivation. I feel that this process could make a significant contribution to the promotion of job-satisfaction and employee motivation. Building on the work of Herzberg (1966), Hackman and Oldham (1980) propose three factors which promote satisfaction among employees:

- Work should be *meaningful*. Without question, the work of a pre-hospital practitioner could certainly be described as 'meaningful'.

- Employees should have *responsibility* for results. Pre-hospital practitioners are entirely responsible for their patients while they are in their care.

- Employees should receive *feedback* on results. It is in this area that I believe the Reflective Discussion Forum can make a significant impact. Giving positive feedback is not something we in the Ambulance Services have been particularly good at in the past. However, the Reflective Discussion Forum offers an opportunity to provide feedback to practitioners, which I believe will encourage them to be more engaged in their practice, and will motivate them to even higher levels of performance.

The benefits of the Reflective Discussion Forum are very much in keeping with the findings of Bhanji et al (2015), Bhanji et al (2010), O'Donnell et al (2009) and Edelson et al (2008) in relation to similar reflective debriefing processes. Indeed, they also concur with my previous experience of using reflective discussion to improve performance in the management of cardiac arrest patients in an acute hospital setting (Kennedy and O'Connor, 2010, 2011, and 2012).

5. 4. 3. Informal Personal Reflection.

As I have discussed in the previous chapter (4. 3. 4.), all of the EMT's, Paramedics, and Advanced Paramedics I interviewed already engage in a certain amount of reflection, usually informal, relating to their work. Some reflect privately, others with a trusted colleague. The

Reflective Discussion Forum provided a platform that allows for these reflections to be shared among colleagues, adding another dimension to the informal reflective processes that were already in existence, one that all participants were enthusiastic about. It also provided an opportunity to introduce them to a more structured approach to reflection, by presenting an education session on Gibbs Model of Reflection (Gibbs, 1988).

5. 4. 4. Barriers to Reflective Discussion.

93% of respondents to the online questionnaire survey believed that participation in a Reflective Discussion Forum would be beneficial, and 88% indicated that they would be comfortable sharing experiences in an open forum. However the remainder identified what they perceived as potential barriers to the process. The issues they raised were in line with the issues relating to trust, which I have discussed in section 5. 3. Interestingly, practitioners who actually participated in the reflective discussion forum expressed no negative issues with the process whatsoever. Perhaps this is due to the fact that the ground rules in relation to confidentiality were set out in advance of the forum. It is also possible that since this was a new initiative, the concerns expressed online were simply a manifestation of a fear of the unknown.

Conclusion:

The Reflective Discussion Forum offers many benefits, both for practitioners, and for an organisation. These include the identification of learning needs, improved clinical practice, the generation of trust, and the development of a positive organisational culture.

Recommendations:

- Establish a regular (quarterly) Reflective Discussion Forum.
- A Learning Contract, including a confidentiality agreement, must be in place prior to the establishment of the forum.

5. 5. Cycle 2 of the Action Research Process - Audio-visual recording of Simulated Patient Encounters.

For the practitioners who participated in this cycle of the research process, the audio-visual recording of simulated patient encounters presented them with a new experience, a step into the unknown, and consequently many were a little apprehensive. This was due, firstly, to the fact that for most of them it was their first experience of a clinical scenario in such an immersive and realistic environment. Secondly, for all but one participant, it was their first experience where their performance in a clinical situation was recorded audio-visually and so the prospect of reviewing their own performance added a 'high-stakes' element to the experience that traditional scenario simply does not provide.

5. 5. 1. The Simulation Experience.

The reaction of all participants to the simulation experience was extremely positive and I believe that it is fair to comment that they all found the experience to be both enjoyable and beneficial as an educational experience. I believe that there were five critical elements that contributed to the educational experience that differed from their previous experience of scenario training.

The Clinical Scenario. For any clinical scenario to work as an educational tool, it must be planned in advance, as opposed to the common practice of making-up scenarios 'on-the-fly'. It must be realistic in relation to the case history and the clinical aspects of the scenario, the presentation of the patient's physiological parameters, etc. The student or practitioner must always be the central focus of the educational experience, with specific learning outcomes that relate to the practitioner's clinical practice.

This all may appear to be rather obvious, however I have witnessed some quite bizarre scenarios being presented to bemused students and practitioners. For example, an instructor once presented a scenario concerning a 24-year-old pregnant female patient who was in full

cardiac arrest after she had been rescued from the canal on a cold winter night following a heroin overdose. Apart from the ridiculous and highly unlikely nature of the scenario, the major problem as I see is the fact that the student, and their learning, is certainly not at the heart of the scenario. This is a simple case of an instructor 'show-boating'. By this I mean that in an attempt by the instructor to display their knowledge of a wide array of topics in one 20-minute clinical scenario, the student has been forgotten.

Choosing to develop a student-centred, realistic clinical scenario with clearly defined expected learning outcomes, one that practitioners are quite likely to encounter in their real-life clinical practice added to the credibility of the process.

