Embedding and Nurturing Enquiry-based Learning:
Exploring Multiplicities of Enquiry in Initial Teacher Education (ENEBLe).

Final Report of the ENEBLe Project Funded by SCoTENS

January 2020

Project Partners

Marino Institute of Education: Dr. Sandra Austin, Dr. Karin Bacon
Stranmillis University College: Dr. Richard Greenwood
Dublin City University: Dr. Susan Pike

INSTITIÚID OIDEACHAIS
MARINO
INSTITUTE OF EDUCATION
An Associated College of
Trinity College Dublin, the University of Dublin

STRANMILLIS UNIVERSITY COLLEGE
A College of Queen's University Belfast

DCU | Institiúid Oideachais
Institute of Education

Section 1: Introduction

Context

To even begin to identify and address the critical issues of our time, such as sustainability, climate change, racism, discrimination, and global interdependence, both children and adults need to be able to think conceptually, combining creativity and analysis (Austin, 2019). Enquiry-based learning (EBL)[1] is understood in many different ways, but at all levels of education it is generally recognised as a stance 'that underlies our approach to living as learners' (Short, 2009). Central to EBL[2] is recognising how the learner has a significant influence on the aim, scope or topic of their learning (Roberts, 2010; Short, 2009). Scenarios for EBL are often created on the basis that they are sufficiently open-ended for there to be multiple and different responses. Enquiry as a theme of educational research and practice has attracted considerable interest (Audet, 2005; Erickson, 2008; Lindfors, 1999; Parker, 2007). It currently influences curriculum development and teaching approaches and methodologies in a number of innovative programmes to construct new models of teaching and learning (Pataray-Ching & Roberson, 2002; Sausele Knodt, 2008). This has led to research and development of enquiry-based curricula, and the argument in support of enquiry-based learning is being heard increasingly, including within Initial Teacher Education (ITE) (Waldron, 2009).

Definitions vary, but at its core EBL has a strong focus on pupils asking questions, on purposeful talk, working together, selecting and interpreting sources, on collecting information, and on interpreting and analysing what they find to come to conclusions and find answers to the question(s) asked (Grigg and Hughes, 2013; Harlen, 2014).

---

[1] See Appendix A for a full list of abbreviations used in this report.

[2] In the UK the word *inquiry* is used in relation to a formal inquest (i.e., an investigation), while *enquiry* is used to denote *the act of questioning*. However, often both words now are used interchangeably and there is considerable leniency on this distinction. For the purpose of this report the word enquiry is used throughout except where quoting directly from a source.

EBL is a learner-centred approach that emphasises how learning is driven by a process of enquiry owned by the student. Through enquiry, students are motivated to question, explore and formulate new ideas about issues that they find personally relevant. Enquiry, real enquiry, is not just a process or methodology. Murdoch describes it as a way of being (Murdoch, 2015); Short describes enquiry as a stance on curriculum, which is as much about how we live as learners as it is about what we learn (Short, 2009).

Enquiry is often depicted as a set of recurring learning events commonly referred to as the enquiry cycle (Short, Harste & Burke, 1996; Murdoch, 2015). Although they may differ in detail, presentation or in emphasis, many of the models of enquiry contain similarities and have attributes and stages in common. These often include students:

- Asking a question or identifying a researchable problem;

- Investigating possible solutions and developing a plan;

- Gathering resources; analysing, summarizing and presenting findings;

- Drawing conclusions and reporting findings and taking some form of action;

- Reflecting on the process and taking action.

Research in schools has highlighted the overwhelmingly positive responses to EBL in classrooms (Pike, 2016, Roberts, 2010). In the Republic of Ireland (ROI), the National Council for Curriculum Assessment (NCCA) emphasises the importance of an enquiry approach to learning, recognising that a child's sense of wonder and natural curiosity is a primary motivator for learning, and also emphasising that the child should be an active agent in his or her learning (NCCA, 1999). Similarly, the Council for Curriculum, Examinations and Assessment (CCEA) advocates for active learning

contexts within Northern Ireland (NI) primary education, and highlights the importance of children being actively involved in planning, carrying out and reflecting on their own work (CCEA, 2007).

We will return to the theme of EBL in greater detail in the next section of this report. However, at this point it is sufficient to note that, more than ever, it is important that the principles of enquiry - such as emphasising collaboration, conceptual understanding, problem seeking and problem solving, selecting and interpreting sources - are carried through to the teacher education environment (Bacon and Matthews, 2014; Grigg and Hughes, 2013). In this way the kind of learning in these environments will more authentically reflect the experience that ITE institutions want primary teachers to provide in their own classrooms. As a group of teacher educators who model EBL in our ITE courses, we aim to model good practice across the primary Science, History and Geography curricula.

Project Aims

This research project was driven by a shared desire not just to model but also actively to incorporate enquiry pedagogies into our own teaching, where appropriate, so that students experience these pedagogies at multiple levels: as an intrinsic component of their learning, as modelled for the primary classroom, as they experience them when they are teaching on school placement, as well as in other ways. We refer to these as "multiplicities of enquiry" throughout this report.

While we are each committed to providing student teachers with the skills and understanding to use an enquiry approach in their classrooms, it was important for us to examine the extent to which we use this approach ourselves, or whether we instead fall back onto traditional methods, citing time and content pressures as reasons for

restricting the opportunities for enquiry, for example including the "student voice" within the planning and delivery of our programmes.

Our research questions can be summarised as:

- How do the ITE courses in which we are currently involved present enquiry-based learning to student teachers?

- How can multiplicities of enquiry best be incorporated into ITE courses at teacher education and classroom levels?

- What impact do multiplicities of enquiry in teacher education have on student teachers' understanding, confidence and practice?

The main aim of this research was to provide four teacher educators with informed insights into their teaching of science, history and geography education, thus contributing to the development and review of ITE programmes. The authors all work in settings where teacher enquiry into practice is encouraged but also required in our countries' teacher standards. As well as this, the primary curricula in NI and ROI share an enquiry approach to the teaching and learning of science, history and geography, and there are many commonalities in the conceptual nature of the subjects. This enabled us as teacher educators to benefit directly from each other's learning with regard to planning, implementation and assessment of teacher education in these subjects.

It is hoped that this research will lead to greater understanding of how our pedagogical practices contribute to the learning experiences of our students, and help to prepare them for a career in education.

Section 2: A Review of the Literature

Enquiry-based Learning

There is a growing interest in enquiry-based learning at all levels of education, from early childhood to higher education (Audet, 2005; Aditomo, 2013). An enquiry-based learning (EBL) approach is firmly rooted within psychological theories of learning, notably ideas related to constructivism (Pickford, Garner & Jackson, 2013). Students who are involved in enquiry develop essential skills and qualities for learning. An active approach to learning is promoted, encouraging pupils to ask questions about real issues, to search for answers using a wide range of skills and information, and to think critically about issues rather than accept passively the conclusions, research and opinion of others (Davidson, 2006).

For the purpose of this research, enquiry is understood as the ways in which curious learners actively and seriously engage with the social and physical environment in an effort to make sense of the world, and the consequent reflection on the connections between the experiences encountered and the information gathered, leading to thoughtful action. Such engagement is rigorous but also captures the elements of excitement and wonderment as articulated in the questions of the learners; these are addressed through rigorous hands-on investigation, leading to sometimes tentative answers.

An enquiry stance encourages us to wonder and question. It is a conceptually-based approach to curriculum, where knowledge and information are tools to explore conceptual understanding as well as being ends in themselves. It evolves from a connection to children's own lives and experiences, and it emphasises process rather than product (Short, 2009). Enquiry is characterised by the active involvement of children in their own learning, through pursuing questions or addressing problems that

they are interested in exploring (Bacon and Matthews, 2014). They collect evidence and use it to make sense of the world around them. As well as building their understanding they are developing their critical thinking and communication competencies, and learning how to work both independently and collaboratively (Harlen, 2014).

Enquiry is a collaborative process 'of connecting to and reaching beyond current understandings' (Short, 2009, p.12). As we reach beyond, we need collaborators to challenge us to outgrow ourselves. 'Enquiry takes place in participation, not in individual minds. It is a way of being in the social world, not just coming to know about that world' (Short, 2009, p.18). Thus, enquiry is enhanced by involvement with a community of learners, each learning from the other in social interaction. Teachers help to build a community of enquiry in the classroom in many ways: through small group work; by encouraging learners to share with each other; and by providing equal opportunities to participate in discussion (Austin, 2019; Pike, 2016).

EBL in the ROI and NI Curricula

The Northern Ireland Curriculum document does not make explicit mention of 'enquiry' methods; however phrases describing how pupils should be enabled to explore and investigate are used. In the Area of Learning which includes geography, history and science and technology – 'The World Around Us' (WAU) – teachers are encouraged to build on children's previous experiences of the world in which they live, which are likely to have included '…asking questions about why things happen' (CCEA, 2007, p. 85). A report by the Schools Inspectorate in Northern Ireland (ETI, 2014) into the implementation of the WAU in primary schools emphasised the importance of enquiry-based learning. They recommended that schools should make WAU, particularly the

science and technology strand, more investigative and enquiry-based and emphasise its place in everyday life.

Such emphasis is also seen in the ROI's Introduction to the Primary Curriculum (NCCA, 1999). It states how "The curriculum aims to instil a love of learning ... and that will express itself in an enquiring mind and a heightened curiosity"(p.7). Strong emphasis is placed on developing the ability to question, to analyse, to investigate, to think critically, to solve problems, and to interact effectively with others (p.9). The development of these skills is particularly evident within the curriculum area of Social, Environmental and Scientific Education (NCCA, 1999). The curriculum identifies the child's sense of wonder and natural curiosity as a primary motivating factor in learning. It states that the child is an active agent in his or her learning and this learning should involve guided activity and discovery methods (p.8).

Enquiry in the classroom

An enquiry stance invites us as educators to change our thinking about learning, and about our role in the classroom. When working through enquiry, teachers and learners are collaborating in a process of 'curriculum-making', defined as a 'creative act of interpreting a curriculum specification and turning it into a coherent, challenging, engaging and enjoyable sequence of teaching and learning' (Geographical Association, 2019, para. 1).

The benefits for learners of using enquiry approaches in the classroom include increased interest and motivation and a feeling that they are valued and treated as being responsible for their own learning (Murdoch, 2015). In addition, EBL approaches can provide both natural differentiation and challenge. The focus encompasses process, as well as product (Wolk, 2008).

EBL has long been seen as an effective vehicle for group work, with its benefits of collaborative discussion, task-focussed talk, sharing knowledge, understanding and ideas and group problem-solving (Hoodless et al., 2009). Enquiry is, by its nature, a participatory process, as it recognises the co-learning that takes place between teachers and students as they engage in their investigations. Teachers often fear handing over control to their students (Waldron, et al., 2009), but students need to know how to determine what is significant and worth pursuing – they need to be able to 'question the questions', to find which problems matter and are worth solving. EBL makes demands on teachers' subject knowledge and their pedagogical knowledge, but successful teachers can develop a 'culture of enquiry' in the classroom (Roberts, 2013).

Thus, while enquiry-based learning can be seen as one of the most effective and beneficial forms of learning, it is also one of the most complex and demanding types of work for teachers to engage in (Kidman and Casinader, 2017). Therefore, we must support teachers, both during initial teacher education and continuing professional development, to embrace the enquiry approach.

Learners need support to develop their enquiry skills to a point where they can conduct their investigations independently. A range of enquiry approaches fall along a continuum, from most structured (teacher-guided) to most open (learner-driven) (NRC, 1996). This is also recognised in the ROI Curriculum, which states that 'providing opportunities for students to develop a range of inquiry skills will be necessary to progress along the continuum of inquiry', and illustrates the continuum as shown in Fig. 1. (NCCA, 2015, Junior Cycle Science Curriculum Specification pp.13-14).
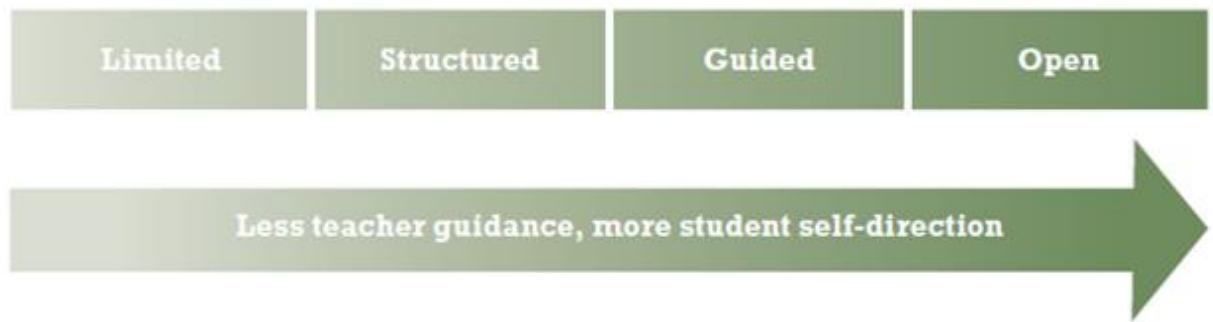
Figure 1.1 Continuum of inquiry (NCCA, 2015)

Enquiry in Initial Teacher Education

As outlined in the opening section of this report, practitioner EBL is crucial for ITE students because it encourages student teachers to ask their own questions, through which they can 'problematize their own learning and to seek solutions through critical reflection and through in-depth study of theoretical readings' (Hulse and Hulme, 2012, p.313). However, student teachers may often be in the position where they learn how to teach through enquiry in sessions that are largely didactic in nature (Lotter, Yow& Peters, 2014), with little opportunity for features associated with enquiry, such as asking questions, making sense of data, reflecting on and evaluating their learning.

Here we consider evidence of enquiry in teacher education and how it can occur to enable student teachers to shape their learning experiences in general, and specifically in relation to implementing enquiry in their own classrooms. This resonates with wider educational theories such as the work of Freire. He advocated that teacher education programmes should encourage epistemological curiosity, asking teacher educators to create 'pedagogical spaces where students become apprentices in the rigours of exploration' to ensure teachers were skilled (Freire and Macedo 1995, p.53). Taking an enquiry stance enables students to develop an understanding of the complex relationships between theory, policy and practice in teaching (Dickson, 2011).

As well as wider debates around the impact of EBL in ITE, Aditomo et al. (2013, p.1239) note that there is currently 'little systematic knowledge about the practice of enquiry-based learning (EBL) in higher education'. However there have been attempts to develop conceptual frameworks, in some cases with detailed case studies comparing different forms of EBL (Spronken-Smith and Walker 2010).

Within the literature there have been examinations of students' experiences of EBL (Levy and Petrulis 2011) as well as research into its impact on student learning outcomes (Justice, Rice, & Warry 2009). From the research available, there is evidence that students benefit when their ITE programmes are characterised by EBL (Waldron, et al., 2009). For example, Goodnough (2011) concluded that research activity becomes meaningful to an individual when they are able to choose for themselves what they want to explore, and how. Dickson et al. (2011) found that students were able to identify their own learning trajectory, and this had the effect of personalising their learning; this also gave them a sense of agency in their external environments.

This is not to say that EBL in ITE always works well or is easy to implement. In an earlier SCoTENs study of students' experiences of, and attitudes to, Science, History and Geography, uncertainty or anxiety about the use of EBL was evident among students, due to their lack of EBL experiences in school (Waldron, et al., 2009). A study of teachers on Master's programmes in the USA also found similar resistance to EBL, particularly amongst science graduates (Bryant and Bates 2010).

There is a relatively large body of research on professional development initiatives that aim to facilitate teachers' adoption of enquiry-based pedagogical approaches (e.g. Levy, Thomas, Drago & Rex, 2013; Lotter, Yow & Peters, 2014). Stuyven and colleagues found that immersion *in* EBL experiences, rather than teaching *about* EBL,

provided students with 'good practices' that encouraged students to subsequently adjust their teaching (Struyven, Dochy & Janssens, 2010).

Where enquiry is modelled there appears to be a relationship between student teachers' self-efficacy and their positive attitude to a range of pedagogical approaches to meet the needs of their learners, including enquiry (Ross, Bradley Cousins & Gadalla, 1996). Student teachers attributed their high sense of teaching efficacy to their increased knowledge of teaching strategies, among them enquiry, interactive, and hands-on learning (Swars and Dooley, 2010).

Overall, there is a range of interpretations of EBL in ITE, with a corresponding range of activity considered to be enquiry in both overall programmes and particular modules. Whilst there is a lack of systematic research in the area, it appears that embedding EBL in ITE means that students have more opportunities to engage with the process of enquiry (Wirkala and Kuhn, 2011).

Section 3: Research Design and Methodology

This project has been a practitioner-based study of teacher education, providing an insider perspective into teaching and learning in ITE. This has incorporated collaborative self-study by teacher educators, while also making space for student voice.

Our research questions can be summarised as:

- How do the ITE courses in which we are currently involved present enquiry-based learning to student teachers?

- How can multiplicities of enquiry best be incorporated into ITE courses at teacher education and classroom levels?

- What impacts do multiplicities of enquiry in teacher education have on student teachers' understanding, confidence and practice?

Context

Current education policy in both NI and ROI prioritizes the balance of skills and knowledge. In both NI and ROI an integrated approach to the teaching and learning of science, history and geography is encouraged within the primary curriculum. In NI, these subjects are delivered as 'The World Around Us', while in ROI they are delivered under the umbrella of 'Social, Environmental and Scientific Education'. In both cases, the use of an enquiry approach within the classroom is emphasised. Enquiry-based learning provides a range of opportunities for providing authentic, active learning experiences for learners, which is important throughout the education spectrum. It is important therefore to elucidate and identify how effectively these approaches are put into practice throughout the continuum of teacher education.

Rationale for research design

Communities of Enquiry

Davidson, in considering the notion of enquiry, identifies it 'as a creative process; a community pursuit of new understanding by applying, adapting and recombining different concepts and skills'. As such he identifies that the greatest differences between enquiry and more traditional didactic teaching, 'are not in the tools themselves, but in how the class functions as a community to develop and use these tools in the pursuit of new insights' (Davidson, 2009, p. 27).