The Physical Environment. This scenario took place in what appeared to be the kitchen/living area of an apartment. Everything that one would expect to see in a typical home was present, table and chairs, kitchen sink and cupboards, sofa, cups, plates, cutlery, etc. In line with the case history, what appeared to be drug paraphernalia was evident on the kitchen table where one of the actors was sitting in a semi-conscious state. A realistic physical environment, I believe, is one of the most critical elements of scenario training which will help to adequately prepare them to work in the real world. Practitioners described their previous experiences of scenario training as taking place in the middle of a large room or hall. This type of environment, while it be adequate for preparing for OSCE style exams, doesn't prepare practitioners to work in a real-life environment. Because in a real-life emergency situation practitioners rarely have the luxury of wide open spaces, and even in the tidiest of homes, everyday items such as tables, chairs, beds, narrow stairways and halls quickly become obstacles to be overcome. It is so important for practitioners to train and learn how to deal with these issues in an environment similar to where they are likely to practice, rather than learn these skills on the job in an emergency situation when a real patient's life might be at stake.

The Actors and High-Fidelity Simulation Equipment. During the interviews, when practitioners described their previous experiences of scenario training, they used terms such as 'cardboard' and 'unrealistic'. They also commented on the instructors having to verbalise a patient's history, vital signs and symptoms, and then practitioners verbalising various procedures such as obtaining blood pressure (BP), or gaining intravenous (IV) access. Once again this type of scenario fails to prepare practitioners to work in a real-life environment, because instead of interviewing the patient regarding their history, observing the patient's condition and vital parameters and initiating treatment; what is meant to be a practical scenario, turns into a conversation between the instructor and the student, where very few practical skills are actually performed. Another disadvantage of poor quality staging and excessive use of verbalisation is that it makes it extremely difficult for the student to relate the scenario being verbalised by the instructor to the poor quality simulation set-up.

For this scenario, I chose actors who were experienced in this type of role-play. The actors were briefed in relation to their symptoms and medical history and wore make-up to reflect their clinical condition. Participants were able to assess accurate vital signs illustrating the patient's clinical condition using the iSimulate system, which operates in a similar fashion to the LifePak 15 monitor/defibrillator used by many ambulance services. For the cardiac arrest element of the scenario, an ALS (advanced life support) Manikin was used. With this manikin, practitioners can perform all of the skills to manage an incidence of cardiac arrest exactly as they would in real-life.

All of the above mentioned elements in the staging of the clinical scenario are critical to its success in creating a simulation experience that is as close to reality as possible. This concurs with the findings of Issenberg et al (2005) Bhanji et al (2015), as I have discussed in chapter 2. 4. 2. When all of these elements are in place, it becomes a truly immersive

student-centred educational experience. In fact, it is not necessary for the instructor to be present in the same room.

The Hot Debrief. Immediately following the simulation experience a short 'hot debrief' was convened. The strategy of a post-event debrief was also found to be successful by Bhanji et al (2015), Bhanji et al (2010), and Edelson et al (2008). The purpose of the hot debrief was to clarify the clinical aspects of the scenario for everybody, especially as some of it elements were beyond the expected knowledge, and scope of practice of the EMTs. The hot debrief was found to be helpful to the practitioners as it allowed them to reflect upon the event fully informed in relation to the learning outcomes of the event.

Evaluation of the Scenario via Moodle. Practitioners availed of the opportunity to review the footage of the audio-visual recording on the Moodle platform, an experience that some initially found to be a little strange. In reviewing the footage they used Gibbs Model of Reflection (Gibbs, 1988) to guide them in their evaluation of their own performance and that of their colleagues. When compared with their previous experience of how scenarios were evaluated, both practitioners and educators found this new methodology to be a revelation. In their previous experiences, both educators and practitioners described scenarios being evaluated by an examiner with a clipboard and a tick-box score-sheet which was mainly focussed on technical points of specific skills. In these circumstances it is very difficult for an examiner to see everything as it happens while marking the score-sheet. It is also almost impossible for the examiner to assess the non-technical skills, such as communication, leadership, teamwork, etc., while simultaneously assessing the technical skills.

Given these difficulties in assessing the students it is impossible to provide accurate feedback to the student. Whereas all skills, both technical and non-technical, can easily be assessed by reviewing the footage of the audio-visual recording using multiple camera angles if necessary.

5. 5. 2. Reflection in the Simulation Experience.

Once again, for most of the participants, this was their first engagement with a formal process of reflection. All described various strategies of informal reflection which they had previously employed throughout their careers as EMS practitioners, which I found encouraging, as it demonstrates their understanding of the importance of examining one's practice with a view to improvement. However, I find myself in agreement with the views of most of the educators and the comments of Schutz (2013, p. 197) discussed earlier in this chapter (5. 2.), regarding the importance of the more formal structured process of reflection. In addition to adding rigour and credibility to the process, the structured approach offers guidance to the practitioner and ensures that they follow the process through to implementation and evaluation of the change in practice.

Participants in this process found the structured model of reflection to be beneficial and were keen to embrace the process, although one practitioner complained of the time commitment required to undertake the formal process. There is no doubt that the structured model of reflection requires dedication and commitment from the practitioner, a fact that has been acknowledged by many commentators including, Wilding (2008), Hilliard (2006) and Cooney (1999). However, as Wilding (2008, p. 724) comments, 'the energy invested in recalling the experience, writing, researching, reading, synthesising, thinking, followed with more writing, is significant. But it is a worthwhile exercise'.