Several social aspects are involved in such a learning community. A shared understanding and agreed ways of working together must be established. DeWitt emphasises the importance of discussion or dialogue in the development of community: 'The values of trust, involvement, and concern are democratic, marked by an open-mindedness to others' perspectives, and are essential to group members' willingness and ability to deliberate' (DeWitt, 2003, p. 284).

Criteria of a community of enquiry may include the following: listening to others; making decisions based on fairness and equality; working collaboratively in a group; working towards and obtaining consensus; being a leader in some circumstances and a follower in others (IBO, 2007).

Classrooms where students are expected to propose and defend their ideas and conjectures and to respond thoughtfully to the arguments of their peers can be thought of as classroom communities. Critical reflective thinking that is implicit and intuitive in nature induces learning in the community.

Practitioner Research

Kemmis (2006) has argued that the criticality of many action research practices is limited because they (i) aim to improve existing techniques rather than critically question them, (ii) focus on enhancing efficiency of practices rather than evaluating them in terms of their consequences for the young people in our schools (colleges), (iii) develop an understanding of the improvement of practice solely from the perspective of the practitioner, rather than engaging with the voice and perspective of others involved in practice, and (iv) are conducted by individuals rather than in open communication with other members of the community.

This research project was designed to address several of these issues using a number of methods, as outlined below.

Research Methods

Year 1 of the project focused on collaborative self-study among the group of four teacher educators, both as practitioners and researchers. Based on our own reflections and our observations of each other, we identified changes that could be made to the planning, content and delivery of our respective modules. Limited student input was incorporated through online surveys before the modules in question were taken. In Year 2, each researcher/practitioner had the opportunity to implement and review the identified changes to their module. There was, however, a shift in focus towards a stronger representation of the student voice, with the incorporation of a number of focus group interviews with representative student volunteers from each of the modules in question. The research generated both quantitative and qualitative data. SPSS was used to analyse quantitative data. Qualitative data was analysed collaboratively using systematic coding and thematic analysis. Research methodology broadly reflected a

model of Collaborative Action Research; researcher/practitioners collaboratively planned, observed, reflected and acted upon their findings.

Peer Observation Visits

Teacher educators (TEs) shared their practice, visiting each other's institutions and observing teaching and learning in each of the modules being researched (Table 3.1). There were four observation visits in total, with at least two observers at each visit. The first observation visit was used as a pilot, to help to devise a format for future visits. Following this visit, it was decided that, for future visits:

- Observers should meet with the lecturer immediately before the lesson to be observed, to discuss the lesson plan, the context in which the lesson was situated, and any other relevant issues.

- A framework for observation would be used. This was developed collaboratively, and based on the enquiry framework devised by Roberts (2003). See Appendix C.

Table 3.1 Schedule of peer observation visits, ENEBLe project.

Date of Visit	Observers	Lecturer	Institution	Programme	Module	No. of students	Duration of class
22/1/18	Sandra Austin, Susan Pike	Karin Bacon	MIE	BEd	Yr2 Enquiry-based Learning and Creative technologies	38	Double (100min)
30/1/18	Sandra Austin, Karin Bacon, Susan Pike	Richard Greenwood	SUC	BEd	Yr3 Local Studies Elective	20	Single (60min)
2/2/18	Sandra Austin, Karen Bacon	Susan Pike	DCU	BEd	Yr 3, GEO specialism	22	Single (50min)
15/2/18	Richard Greenwood, Susan Pike	Sandra Austin	MIE	PME	Yr 1 Social, Environmental and Scientific Education	33	Double (100min)

Critical Reflection

TEs reflected on their own and each other's practices and experiences, through journaling, discussion and shared critical thinking. At the beginning and the end of the research project, each researcher submitted a written reflective piece on enquiry and how they used it in their teaching. In addition, research group meetings (10 in total - See Appendix B) provided an opportunity for critical reflection through discussion and dialogue.

Student Surveys

A convenience sample of students completed brief initial survey questionnaires relating to their views and experiences of EBL. These questionnaires were devised collaboratively by the research group (See Appendix C for template), and delivered to students in the modules outlined in Table 3.2. A total of 127 survey responses were received. All responses were anonymised. Quantitative analysis was carried out using SPSS.

Table 3.2 Student survey cohorts, ENEBLe project

Project Partner	Module Title	Cohort	Number of responses received
Dr. Sandra Austin, Dr. Karin Bacon (MIE)	Enquiry-based learning and creative technologies	BEd 2	76
Dr. Susan Pike, (DCU)	GEO (Geographical, Environmental and Outdoor education) Specialism	BEd 3	19
Dr. Richard Greenwood (SUC)	Area of Specialism 2 and 3 (History/Geography)	BEd 2 and BEd 3	32

Student Focus Group Interviews.

Interviews were conducted in person with student participants at their institutional setting, and were recorded using an Olympus WS-321 digital voice recorder. Audio recordings (in either WMA or .mp4 format) were transcribed prior to coding and analysis. Participants (students) from each of the researchers' modules outlined below

(Table 3.3) volunteered for interview, and in each case interviews were carried out by members of the research team who were not involved in the teaching of those modules.

A semi-structured interview format was employed, which provided a framework for the interview but allowed the participants to set the tempo and order of conversation and catered for the emergence of unexpected themes (Erlandson, 1993). Groups ranged in size from 4-7 participants, and interviews were generally about 60 minutes in duration. Initial questioning was based on a prepared Interview Schedule (Appendix C). This interview schedule was developed collaboratively, based on concepts derived from the literature and the researchers' own fieldwork and experience. Respondents were also given freedom to talk about the topic and give their views in their own time.

The constant comparative method was used for data analysis (Marshall and Rossman, 2010). Transcripts were initially read independently and coded by each member of the research team. Collectively, the researchers then met to identify dominant and recurrent themes, and these were combined to constitute categories of meaning, then re-evaluated. Findings are presented in line with conceptual themes from the literature review and data collection instruments.

Table 3.3 Focus Group Interviews, ENEBLe project

Project Partner	Module Title	Cohort	Interviewers
Dr. Sandra Austin, Dr. Karin Bacon (MIE)	Social, Environmental and Scientific Education	PME 1	Susan Pike
Dr. Susan Pike, (DCU)	GEO (Geographical, Environmental and Outdoor education) Specialism	BEd 3	Sandra Austin, Karin Bacon
Dr. Richard Greenwood (SUC)	Area of Specialism 3 (History/Geography)	BEd 3	Sandra Austin, Karin Bacon, Susan Pike

Ethical Review

The research design was subjected to ethical review at all three of the participating institutions, and was approved by the Research Ethics Committee at each institution. Students gave informed consent prior to participating in surveys or focus group interviews. Participation was voluntary and participants retained the right to withdraw from the study at any time. All data was anonymised and stored in secure files. Templates for the Plain Language Statement and Informed Consent forms are available in Appendix C.

Section 4: Results

In this section, the findings are presented under the following headings: peer observation visits, researcher reflections, student surveys, and student focus groups. The first two address the perspective of the researchers involved in the project, while the last two give voice to the student perspective.

Peer Observation Visits

As outlined in Section 3, the aim for the peer observation visits was to discuss and observe practices, with a view to learning from each other and this was certainly achieved. Following the pilot session, the importance of pre- and post-briefing sessions was recognised, and these were incorporated thereafter where possible. An enquiry-based observation framework was developed to facilitate consistency among the researchers' field notes.

It was quickly recognised (after the initial pilot visit) that we as researchers needed to define three distinct 'modes' of enquiry in action in order to be able to articulate our observations. These were:

a) Where students were directly experiencing enquiry-based learning engagements (student as learner)

b) Where students were asked to reflect upon a child's experience of this engagement (student as teacher)

c) Where students were encouraged to link their learning experience to theory (student as enquirer researcher).

These modes, as defined by the above terms, arose and were developed from the observations - an example of our developing language that allowed us to articulate our

observations. There was, however, a fluidity of movement among the different 'modes' of enquiry within the seminars, which sometimes made it difficult to complete the observation framework as originally devised. Through observing each other we noted that multiple enquiry pedagogies were incorporated into our teaching, although all were limited by programme structures and timings.

The impacts of the peer observation visits were several. Observing and critiquing our own and others' performance forced us to focus on our practice. We all wanted students to experience EBL in Geography, History and Science before going on to use EBL in their own practice. Modelling classroom practice was common to and central to our seminars. For example, one observer noted an occasion, during a field trip, where

> Data were gathered on the walk, not simply given - 'constructivism'. It is important to model this with TE students. Throughout, the question about what we would have to do differently if we were doing this with a primary class was emphasized (Researcher 3).

However, intrinsic enquiry, where students themselves are the enquirers, was also present, if less common. Whilst we all supported intrinsic enquiry, we noted that opportunities to provide it were severely constrained by time, student numbers and course requirements. However specialism modules allowed for a greater level of collaboration between students and lecturers, creating space for intrinsic enquiry. For example, Researcher 1 noted that, during observation of a specialism module, the lecturer "shares the course learning outcomes with the students, to illustrate the confluence between the student and the lecturer objectives".

Overall, we were inspired by hearing others' ideas, and by seeing our colleagues' various approaches to enquiry. Due to the differences in the student groups, programme focus and subject areas of the seminars observed, "each of the 3 lessons observed to date have been *so* different from each other" (Researcher 2). It might have been easier

to draw more definitive conclusions had the sessions observed been more similar. However, it was both beneficial and encouraging to observe and identify commonalities in our approach to enquiry-based learning across a broad range of circumstances.

Researcher Reflections

The aim of the observation visits, as well as other meetings online and face-to-face, was to engage in critical and constructive dialogue about our practice, ideas and beliefs with regard to enquiry.

Initial Reflections

From the initial reflective pieces submitted by each researcher on the project ('How I use enquiry in my practice'), it became apparent that, although we each had different conceptions of enquiry-based learning, broadly speaking our understanding of the characteristics of enquiry was similar - enquiry as conceptual, collaborative, questioning, learner-led, critical and analytical. The commitment of each of the researchers to the process of fostering enquiry through our teaching was also apparent:

> I try to incorporate enquiry into all elements of my teaching, both from a theoretical perspective but also what it looks like in practice. (Researcher 2)

The modelling of classroom enquiry was a core element of all of our classes, as exemplified below:

> Through this module the students experience a range of modelled enquiries, including open and closed enquiries, with many examples of children in schools completing such activities in classrooms, through photographs, video and written examples. (Researcher 4)

As teacher educators we build a community of enquiry in seminars, through group investigations (e.g. long range investigation of an apple, or where a butterfly would like to rest) through shared discussion and dialogue. Enquiry was evident in modes of assessment: assignments were often based around research investigations (e.g. a study

of the local area) to be carried out by the students, and/or contained elements such as group work, reflective journaling and individual choice. In some cases this was intrinsic enquiry, such as an action research project; at other times it was both intrinsic and modelled enquiry, such as an investigation into a locality.

Challenges identified by the researchers included time constraints, and the tension between structured and open enquiry. For example:

> I always feel pressured to cover much with little contact time; this is where I struggle most - deciding what is absolutely required, and when to just go with the flow. (Researcher 1)

and

> The scope for using enquiry in the general … modules is limited by time and numbers of students, but it is not impossible! (Researcher 4)

The researchers endeavour to give students choice about their learning - for example, through shared planning of the latter part of a module (as described by Researcher 1 and Researcher 3 in their reflective pieces).

Development of understanding

In our retrospective reflective pieces ('What has changed in my practice through the course of this project?'), the researchers independently identified several common elements on which this research process has had an impact. One was a recognition that we may need to be more explicit about the enquiry-based learning that is going on in our classrooms. Thus, we have begun pointing out instances where students are given opportunity to make decisions, work independently, think conceptually and reflect. Students may not otherwise recognise EBL or its elements:

> Perhaps we assume that they will be comfortable and familiar with EBL by the time they reach us. But I think we can see that they are not. (Researcher 1)

Each researcher also recognised that, despite a shared belief that enquiry is about learner responsibility and agency, there may be limited opportunity to practise this in a real sense in much of our teaching. All of the researchers expressed a desire to increase the amount of student agency and responsibility within their modules.

All of the researchers commented on the value of having the time and opportunity to engage with colleagues, both through peer observation and through collaborative reflection. Each spoke of changes in their practice that related directly to peer observation (e.g. inclusion of a Mind the Gap reflective exercise).

In addition, the opportunities to engage with the research literature and to listen to student voice were also highlighted. One element in particular that emerged through student engagement was the realisation that for the most part it is perhaps only within our modules (History, Science, Geography) that students recognise their learning as being enquiry-based.

Student Surveys

To get a sense of the background of our students, as outlined in Section 3, students in three Colleges of Education in NI and the ROI were surveyed for their views and experiences of EBL (See Appendix C for the survey template). A total of 127 students responded to the questionnaire. As shown in Table 3.2 (p. 20), all of the students were in Year 2 (76 students, 60%) or 3 (51 students, 40%) of their programmes. Most of the students (94, or 74%) were studying in the ROI, with 33 students (26%) studying in NI, reflecting the balance of research partners in the project.

There was a broad range of prior experience in Geography, History and Science among the students. Students were asked to identify their highest level of study in Science, History or Geography. All of the students had studied Geography and History

beyond primary school, and there was only one student who had not studied Science beyond primary school. Students in the ROI were more likely to have studied Geography (54% vs 39.4%) and Science (77.7% vs 27.3%) through to upper secondary, with students in NI more likely to have studied History (54.5% vs 25.5%). However, this is unlikely to have affected the survey outcome, as any differences between jurisdictions in all following question responses never reached statistical significance.

Experience of EBL in school

Students were asked to indicate at what stage in their education they first learned what EBL was. For most students (86.6%), EBL was first identified in college.   There are two possible explanations for this – either they did not encounter EBL in primary or secondary school, or the EBL they did encounter was not explicitly identified as such until they learned about it in their ITE programme.   However, the possibility of limited exposure to EBL in school is supported by the fact that 62.4% of students disagreed or strongly disagreed with the statement "I had choices in learning in primary school", with only 11.2% agreeing or strongly agreeing with that statement. The situation in secondary school was more encouraging, with 54% of students agreeing or strongly agreeing that they had choices in their learning at second level, and only 29.4% disagreeing or strongly disagreeing with that statement.

Experience of EBL in College

55% of students agreed or strongly agreed that their lecturers use EBL to model classrooms on their modules. However, only 21.8% of students agreed or strongly agreed that their lecturers involve them in the planning of their modules. This is echoed in their response to the statement 'I have a say in how my module is taught', with 66.1% of students disagreeing or strongly disagreeing with this statement.

Experiences of and Attitudes to EBL on Placement

When asked to consider EBL in the context of school placement, students were very positive about the impact of EBL on pupil learning – 91.2% thought that it helped children to understand concepts - and they provided examples of EBL that they had either taught or observed from Science, History, Geography and a range of other subjects. These included: exploring electricity through enquiry; children creating and implementing a school survey; an enquiry about environmental change; using enquiry in maths to learn about weight; exploring the life of Henry Ford; an enquiry into local landfill and recycling; designing and making with Lego WeDo. 96% of students strongly agreed or agreed that EBL was a good way to learn science, with 93.6% thinking it was a good way to learn geography. Figures were lower for history, but even here over three quarters of students (76.6%) thought EBL was a good way to learn the subject.

Students did recognise that EBL can be challenging. Just over a quarter of the students (26.6%) agreed or strongly agreed that EBL is difficult to implement in the classroom, although 34.1% of respondents disagreed or strongly disagreed with this statement. However, for most students, the value of EBL outweighed the challenge - only 13% of students agreed or strongly agreed that EBL takes too much time to do in classrooms, with 53.7% disagreeing or strongly disagreeing with this statement.

<div align="center">

Focus Group Interviews

</div>

Three focus group interviews were carried out, one in each of the three ITE institutions. The schedule of questions (Appendix C) addressed the following issues: the students' understanding of the definition and characteristics of EBL; reflection on their own experiences of EBL in primary and secondary schools; their experience of EBL in College and while observing and teaching using EBL on school placement; and their

ideas about the benefits and challenges posed by EBL for both teachers and pupils. However, it should be noted that sometimes the responses ranged widely across all of the above elements. This suggested that the students were making connections from their experience in ITE to the classroom.

Definitions and Characteristics of EBL

There was a high degree of commonality in the three groups' understanding of how EBL can be defined. Frequently used words and phrases were 'discovery', 'children asking questions' and 'children's choice/ control/ decisions'. In addition, individuals mentioned that while teachers would most likely choose the overall topic and pose the main problem or question, children were encouraged to 'figure things out for themselves'. Others noted the ideas of 'following children's interests', 'curiosity' and 'child-led /child-centred work'. One student simply said 'having an enquiring attitude'. The importance of 'group work' and 'children learning from each other' was emphasised, as were 'active learning', 'pupil participation', 'hands-on learning', 'engagement' and 'problem-solving'. The students in one of the focus groups were unsure about the distinction between active learning and enquiry-based learning:

> Asking questions, is that enough to categorise it as enquiry or is that
> something … is that just active learning? (Student, MIE)

In the students' responses there was a notable absence of reference to the children taking "action". This may indicate that this phase of the enquiry process (see p.3) is less well-recognised, or that the students' experience to date on placement has not been sufficient for them to observe and become familiar with this aspect of enquiry.