5. 5. 3. Skills in the Simulation Experience.

There is no doubt of the value of the simulation experience in relation to the development and assessment of clinical skills. It is particularly valuable in the development and maintenance of infrequently utilised clinical skills (McKenna, 2015), and in moving the steepest part of the learning curve away from the patient in the acquisition of new skills by novice clinicians (Reynolds and Kong, 2010, Burlacu, 2010, and Wyatt, Fallows and Archer, 2004).

Upon reviewing the footage of the audio-visual recording, the practitioners who participated in this process were easily able to critique technical skills and many identified areas where they could improve their own clinical practice. The educators, in agreement with Studnek (2011) felt that the process would be valuable as a means of assessing clinical competency. One issue that everyone strongly agreed upon was the fact that the footage of the audio-visual recording provided a reliable and accurate record of the event, and therefore removed any doubt about the events that had just transpired. In their previous experience, practitioners and educators described instances where the facts of assessment scenarios were in dispute as a result of what Fanning and Gaba (2007) refer to as 'Hindsight Bias'. It is not uncommon that following a clinical scenario, or a real-life patient encounter, that practitioners admit to having difficulty in recalling details of the experience in the immediate aftermath. Some practitioners who were involved in this process acknowledged this, and consequently, they found reviewing the audio-visual footage to be of great benefit.

Both educators and practitioners also agreed that reviewing the audio-visual footage offered great opportunity to observe and to learn about the non-technical skills such as communication, leadership, teamwork, etc. This is something that is not possible without the audio-visual recording facility. Practitioners also reported that among other issues relating to communication, team dynamics, and body language, they had identified some subconscious habits that they would not otherwise have been aware of, for example, one very experienced practitioner hadn't realised that when he was talking to people, he had his hands in his pockets most of the time.

The footage of the audio-visual recording also provided participants with the opportunity to observe and learn from their colleagues' performance, which practitioners reported to be beneficial.

This process also provided practitioners of all three clinical levels to work alongside one another, and this produced a most surprising finding. In the hierarchy of EMS, the EMTs are on the bottom rung of the ladder and are often the subject of disparaging comments (in jest, I think) from their senior colleagues, for example, EMTs are often referred to as 'haemoglobin', in the sense that 'they're only useful for carrying oxygen'! However some of the Paramedics and APs were quite complimentary in relation to the high levels of skill demonstrated by their junior colleagues, which was very nice to hear, and it was appreciated by the EMTs. Overall the mix of clinical levels was felt to beneficial for all concerned, with educators opining that EMTs and their more highly skilled colleagues could all learn lessons from each other by collaborating on a more regular basis.

5. 5. 4. Review of the Footage of the Audio-visual Recording on Moodle.

The facility to review the footage of the audio-visual recording on the Moodle platform is in my opinion one of the most significant developments to emerge from this process. Once uploaded to Moodle, the footage is available to the student for review at any time or place, as often as desired. Both educators and practitioners were enthusiastic about this development, as it offered the convenience of 24/7 access to the footage, thus providing the student with ample opportunity to reflect on the footage at their convenience.

Many authors including Eppich and Cheng (2015) and Fanning and Gaba (2007), have used video playback to illustrate learning points in the immediate aftermath of a simulation experience, and one of the problems they identified was the lack of time available for a full debrief. This difficulty, I believe presents the opportunity to develop the learning process by engaging with the concept of the Flipped Classroom which I introduced in chapter 2. 7.

In the Flipped Classroom, part of the learning is moved from the group learning space to the individual learning space, and as part of the process learning in the individual space can be brought into the group space. The availability of the audio-visual footage on Moodle allows

for the process of structured reflection to be moved into the individual learning space. In the individual student's personal learning space there is more time to reflect upon events, unlike the experience of the authors previously mentioned, who all expressed difficulty fitting video-based debriefing into an already busy classroom schedule. Following reflection the student could bring their insights back into the group learning space by presenting their experience to their classmates, and the instructor would conduct a facilitated debriefing with reflective discussion among the class. Students would then have the opportunity to apply their new knowledge and skills into the next simulation experience.

In this process, the educators and practitioners suggested that the facilitated debriefing with reflective discussion should be conducted by an experienced, and highly skilled facilitator, using a structured debriefing model (Bhanji et al 2015, Eppich and Cheng 2015, and Diekmann et al 2012). This is something with which I concur, especially in light of the findings of Foraida, DeVita, and Schaefer (2006) who found that students' ability to assess and evaluate their own performance, and that of their peers was often unreliable. The presence of an experienced, accomplished facilitator also has particular importance, given the potential for difficulties in relation to issues surrounding trust and organisational culture in certain organisations, which have been discussed earlier in this chapter. With these issues in mind, a Learning Contract, to include a confidentiality agreement, would be required prior to the establishment of the collaborative reflective element of the process.