Students' Primary and Secondary School Experience of EBL

Various examples were listed, of learning that the students would now, in hindsight, describe as EBL, that they participated in when they were in primary school. Examples cited were: a country project looking at a country of their choice and including their

own ideas about content; group experiments and investigations such as growing

sunflowers or cress or making lighthouses including electrical circuits, or water

evaporation experiments; nature walks where leaves and fruit were collected and

identified; and individuals' family tree or family history projects. On this last example,

one student explained,

> You were encouraged to enquire about your own history. You know,
> where you'd be looking for primary and secondary resources and then
> present on the project. (Student, MIE)

One student made a general point about this kind of enquiry,

> I felt that's where the freedom of enquiry was in primary school, when
> you were just sent to do a project and then you worked in a group, and
> then you went and researched it. (Student, DCU)

A student from another group thought that:

> You were motivated by that kind of internally, because it was your
> own work and you were going to present on it you took ownership of
> it so you had a bit more pride in that work than maybe say your
> copybook that no one was going to look at or your homework.
> (Student, MIE)

Another student remembered one teacher's flexible attitude to a question which she,

the student, had asked

> In fifth or sixth class we did a topic about water and I asked the
> question: 'if I left the water beside the window would it evaporate?'
> and I remember my teacher saying, 'Okay, well go get a dish and fill
> it up with water'. That was I think a personal form of … an enquiry-
> based question and she said 'Okay, we'll figure it out. (Student, MIE)

However two students in the NI group said that they had experienced not much or no

EBL in primary school.

Similarly, the students recalled examples of EBL-type work in their secondary

education. For example, geography fieldwork involving some element of enquiry was

mentioned, but it was often highly structured by the teacher. History projects were

remembered in which the choice of topic was allowed but the structure was set by the teacher. Two students wondered if this kind of work was enquiry at all:

> We were told what to do …. I don't know if that counts as enquiry.
> (Student, DCU)

and

> We were given notes and we were told and that was it.
>
> (Student, DCU)

Another student remembered that the members of her A-Level French class had each to choose a region of France to research and report on, and she recalled how her teacher commented that the element of choice had created greater pupil engagement with the work produced than she had previously recalled when this choice was not allowed. Some choice of options within a course was noted by one student, but this was rare in most students' experience. Two students in one of the focus groups said that they had never had any choice about anything in secondary school. The others agreed that there had been a big focus on examination results and associated learning off of material for those exams, and that there had been less practical work than in primary school:

> In secondary school there's a big focus on getting exam results and the teacher has deadlines, so maybe EBL takes a back seat … [there's] more focus on passing exams. (Student, SUC)

Experience of observing and using EBL on School Placement

Students were asked to distinguish between enquiry they observed being used by the class teacher, or others within the school, and their own planning for and teaching with an enquiry "stance". Generally the students reported positively when EBL was used, which was mostly at senior primary level. A number of examples of observing EBL approaches during school placements were cited, for example: independent LEGO programming; Young Scientists activities, "They were doing what they wanted"; history research on iPads; individual and group research/ enquiry during WAU topics

on World War 2 and on Volcanoes; and report writing in English. The students also seem to recognise the greater ownership the children had in these lessons. For example,

> To get them started they were following instructions, but then there were other ones where they had to create their own. (Student, DCU)

And

> It was really child-led. Teachers didn't get involved at all really… They were so engrossed in it. (Student, DCU)

One of the students alluded to the different kinds of inquiry and the possibilities for differentiation, "when they were more advanced they got to do their own creations" (Student, DCU).

Some students in the NI focus group reported less frequently observed use of EBL approaches in upper primary than in lower primary, surmising that the Transfer Test in Primary 7 produced time pressures for upper primary teachers, and EBL approaches are perceived as taking more time. In contrast one of the others in the group had noted the opposite, reporting that teachers with whom she had spoken said that EBL work and providing choice were too advanced for younger children. However, forms of investigation and enquiry during structured play in lower primary classes were highlighted.

The students also listed examples of when they themselves had taught using EBL approaches; these included: using a KWL grid at the start of a new SESE topic, asking for predictions; a P1 topic on 'Water' with lots of experiments and predictions; an experiment on observing melting ice during a topic on 'The Titanic'; Using Ducksters Website where children researched an assigned topic, "Don't tell me everything, just tell me the important parts"; a country project; and using different historical sources and artefacts during a history topic.

One student said:

> I think the more I think about this ….. I realise how much you do
> enquiry, because whenever I went in to do those lessons about water
> that I was talking about like the music or the filtering the water, the
> science, I didn't go into them thinking this is enquiry-based learning.
> (Student, SUC)

Another added, "it's easy to integrate EBL without knowing you're doing it"

(Student, SUC).

Benefits of EBL for Teachers

Two of the focus groups specifically mentioned that teachers should find using EBL

approaches an enjoyable way to teach. The teacher's role has to change and the teacher

should appreciate being a facilitator, 'letting go' a little, going with pupil interests and

providing choice:

> I think the role of the teacher changes as well in enquiry-based
> learning. The teacher is more like a facilitator rather than standing at
> the front of the classroom. I think children enjoy that and a teacher
> may be involved in joining with one of the groups so it's more fun for
> the teacher as well. (Student, SUC)

One student thought that teachers would get more from the pupils when using EBL,

especially when the work is done outdoors:

> They become totally different and they don't see you as being that
> strict teacher - you're part of the group and they open up and they're
> not afraid to get it wrong so they're more likely to contribute.
> (Student, SUC)

Another student agreed, saying that the teachers in the school thought she was

'crazy' for planning to take her class outside for an outdoor enquiry when a College

tutor was due to observe her lesson. She found that the pupils behaved really well

because they were excited about doing something which was different and interesting.

Challenges of EBL for Teachers

The issue of time was noted in all three of the focus groups as a challenge raised by using EBL approaches in the classroom. For example, a student at SUC stated that, "there's a lot of skills they're learning but I think that sometimes teachers think 'Oh that's going to take all day'", while at MIE a student commented that,

> I don't think it's possible to do just enquiry-based all the time … there is a balance between enquiry and then … teaching them what they have to do. (Student, MIE)

And at DCU it was noted that,

> I did 'Soil' on my last placement, with 3rd Class, and I would have loved to have got them going out and collecting their own soil samples and everything, but you just don't have time to do that, with the hour slot that you have for Geography. (Student, DCU)

Students in two of the focus groups made contradictory comments about the issue of time for EBL approaches when on school placement. One student from DCU complained that,

> It's not your school, it's not your class, you can't ask for too much and you can't ask for too much time either. Whereas if you had a class for the whole year you could devote a bit more time to it, because it's worth it. (Student, DCU)

By contrast, one of the SUC students explained how she had used lots of enquiry and experiments in a P5 topic on Water. She said, "I had more time and less pressure than the teacher."

Rather than illustrating ROI/NI differences in approach, this kind of discrepancy may be because of differing student perceptions or differing school/teacher attitudes.

In addition, issues of resources, facilities and logistical challenges were noted:

> There's a lot of prep and a lot of resourcing … bringing stuff in.
> There's so much learning goes on with enquiry-based [learning] but
> there are challenges there, logistical challenges for teachers. It's
> brilliant when it works. But it requires time, preparation and money to
> really facilitate a good EBL lesson. (Student, MIE)

Difficulties in classroom management were also identified as potential problems, especially where class sizes are large.

All three groups mentioned challenges associated with assessment – both with devising effective assessment of EBL work and, when the activities have been active and hands-on rather than paper-based, with having evidence that work has been done to show, for example, to other staff, parents or inspectors: "I find a challenge is with the assessment [of EBL work] - to assess what they actually know" (Student, DCU). This was echoed by students across the institutions:

> I suppose teachers need results and … I think for enquiry-based
> [learning] it's hard to have something to show for it. (Student, MIE)

And

> The one problem I find is to strike that balance between recording and
> still keeping it playful and focussed on enquiry because I think that
> the challenge for … actual qualified teachers is - what do we actually
> have to show for the end of this? (Student, SUC)

The SUC group discussed how ICT can help with the recording issue as photographs of the children working and perhaps the items they have created can be taken, and apps such as Seesaw and PicCollage have been found to be useful for storage and display of this evidence. As one of them stated, "I think that the benefits definitely outweigh any of the challenges" (Student, SUC).

Benefits and challenges of EBL for Children

The three groups of students provided a number of potential benefits of EBL for children – for example that it is more enjoyable and more stimulating than other forms of school work, increasing pupil interest and motivation, and that it is often more

memorable. A MIE student spoke about pupil retention of information: "I found that they retain information more if they've been given the opportunity to do hands on learning which is enquiry-based."

One student suggested that much more discussion is developed among the children when using EBL, and they all agreed that they could remember more from lessons in which they took part in primary school when active, enquiry approaches were used than from more 'passive' lessons. One student recalled her own time at primary school:

> I have retained lots of information from primary school about things
> that I looked up myself. I did a project on Denmark in fifth and sixth
> class and I remember … I can tell you everything about Denmark
> from that project. (Student, MIE)

A student from MIE reflected on the idea that many skills can be developed at once and that skills development might often be more important in the long term than the retention of subject-specific information:

> But throughout school they're learning those skills which is more
> important. So, it's in those lessons that they're learning those skills
> that they're going to keep building on, and perhaps it's more important
> to have those skills to find out more information than to actually have
> the information itself. (Student, MIE)

EBL in Initial Teacher Education

Students noted the way EBL worked at a number of levels in their ITE modules, both intrinsically and modelled, as well as varieties of these. It was something they noted early on in their ITE experiences, as a feature of child-centred education:

> I just remember having a conversation at the beginning of the course
> about how this was all very new to me and it seemed to be important
> to be teaching in an enquiry-based way. (Student, MIE)

Their descriptions included modelled enquiry, as well as intrinsic enquiry involving students in their personal enquiries through research projects or group assignments. In terms of intrinsic enquiry, students also noted how they were given the opportunity to

have a role in the design and delivery of modules in advance through collaboration with lecturers or after modules through evaluations. There were fewer references to students experiencing enquiry as an intrinsic part of their programmes, such as what content would be taught in a module, or an education issue they could independently research. In terms of the overall design and delivery of the modules, students recognised that this occurred, but only in some modules and often in a limited way:

> I think geography was the only one where we did that. I think even with Geography they had what they wanted to do with us, but just gave us different options on how to do it. That kind of goes back to what I was saying earlier - there are certain things that have to be taught. (Student, DCU)

And

> In science the first 6 weeks were set in stone… then at the end we were allowed to decide... at least it was nice at the end that you had the choice. (Student, SUC)

Overall, students' opportunities to shape modules were at the beginning of the module or in assignments, including projects. Assessments were sometimes an enquiry itself with students being required to investigate an issue, problem or question of their own. All three of the groups mentioned examples where some element of choice had been given concerning assignments. However, the students noted elements that they considered EBL within modules, even where they felt the module was not enquiry-based, such as a question by a lecturer that they then discussed by the seminar group. At the end of some modules, the enquiry process was completed, as students evaluated the modules. However, they evaluated the module content and delivery, not their contribution to it. Students recognised that this had a positive impact on the module design, for example:

> Our year was always the one that they said, 'right, we'll try this out'. Do you remember in second year, and they said, 'no, we'll never do that again'. They changed loads and our year was kind of the guinea pig year. I think they changed it because they did listen to us, in fairness - some of them did. (Student, DCU)

or

> We fill out the module evaluations at the end of every module. They take on, if they can, some of the responses. Then some lecturers tell you what changes they made because of the module evaluation so you get to change it a little bit maybe for the year after you but not for yourself. (Student, SUC)

Students welcomed these opportunities and suggested that this should happen more:

> I think there's definitely room for lecturers to listen to what the students thought about the way [the module] was done, and to maybe adapt it for the following years. I don't think that's done enough here. I think a feedback form would do the trick for most seminars and lectures. (Student, DCU)

Some of the groups agreed that a greater degree of intrinsic enquiry in ITE could increase students' scope and flexibility, leading to greater engagement. As one MIE student noted, "Some lecturers did teach in that way [enquiry-based style] and you really saw the difference with the engagement."

The students' recollections of an enquiry approach being either advocated or modelled within their college courses were relatively few and restricted to certain subjects, especially their subject specialisms, and to certain members of staff. Some of the students said that there was a lack of demonstration or modelling of an enquiry approach during college classes and lectures. Positive examples included SESE courses in ROI and during some art, PE and music lessons; at DCU the students were asked to 'think themselves into children's shoes'; SUC students specifically mentioned a 'Playful Science' module as modelling an exploratory, playful approach, as well as Literacy sessions where lots of Literacy resources were distributed and the students were told to 'play' with them and pretend to be pupils. MIE students recalled a

curriculum History class which began with historical artefacts on the tables in the room when the students entered:

> We were just given the artefacts, there was no other information other
> that these artefacts and then through studying them with your group
> and then passing them on … we had to decide who [each] person was.
> [I understood] the idea of what enquiry-based learning was from there.
> (Student, MIE)

When asked if lecturers in college had supported them in using EBL in their teaching, a number of examples were given. Students mentioned that they had been equipped with a number of helpful strategy suggestions such as thinking frames; students also valued visiting places which were popular with primary schools for 'learning outside the classroom' where the process of school visits was discussed and pupil enquiry while there was emphasised. This was noticed in both core and elective modules:

> Last year we did Local Studies, a mixture of History, Geography and
> Science. We did a study of Drumcondra. I felt that was really the most
> enquiry we had done. It was actually interesting because you had
> classes, then you had to go out and find out more information
> yourself. For Local Studies, there's no other way to find the answers
> unless you go out. So that was a good way of doing it. (DCU student,
> referring to a core module)

And

> In Geography and History we are going to different places where you
> could possibly bring your classes. We went to Sentry Hill and
> tomorrow we're going to the Titanic Centre and then HMS Caroline,
> the week after. We get to literally explore those places that are outside
> the classroom to see if one day we would like to bring classes there.
> Then they tell us the packages that they have for classes and what they
> do for children, which is quite good. (SUC student, referring to an
> elective module)

In terms of EBL in their programmes, the most talked about aspect was modelled enquiry, where classroom enquiry was modelled within teaching, learning and assessment. This occurred most often by students taking on the role of a learner within seminars. The students described how, in some cases the enquiry activity was carried

out first, to get the students to begin thinking about enquiry, but in most cases students took on the role of 'enquiring child' after they had been introduced to theories and models of enquiry,

> I think SESE - History, Geography, Science - definitely would have been the main areas where we did enquiry. They were always on about it! [laughing] (Student, DCU)

Students felt very positive about such experiences, especially at the beginning of their programmes, as it helped them think deeply about engagement in learning for children:

> A lot of the time they get us to be the pupils to show us how you would really do it and I find that when you come to teach it it's far easier because you can remember sitting and… remember doing it. (Student, SUC)

It also put them at ease in a teaching and learning environment:

> It was actually helpful that in a lot of different lectures they got us thinking as if we were the child. So, putting yourself in that mind frame, thinking how you go about it. It encouraged us to forget about what we're worried about. (Student, DCU)

There were issues and tensions in the student accounts; at times students conflated EBL with being active, and often mentioned the outdoors. This was not surprising as many of the modules using outdoor learning did so through modelled enquiry:

> You're thinking, 'I wouldn't want to sit here and listen to someone for x amount of time so why would a child?' So it just showed why you should get them up and get them moving. I think, as well, it was mainly with the curriculum subjects, rather than big lectures: PE, History, Geography, those subjects. (Student, DCU)

Students also tended to describe open-ended activity as enquiry, rather than enquiry as a stance in which different types of learning can occur:

> In Science in first year we went around the college, remember, outside, where we had to find something shiny, something that smells funny, something that was green, so you are allowed to go outside and you could go anywhere where are you allowed to go. (Student, MIE)

Some students also felt that intrinsic or modelled EBL would not work for certain subjects, such as languages, but they recognised that other good practices were modelled:

> Irish is not really enquiry-based, but they model good ways of teaching Irish as well. Even just getting the children to do their own work, and it's all about getting involved, and games and everything, as well. (Student, DCU)

However, students in NI thought the opposite in relation to language, revealing that students' conceptualization of EBL in different school subjects was reliant on subject content and pedagogical approaches modelled in their course modules:

> Literacy and drama and a few of the subjects lend themselves really well to enquiry-based learning. There are other areas and modules that we do that don't seem to show or model enquiry-based learning at all or not very much. I think that just depends on the nature of the subject. In Maths sometimes we would be allowed to explore the resources but always it comes back to lecturers' style afterwards so it's more like - get the information to you rather than do it yourself and be the pupils for most of it. (Student, SUC)

Finally, students did recognise the complexities of marrying EBL pedagogies with assessment types:

> The way the subjects or the content is assessed in colleges lends itself to more kind of straightforward PowerPoint teaching, whereas some of the subjects did enquiry-based learning and…the assessment was enquiry-based, whereas some subjects had assessment which was the old fashioned … written exam style assessment, So, I think in order to have enquiry-based learning, the assessment has to somehow marry with that and I think that's the difficulty colleges have really. (Student, MIE)

Overall, students it appeared students were most likely to think EBL would work well in subjects where they had experienced it as a pedagogy suitable for the primary classroom.

Tensions and Issues of EBL in ITE

The students also recognised the tensions between the need for lecturers to teach students the many aspects of the ITE programme, and also the wish to model good practice, giving students a say in the design and implementation of modules.

> Everything we learn seems to be pointing towards letting the children figure things out for themselves. But we remarked that it seemed like some of our lectures wouldn't have that format. (MIE student)

The students also had thoughts about the equality of access to learning about EBL pedagogies in ITE. For example the students at DCU wondered if enquiry-based learning approaches were being used in other subjects or areas not represented in the focus group participants. The SUC students were concerned that they (Geography/History specialists) might be the only students who had discussed EBL or, at best, were using the term for methods they were using already:

> I feel like we are the only ones who will have an understanding of enquiry-based learning even though it is done in literacy to a point and in science it's not explicitly talked about - I suppose in science it is explicit. I feel if I was to say to somebody who's not in our geography/ history class something about enquiry-based learning they would look at you and think 'what's that?' when it's really not that complex at all. I mean they'll probably do it themselves and not realise that they're doing it. (Student, SUC)

In conclusion the students felt there were many examples of EBL in their modules. In places this was an intrinsic part of module design, from content and approaches through to assessment and evaluation. In other places opportunities were more limited, but students were respectful of the lecturers' expertise in delivering modules in the best way. As one student noted,

> I think there has to be a balance between like the enquiry and teaching them what they have to do. You have to summarise and that's what the lecturers do here. So, a lot of them do have a small component [of EBL]. (Student, MIE)

Finally, students noted how lecturers could share their experiences of EBL in teacher education, due to it being so motivating for the students, "I think they're all very structured subjects, so it would be interesting to see how you would go about doing it that way."