Following the discussion of this section, 5. 5., the following model for the evaluation of learning from the simulation experience in the Flipped Classroom is proposed.
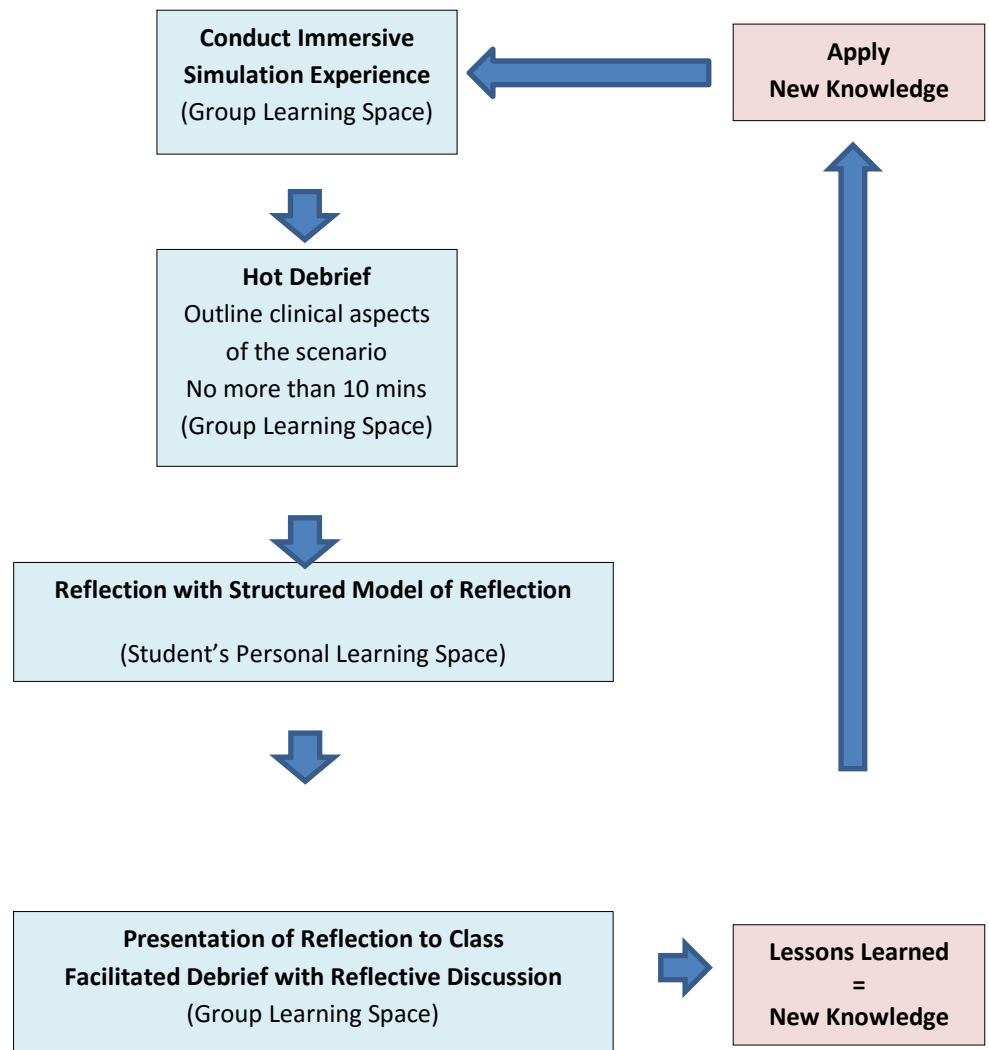
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┌─────────────────────┐                    ┌─────────────────────┐
│ Conduct Immersive   │◄───────────────────│      Apply          │
│ Simulation Experience│                    │   New Knowledge     │
│ (Group Learning Space)│                   │                     │
└─────────────────────┘                    └─────────────────────┘
          │                                           ▲
          ▼                                           │
┌─────────────────────┐                               │
│     Hot Debrief     │                               │
│ Outline clinical aspects│                            │
│   of the scenario   │                               │
│ No more than 10 mins│                               │
│ (Group Learning Space)│                             │
└─────────────────────┘                               │
          │                                           │
          ▼                                           │
┌─────────────────────────────────────────┐          │
│ Reflection with Structured Model of Reflection│     │
│                                           │          │
│ (Student's Personal Learning Space)       │          │
└─────────────────────────────────────────┘          │
          │                                           │
          ▼                                           │
┌─────────────────────────────────────────┐   ┌──────────────────┐
│ Presentation of Reflection to Class       │──►│ Lessons Learned  │
│ Facilitated Debrief with Reflective Discussion│ │       =          │
│ (Group Learning Space)                    │   │  New Knowledge   │
└─────────────────────────────────────────┘   └──────────────────┘
```

Figure 5.1. Proposed Evaluation Model of the Simulation Experience in the Flipped

Classroom.

Conclusions:

- When combined, a simulation experience with audio-visual recording and a structured

  model of reflection become a powerful learning experience.

- The process of a simulation experience with audio-visual recording, and a structured

  model of reflection appears to dovetail very nicely with the concept of the Flipped

  Classroom.

Recommendations:

- The process outlined above in figure 5.1. has shown great promise as a learning experience, and I propose a larger scale pilot study.

- A Learning Contract, including a confidentiality agreement, must be in place prior to the establishment of any collaborative reflective discussion forum.

5. 6. Cycle 3 of the Action Research Process - Audio-visual recording of Real-Life Situations.

While the simulation experience has proven to be a powerful learning experience, following reflection upon the second cycle of the action research process, I couldn't help wondering if the simulation experience really did capture the manner in which practitioners would perform and react in a real-life clinical situation. No matter how realistic the simulated environment may be, no matter how good the props are or how convincing the actors are, practitioners are still aware that it is not quite 'for real'; and while there is no doubt that the audio-visual recording does add the high-stakes edge to the proceedings, it is still not the same as real life. The pressure felt by a practitioner when cameras are monitoring their performance, while uncomfortable, is insignificant when compared to the pressure of having somebody's life depending upon your actions, skills and knowledge.

The use of audio-visual recording of real-life pre-hospital clinical situations is in its infancy and consequently experience in this field is limited, one notable exception is Lyon et al (2015), who employed audio-visual recording to evaluate the quality of CPR during the extrication and transportation of patients in cardiac arrest.

With all of this in mind, 6 practitioners were recorded while attending patients during the course of their normal work for the third cycle of the action research process. Much of the discussion from the previous section, especially sections 5. 5. 2, 3 & 4, also has relevance to the discussion of the real-life experience.

5. 6. 1. The Real-Life Experience.

Just as with the simulation experience, practitioners admitted to being slightly apprehensive prior to being recorded in their real-life clinical context. However, once again, just as with the simulation experience, all practitioners reported that they completely forgot about the presence of the camera and proceeded to deal with their patients as normal. As an

experienced practitioner myself this makes perfect sense to me as once a practitioner encounters a patient, that patient becomes their sole focus and nothing else matters other than the assessment and treatment of the person in their care. Having personally reviewed the audio-visual footage along with each participant, it is quite clear that all of the practitioners are concentrating entirely on their patient and paying no attention to the camera.

5. 6. 2. Comparing the Simulation Experience with the Real-Life Experience.

It was agreed by all practitioners and educators that both experiences had a lot to offer as learning methodologies, each strategy having its own advantages and limitations.

With the simulation experience, the instructor can easily plan clinical scenarios designed with specific learning outcomes in mind. By way of contrast, it is practically impossible to plan for specific learning outcomes in the real-life situation, which by its very nature is predictably unpredictable.

Where the real-life audio-visual recording really comes into its own is in the evaluation of a practitioner's, or a team's clinical performance in their own clinical context. In the real-life clinical context, practitioners tend to forget about the presence of the cameras as they are engaged in the process of taking care of their patients, and so, the footage of the audio-visual recording will present a true reflection of a practitioner's performance. As previously mentioned in chapter 2. 6. this has been demonstrated in the hospital environment by Scherer (2003) and in the pre-hospital arena by Lyon et al (2015). By way of contrast it appears that it is difficult to be sure that a practitioner's performance in the simulation experience reflects their real-life performance, as participants in this process felt more aware of the presence of the cameras, and felt more aware of the fact that they were being assessed while participating in the simulation experience.

It is my opinion that the use of audio-visual footage would be of particular benefit in the formative assessment of EMS students of all clinical levels, as part of their undergraduate and

postgraduate internship. Currently, there is no way of accurately evaluating how students will act in an emergency situation while alone with a patient. To evaluate a student during their internship, students are often placed alongside a preceptor. However, in this situation, the student is never actually alone with the patient, as they always have the 'safety-net' of an experienced preceptor by their side. The audio-visual recording provides an excellent solution in this instance.

5. 6. 3. Use of Audio-Visual Recording for Unintended Purposes.

As I have already discussed in section 5. 3. of this chapter, practitioners who had contributed to the online survey questionnaire suggested that learning situations such as reflective discussion forums and audio-visual recordings could be open to misuse, and how knowledge shared in a public forum could be potentially used maliciously. In relation to the idea of audio-visual recording in a real-life situation, contributors to the online survey questionnaire also raised the possibility that footage could be hijacked by 'management' and used to pursue disciplinary procedures, or to prosecute a 'fitness to practice' case. Judging by the responses to the online survey questionnaire, it would appear that there are some ambulance services in this country who have unresolved problems in relation to organisational culture, which is shown here as a wariness of, and a serious lack of trust in the management.

During the interview process practitioners and educators opined, and I concur, that any attempt to use the audio-visual footage for anything other than learning purposes would lead to serious industrial relations (IR) issues, and consequently the concept of using audio-visual footage as part of a learning strategy would be 'dead-in-the-water'. All participants were unanimous in proposing that a policy, which would clearly define the circumstances in which audio-visual footage could be used, would need to be put in place prior to the commencement of any audio-visual recording.

Conclusions:

- The review of footage from audio-visual recording in the real-life clinical context provides a reliable and accurate means of evaluating clinical performance.

- There are perceptions that audio-visual footage could potentially be used for unintended purposes such as, disciplinary procedures.

Recommendations:

- Develop a pilot programme with student practitioners during their undergraduate internship, and evaluate its findings.

- Develop a policy which clearly defines the use of audio-visual recording footage prior to the commencement of the pilot programme.

5. 7. Summary of Key Recommendations.

- Reflective practice to be included in the education standards for all levels of practitioners in Ireland.

- Provide education for all EMS course faculty regarding reflection, reflective learning, reflective practice, and structured models of reflection.