Whilst the students' views that intrinsic or modelled EBL is not always possible in modules, it seems that there is scope for more "intrinsic EBL as a stance" in teacher education, and although this is built into programme design it appears it may not be occurring at module level.

Section 5: Analysis and Discussion

This project was intended to examine, strengthen and extend the use of enquiry methodologies in teacher education in NI and ROI, reflecting the emphasis on these methodologies across both education systems.

The first outcome stated in our original research project application was to identify and characterise the ways in which EBL is currently presented to student teachers. This was encapsulated in the research question:

How do the ITE courses in which we are currently involved present enquiry-based learning to student teachers?

This was investigated both through individual reflection and through observation of the teaching of the four researchers by each other. There was evidence of shared interest in the area of EBL. However, there were noted differences in the approaches to teaching, although it is not clear if this was mostly because of the differences in the modules examined. A major benefit of the observations identified by all four researchers was that they facilitated valuable opportunities to discuss, provide encouragement and to critique their practice. The establishment of agreed ways of working together and "the values of trust, involvement…. an open-mindedness to others' perspectives and willingness and ability to deliberate", which DeWitt highlighted as being essential in the development of community of inquiry, were evident throughout (DeWitt, 2003). It was noted how rare such opportunities were, even with colleagues in our own institutions. As data was limited to the four researchers involved, we have been cautious about drawing wider conclusions. However, it does suggest that a wider study may be worthwhile.

The second outcome in the original application was to examine the impact of a two-level model of enquiry in teacher education on student teachers' understanding. We quickly developed our thinking beyond this initial 'two-level model' towards an understanding of the multiple enquiry modes which exist in any given learning environment. Our revised thinking was thus encapsulated in the research question:

How can multiplicities of enquiry best be incorporated into ITE courses at teacher education and classroom levels?

Arising from our observation visits, three enquiry modes were particularly noted in our ITE modules. We described these as "student as learner", "student as teacher", and "student as enquirer researcher". It was recognised that identifying these different modes and getting the students to distinguish between, and more importantly to make connections between, them was valuable. This echoes Short's view, mentioned earlier, about enquiry "reaching beyond current understandings" (Short, 2009, p.12). In some responses during the focus group interviews, students demonstrated a vague understanding of EBL, with an emphasis on choice, agency and active learning, and a lack of awareness of the importance of reflection and action. Thus, we as researchers now recognise that perhaps we need to demonstrate the full process of enquiry, and to make the connections between the multiplicities of enquiry more explicit in our own teaching.

The final question in the original application was to examine the impact of a two-level model of enquiry in teacher education has on student teachers' understanding, confidence and practice? As with the previous question, this was further refined and was encapsulated in the final research question:

What impact do multiplicities of enquiry in teacher education have on student teachers' understanding, confidence and practice?

This question was investigated mostly through the questionnaires administered to the students and through focus group interviews. It was evident that the students were positively disposed towards EBL and could see the benefits of it. They associated having greater freedom, agency and motivation with enquiry. However, at times they over-associate having choice as being enquiry.

There seems to be a strong link between the positive attitudes of the students towards EBL and their experience of enquiry within their ITE modules. Students expressed confidence in the benefits of enquiry, and their ability to use enquiry in their teaching, based on their own learning in teacher education. This is reflective of the research literature, which indicates a relationship between modelling of enquiry, student teachers' self-efficacy and their positive attitude to a range of pedagogical approaches (Ross, Bradley Cousins and Gadalla, 1996; Swars and Dooley, 2010).

While the survey responses indicated that the majority of students felt they had little involvement in the planning of their modules, or little say in how they were taught (indicators of intrinsic inquiry), within the focus groups students gave examples of a number of ways in which they were given opportunities to shape their modules. It was clear that these opportunities were valued by the students.

Students, however, cited few examples of EBL in modules beyond the subject areas of History, Geography and Science. The researchers thus realise that they themselves may be the main conduits for EBL within their institutions and have little knowledge of how other colleagues address enquiry, if at all. This seems to be another valuable opportunity for further research.

Finally, the link between what students hear about EBL in lectures and the expectations (or perceived expectations) while on school placement needs to be

examined. There appears to be a tension between the "ideal" EBL environment and the

reality.

Section 6: Conclusions and Recommendations

There are several conclusions that can be drawn from this research. Firstly, the project has led to a development in the thinking of the researchers involved, moving from the conceptualisation of enquiry in ITE as a 'two-level model' towards an understanding of multiplicities of enquiry. This happened early in the project, arising primarily from peer observation sessions, and resulted in the development of new language to articulate the growth of our ideas. Thus, we now recognise that there are a multiplicity of enquiry modes presented in our ITE modules. It may be that we need to be more explicit about these multiplicities of enquiry with our students in order for them to fully understand and benefit from enquiry.

Secondly, it is clear that a community of inquiry has emerged among the researchers. Discussion and dialogue were integral to the project (DeWitt, 2003), and our pursuit of new understanding was a shared process, based on willingness to listen and respond to others' perspectives. Through observing each other in a teaching and learning environment, we gained a true insight into other ITE programmes, and of how the process of supporting student teachers worked in the different settings, North and South. The research processes was enriched by drawing our students into the project, through interactions in classes, interviews and questionnaires. Our engagement with student voice and perspective; our willingness to question our own and others' practice; our openness to observation and critique, all increased the criticality of our research process, as highlighted by Kemmis (2006).

This research also highlights the impact of EBL experience in ITE on student teachers. The research led to greater understanding of how our pedagogical practices contribute to the learning experiences of our students to help to prepare them for a career in education. However, listening to our students has led us to recognise that

exposure to EBL in college may be more limited than we had anticipated, and appears to occur mainly in the SESE and WAU modules. Future work could include exploring the use of enquiry-based pedagogies among our colleagues (in other disciplines). Also, the perspectives of class teachers and school principals (in schools involved in SP) would be worth capturing.

We recognise that the scope of this project has been limited, focusing on the experiences of four teacher educators within three education institutes.

We recommend that research into EBL should be an ongoing, iterative process which involves a high level of criticality, reflected in engagement with student voice, open communication and critical questioning. We also recommend continued collaborations between institutions in relation to EBL in teacher education.

This study has shown that our student teachers appreciate the importance of having an enquiry stance in all aspects of their professional lives, in both how they progress as teachers and in how they encourage the children in their classes to progress as learners. We hope that this research will contribute to the ongoing conversation about enquiry in teacher education and our schools.

References

Aditomo, A., Goodyear, P., Bliuc, A., & Ellis, R. A. (2013). Inquiry-based learning in higher education: Principal forms, educational objectives, and disciplinary variations. *Studies in Higher Education, 38*(9), 1239-1258.

Audet, R. H. (2005). Inquiry: A continuum of ideas, issues and practices. In R.H. Audet & L. K Jordan (Eds), *Integrating inquiry across the curriculum* (pp.5-15). Thousand Oaks, CA: Corwin Press.

Austin, S. (2019). Translating critical thinking into meaningful action. In B. O'Toole, E. Joseph & D. Nyaluke (Eds.), *Challenging perceptions of Africa in schools; critical approaches to global justice education.* (1st ed.). Oxford: Routledge.

Bacon, K., & Matthews, P (2014). Inquiry-based Learning with young learners: A Peirce-based model employed to critique a unit of inquiry on maps and mapping. *Irish Educational Studies, 33(*4*)*, 351-365.

Bryant, J., & Bates, A. (2010). The power of student resistance in action research: Teacher educators respond to classroom challenges. *Educational Action Research, 18*(3), 305-318.

CCEA. (2007). *The Northern Ireland curriculum: Primary.* Belfast: Council for the Curriculum, Examinations and Assessment.

Davidson, G (2006) *GTIP Think Piece – Geographical Enquiry.* Available at: http://www.geography.org.uk/gtip/mentoring/geography/curriculumplanning/geographical enquiry/#top

Davidson, S. (2009). Communities of inquiry. In S. Davidson, & S. Carber (Eds.), *Taking the PYP forward.* (pp. 9-26). Woodbridge: John Catt Educational Ltd Glasgow.

DeWitt, S. (2003). Multicultural democracy and inquiry pedagogy. *Intercultural Education, 14*(3), 279-290.

Dickson, B. (2011). Beginning teachers as enquirers: M-level work in initial teacher education. *European Journal of Teacher Education, 34*(3), 259-276.

Erickson, L. (2008). *Stirring the Head, Heart and Soul - Redefining Curriculum, Instruction and Concept-Based Learning* (3rd ed.). Thousand Oaks, CA: Corwin Press.

Erlandson, D. A. (1993). *Doing naturalistic inquiry: A guide to methods*. Newbury Park, Calif: Sage.

ETI (2014) *An Evaluation of the Implementation of The World Around Us in Primary Schools by The Education and Training Inspectorate*. Belfast: NI Dept. of Education. Available at: https://www.etini.gov.uk/publications/evaluation-implementation-world-around-us-primary-schools (last accessed 14/2/20)

Freire, P., & Macedo, D. (1995). A dialogue: Culture, language and race. *Harvard Educational Review, 65*(3), 377-403.