- Develop and roll-out an education programme for existing practitioners regarding reflection, reflective learning, reflective practice, and structured models of reflection, as part of their CPC requirements.

- Although it is outside the scope of this study, a further research enquiry to explore the reasons for the disparity of opinion between volunteer and professional organisations regarding the encouragement of reflective practice is recommended.

- A Learning Contract, including a confidentiality agreement, must be established prior to the establishment of any collaborative reflective discussion forum.

- Any collaborative forum must be chaired by an experienced and highly skilled facilitator.

- Although it is outside the scope of this study, further research exploring the reasons for what appears to be a breakdown in trust within certain organisations is strongly recommended.

- Establish a regular (quarterly) Reflective Discussion Forum.

- The process outlined in figure 5.1. has shown great promise as a learning experience, and I propose a larger scale pilot study.

- Develop a pilot programme with student practitioners during their undergraduate internship, and evaluate its findings.

- Develop a policy which clearly defines the use of audio-visual recording footage prior to the commencement of the pilot programme.

5. 8. Limitations.

While I am convinced of the value of this research project, it does have its limitations.

Cycle 1 of the action research process was originally conceived to investigate a particular set of circumstances within the context of particular organisation. It was conducted using a relatively small sample, representative of the various stake-holders within that organisation.

The project proved valuable to the organisation in question, however, one cannot assume that these findings would necessarily be applicable, or could be replicated elsewhere. For example, the findings may not necessarily be replicated in a larger organisation such as the National Ambulance Service, or Dublin Fire Brigade.

While cycles 2 & 3 of the process broadened the range of participants to include all clinical levels of practitioners and educators from a broad spectrum of EMS contexts, it is still a relatively small-scale study.

The project was also constrained by time. In the early stages of the project, I struggled to make progress due to my attempts to balance an extremely busy, and often challenging new role. Consequently, I was unable to devote as much time to this project as I would have wished to.

For the past 12 months, I have worked as a freelance EMS Educator and Consultant, and as a result, I have been able to achieve a better work/life balance which has enabled me to bring this project to a conclusion.

However, having said all of that, I believe that this research project has laid the foundations for some interesting new developments within EMS education.

5. 9. Summary.

At the outset of this process, I was presented with a dilemma: how could I, as an education manager and a training officer, ensure that practitioners who have a relatively low exposure to high acuity situations, remain competent and confident with their pre-hospital emergency care skills?

In attempting to address this question, I have explored the relevant literature and experimented with a series of three novel methodologies which I hoped might help practitioners to maintain competence, and confidence in their abilities to provide pre-hospital emergency care. I have taken existing concepts and methodologies, and by combining them I have developed some new strategies that will benefit practitioners of all levels.

While all of the methodologies tested have shown great promise, it is likely that they will require further larger scale study to gain widespread acceptance. By adding these new methodologies into the Clinical Audit process as outlined below in figure 5.2., there are also learning benefits at an organisational level. While offering students and practitioners the opportunity to gain a greater understanding of their practice, it also affords the organisation an opportunity to evaluate the appropriateness and the overall effectiveness of their education programme.
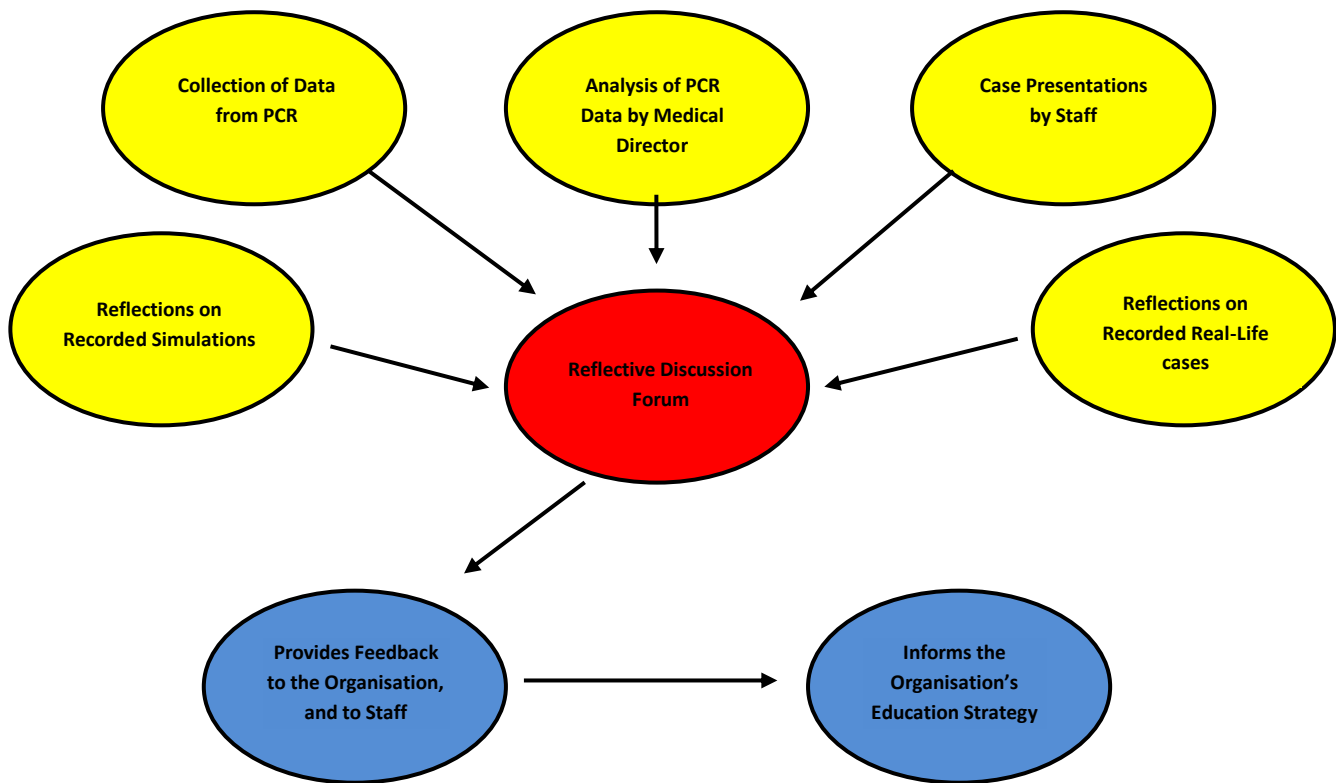
Figure 5.2. Proposed Model of Organisational Clinical Practice Evaluation.

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Appendix I

Letter of Ethical Approval

Ms Christopher O'Connor
School of Education Studies

2nd July 2014

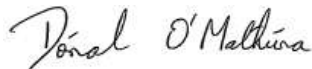**REC Reference:**   **DCUREC/2014/163**

Proposal Title: **An exploration of novel methodologies to support reflective practice among pre-hospital emergency care practitioners**

Applicants: Mr Christopher O'Connor, Professor Joe O'Hara

Dear Christopher,

This research proposal qualifies under our Notification Procedure, as a low risk social research project. Therefore, the DCU Research Ethics Committee approves this research proposal. Materials used to recruit participants should state that ethical approval for this project has been obtained from the Dublin City University Research Ethics Committee. Should substantial modifications to the research protocol be required at a later stage, a further submission should be made to the REC.

Yours sincerely,

Dr. Donal O'Mathuna
Chairperson
DCU Research Ethics Committee

Appendix II

Plain Language Statement

Plain Language Statement

I. Introduction to the Research Study

My name is Christopher O'Connor. I work as the Education & Practice Development Manager with Medicall Ambulance Service. I am currently studying for a Professional Doctorate in Education at the School of Education Studies, Dublin City University (DCU), and I would be grateful if you would agree to participate in this research project.

The purpose of my research project is to examine the value of employing novel methodologies, such as the use of audio-visual technology, to support reflective practice, both collaboratively and individually, among pre-hospital emergency care practitioners so as to improve patient care.

II. Details of what involvement in the Research Study will require

I would be grateful if you would agree to be interviewed, and to participate in a collaborative reflective discussion forum, and audio-visual recording.

III. Potential risks to participants from involvement in the Research Study (if greater than that encountered in everyday life)

- *Loss of anonymity.*

- *Disclosure of personal or confidential information.*

Both of these issues are addressed in section V.

IV. Benefits (direct or indirect) to participants from involvement in the Research Study

Participating in this research will offer you the opportunity to reflect upon your own clinical practice, and to collaborate and share knowledge with your peers, with a view to improving the quality of the care we provide to the patients we all serve.

V. Advice as to arrangements to be made to protect confidentiality of data, including that confidentiality of information provided is subject to legal limitations

All information and data obtained by me during the course of this research project will be held in confidence, and will only be used only for the purpose of completing this academic assignment. No information will be shared, other than with my supervisor, and the course examiners.

The identities of participants will be protected by anonymising all data. Participants will only be referred to as a 'letter' (e.g. 'Participant A', etc.).

All written transcripts, field notes, or other written data will be stored in a locked fire-proof cabinet in a locked room.

All electronic data will only be stored on a computer that is encrypted, and password protected. No external hard-drives, or USB keys will be used to store data.

VI. Advice as to whether or not data is to be destroyed after a minimum period

The data obtained during the course of this research project will only be used for the purpose of my academic assignment. It will be destroyed once the course has been completed.

VII. Statement that involvement in the Research Study is voluntary

Your participation in this research project is entirely voluntary, and you are free to withdraw from it at any stage.

VIII. Any other relevant information

Your identity, along with the identities of all other participants will remain confidential, as will any statements or contributions.

If participants have concerns about this study and wish to contact an independent person, please contact:
The Secretary, Dublin City University Research Ethics Committee, c/o Research and Innovation Support, Dublin City University, Dublin 9. Tel 01-700 8000

Appendix III

Informed Consent Form

I.   Research Study Title

'An exploration of novel methodologies to support reflective practice among pre-hospital emergency care practitioners'.

Christopher O'Connor. School of Education Studies, Dublin City University (DCU).

II. Clarification of the purpose of the research

I am aware that the purpose of the research project is to examine the value of employing novel methodologies, such as the use of audio-visual technology, to support reflective practice, both collaboratively and individually, among pre-hospital emergency care practitioners so as to improve patient care.

III. Confirmation of particular requirements as highlighted in the Plain Language Statement

I have agreed to be interviewed, and to participate in a collaborative reflective discussion forum, and audio-visual recording.

<u>Participant – please complete the following (Circle Yes or No or N/A for each question)</u>

I have read the Plain Language Statement (or had it read to me)	*Yes No*
I understand the information provided	*Yes No*
I have had an opportunity to ask questions and discuss this study	*Yes No*
I have received satisfactory answers to all my questions	*Yes No N/A*
I am aware that my interview will be audiotaped	*Yes No*

IV. Confirmation that involvement in the Research Study is voluntary

I am aware that my participation in this research project is entirely voluntary, and that I am free to withdraw from it at any stage.

V. Advice as to arrangements to be made to protect confidentiality of data, including that confidentiality of information provided is subject to legal limitations

I accept Christopher's undertaking to respect the confidentiality of the information he receives, and to protect my anonymity. It is my understanding that any information I provide will only be used in the context of a doctoral thesis, which may subsequently be published externally at a later date. I also understand that none of the information I provide will be shared, other than with Christopher's dissertation supervisor, and the course examiners.

VII. <u>Signature:</u>

I have read and understood the information in this form. My questions and concerns have been answered by the researchers, and I have a copy of this consent form. Therefore, I consent to take part in this research project

Participants Signature: _____

Name in Block Capitals: _____

Witness: _____. **Date:** _____

Appendix IV

Online Survey Questionnaire Questions

What is your Clinical Level?

- EMT
- Paramedic
- Advanced Paramedic

Would you consider yourself to be a Reflective Practitioner?

- Yes
- No
- Not sure

If Yes, please comment outlining any methods you use, e.g. a particular Model of Reflection.

When reflecting on your practice, do you mostly:

- Reflect Alone
- Reflect collaboratively with colleagues

Is Reflective Practice encouraged in your workplace?

- Yes
- No

Is there a formal Reflective Discussion Forum in your workplace?

- Yes
- No

Would you feel comfortable discussing patient encounters in an open forum?

- Yes
- No

If No, please comment briefly outlining your reasons, and/or any concerns you may have.

Do you feel that reviewing an audio-visual recording of a real-life patient encounter would be of benefit to you in reflecting on the event?

- Yes
- No

Assuming that all issues relating to Ethics, Consent, and Patient Confidentiality have been addressed, would you be willing to have a patient encounter recorded audio-visually, in order to assist you in reflecting on the patient encounter?

- Yes
- No

If No, please comment briefly outlining your reasons, and/or any concerns you may have.

Appendix V

Interview Questions

Interview Format.

Describe your initial response to the Simulation event.

- The staging/set-up.
- The scenario.
- The actors.
- Was it a 'real-life' experience?
- The 'hot' debrief.

Have you ever been recorded audio-visually?

How did you feel about being recorded audio-visually?

Did you feel that the recording affected your performance in any way? Describe . . . . . .

Describe your experience of scenario-based training.

- As a participant.
- As a facilitator.

Compare the two experiences.

- Strengths Vs Limitations.
- Benefits?

Are you familiar with the concept of reflective practice?

Have you ever used reflective practice in your role as a practitioner?

Describe your experience using the structured model of reflection (Gibbs).

Did you find it useful in identifying ways to improve your practice/or not? Describe . . . . . .

Was the audio-visual recording of your own performance helpful in identifying potential improvements in your own practice in relation to clinical/technical skills? Describe . . . . . .

Was the audio-visual recording of your own performance helpful in identifying potential improvements in your own practice in relation to non-technical skills such as leadership, teamwork and communication? Describe . . . . . .

Was the audio-visual recording of your colleagues performance helpful in identifying potential improvements in your own practice in relation to clinical/technical skills and non-technical skills? Describe . . . . . .

Compare the recording of the simulated experience with the real-life experience.
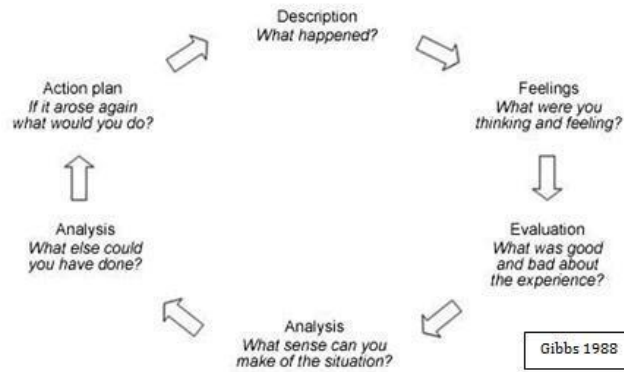
Are there any negative points in relation to audio-visual recording of either simulated or real-life scenarios? Describe . . . . . .

Improper use of the audio-visual recording. Discuss . . . . . . How can this be prevented?

Appendix VI

Student Guidance Documents

Gibbs Reflective Cycle.

Description What Happened?	
Feelings What were you thinking & feeling?	
Evaluation What was good & bad about the experience?	
Analysis What sense can you make of the situation?	
Analysis What else could you have done?	
Action Plan If the situation arose again, what would you do?	

Chris O'Connor - Dublin City University 2016

Learning Points.

	Your Scenario	Other Scenarios
Clinical/Technical Skills		
Scene Management		
Leadership		
Communication with Patients		
Communication among Practitioners		

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