Geographical Association. (2019). Retrieved from https://www.geography.org.uk/Curriculum-making.

Goodnough, K. (2011). Examining the long-term impact of collaborative action research on teacher identity and practice: The perceptions of K-12 teachers. *Educational Action Research, 19*(1), 73-86.

Grigg, R., & Hughes, S. V. (2013). *Teaching primary humanities*. Essex: Pearson Education.

Harlen, W. (2014). Helping children's development of inquiry skills. *Inquiry in Primary Science Education, 1*, 5-19.

Hoodless, P., McCreery, E., Bowen, P. & Bermingham, S. (2009) *Teaching Humanities in the Primary School*. Exeter: Learning Matters.

Hulse, B., & Hulme, R. (2012). Engaging with research through practitioner enquiry: The perceptions of beginning teachers on a postgraduate initial teacher education programme. *Educational Action Research, 20*(2), 313-329.

International Baccalaureate Organisation. (2007). *Making the PYP happen: A curriculum framework for international primary education.* Cardiff: IBO.

Justice, C., Rice, J. & Warry, W. (2009) Academic skill development – Inquiry seminars can make a difference: Evidence from a quasi-experimental study. *International Journal for the Scholarship of Teaching and Learning, 3*(1), 1–23.

Kemmis, S. (2006). Participatory action research and the public sphere. *Educational Action Research, 14*(4), 459-476.

Kidman, G., & Casinader, N. (2017). *Inquiry-based teaching and learning across disciplines: Comparative theory and practice in schools*. London: Palgrave Macmillan UK.

Knodt, J. S. (2010). Teaching for creativity: Building innovation through open-inquiry learning. *School Library Monthly, 26*(6), 41-44.

Levy, B. L. M., Thomas, E. E., Drago, K., & Rex, L. A. (2013). Examining studies of inquiry-based learning in three fields of education: Sparking generative conversation. *Journal of Teacher Education, 64*(5), 387-408.

Levy, P., & Petrulis, R. (2012). How do first-year university students experience inquiry and research, and what are the implications for the practice of inquiry-based learning? *Studies in Higher Education, 37*(1), 85-101.

Lindfors, J.W. (1999) *Children's inquiry. Using language to make sense of the world*. New York, NY: Teachers College Press.

Lotter, C., Yow, J. A., & Peters, T. T. (2014). Building a community of practice around inquiry instruction through a professional development program. *International Journal of Science and Mathematics Education, 12*(1), 1-23.

Marshall, C., & Rossman, G. B. (2010). *Designing qualitative research* (5th ed. ed.). Thousand Oaks: Sage Publications.

Murdoch, K. (2015). *The power of inquiry: Teaching and learning with curiosity, creativity and purpose in the contemporary classroom*. Northcote, Australia: Seastar Education.

NCCA. (1999). National Council for Curriculum and Assessment (Ed.), *Primary school curriculum*. Dublin: The Stationery Office.

NCCA. (2015). National Council for Curriculum and Assessment (Ed.), *Junior cycle science: Curriculum specification*. Dublin: The Stationery Office.

National Research Council (U.S.). (1996). *National science education standards: Observe, interact, change, learn*. Washington, DC: National Academy Press.

Pataray-Ching, J. & Roberson, M. (2002). Misconceptions about curriculum-as-inquiry framework. *Language Arts*, *79*(6), pp.498-505.

Parker, D. (2007). *Planning for inquiry. It's not an oxymoron!* Urbana, Ill: National Council of Teachers of English.

Pickford, T., Jackson, E., & Garner, W. (2013). *Primary humanities: Learning through enquiry*. Los Angeles: Sage.

Pike, S. (2016). *Learning primary geography: Ideas and inspiration from classrooms*. Oxford: Routledge.

Roberts, M. (2010). Geographical enquiry. *Teaching Geography, 35*(1), 6-9.

Roberts, M. (2013). *Geography through enquiry: Approaches to teaching and learning in the secondary school*. Sheffield: Geographical Association.

Roberts, M., & Geographical Association. (2003). *Learning through enquiry: Making sense of geography in the key stage 3 classroom*. Sheffield: Geographical Association.

Ross, J. A., Bradley Cousins, J. B., & Gadalla, T. (1996). Within-teacher predictors of teacher efficacy. *Teaching and Teacher Education, 12*, 385–400.

Sausele Knodt, J. (2008). *Nine Thousand Straws – Teaching Thinking Through Open-Inquiry Learning*. Westport CT: Teacher Ideas Press.

Short, K. (2009). Inquiry as a stance on curriculum. In S. Davidson, & S. Carber (Eds.), *Taking the PYP forward.* (pp. 9-26). Woodbridge: John Catt Educational Ltd Glasgow.

Short, K., Harste, J., & Burke, C. (1996). *Creating classrooms for authors and inquirers* (2nd ed.). Canada: Pearson.

Spronken-Smith, R. A., Walker, K., Dickinson, K. J. M., Closs, G. P., Lord, J. M., & Harland, T. (2011). Designing a curriculum for inquiry: An ecology case study. *Instructional Science*, *39*(5), 721–735.

Struyven, K., Dochy, F., & Janssens, S. (2010). 'Teach as you preach': The effects of student-centred versus lecture-based teaching on student teachers' approaches to teaching. *European Journal of Teacher Education, 33*(1), 43-64.

Swars, S. L., & Dooley, C. M. (2010). Changes in teaching efficacy during a professional development school-based science methods course. *School Science and Mathematics, 110*, 193–202.

Waldron, F., Pike, S., Greenwood, R., Murphy, C., O'Connor, G. Dolan, A. & Kerr, K. (2009) *Becoming a Teacher: Primary Student Teachers as Learners and Teachers of History, Geography and Science- An All-Ireland Study.* Armagh: SCoTENS.

Wirkala, C., & Kuhn, D. (2011). Problem-based learning in K-12 education: Is it effective and how does it achieve its effects? *American Educational Research Journal, 48*(5), 1157-1186

Wolk, S. (2008). School as inquiry. *The Phi Delta Kappan*, 90 *(2)*, 115-122

Appendices

Appendix A: Abbreviations used in this Report

MIE	Marino Institute of Education
DCU	Dublin City University
SUC	Stranmillis University College
ITE	Initial Teacher Education
TE	Teacher Educator
EBL	Enquiry-based Learning
ROI	Republic of Ireland
NCCA	National Council for Curriculum and Assessment
CCEA	Council for Curriculum, Examinations and Assessment
NI	Northern Ireland
BEd	Bachelor of Education
PME	Professional Master of Education
KWL	What we (K)now, what we (W)ant to know, what we have (L)earned.
ICT	Information and Communications Technology

Appendix B: Record of Meetings

Meeting Date	Location	Purpose
29/8/17	Dublin (MIE)	Research Group Meeting
5/12/17	Skype	Research Group Meeting
22/1/18	Dublin (MIE)	Peer Observation Visit
30/1/18	Belfast (SUC)	Peer Observation Visit
2/2/18	Dublin (DCU)	Peer Observation Visit
15/2/18	Dublin (MIE)	Peer Observation Visit
27/6/18	Belfast (SUC)	Research Group Meeting
26/11/18	Belfast (SUC)	Focus Group Interview/RG

		meeting
27/3/19	Dublin (MIE)	Focus Group Interview
21/5/19	Dublin (DCU)	Focus Group Interview
13/9/19	Dublin (MIE)	Research Group Meeting
23/10/19	Skype	Research Group Meeting
18/11/19	Skype	Research Group Meeting (?)
2/12/19	Belfast (SUC)	Research Group Meeting
15/1/20	Skype	Research Group Meeting
27/1/20	Skype	Research Group Meeting

Appendix C: Templates

1. Plain Language Statement (PLS)

(1) We are a group of teacher educators who would like to model incorporate enquiry into our teaching, so that students experience enquiry at two levels; as modelled for the primary classroom and as part of their own teacher education modules. This project will look how we use enquiry-based learning (EBL) in initial teacher education, the impact this has on students, and try to find ways to improve our planning and delivery of EBL. We will do this by observing and reflecting on our own and each other's practice, and by soliciting the views and experiences of student teachers in our institutions.

(2) Your participation in this research study will involve completion of an online questionnaire, which should take you no more than 10 minutes to complete. You may also be invited to take part in a focus group interview to get a more detailed view of your experience of and opinions about inquiry-based learning. Focus group interviews would consist of 4 to 6 participant student teachers and a facilitator and should last approximately 10 minutes. They will be held at your institution at a time suitable to participants.

(3) There are no greater risks to you by participating than you would encounter in everyday life.

(4) The potential benefits to you include gaining an understanding of the action research process, and an opportunity to have your say about what we do in classes, according to your needs. Also, it is hoped we will all deepen our understandings of enquiry-based learning in classrooms and teacher education.

(5) Confidentiality will be maintained to the greatest extent possible. Questionnaire data will be anonymised prior to analysis. Data from focus group interviews will be transcribed and then analysed. This analysis will insert your responses in tables and your response/feedback will then be given a code. The table containing your name and the corresponding code will be kept separately from the data itself. The investigator will take all steps necessary to ensure that any digital recordings produced are used solely for the purpose for which they are intended, and are deleted upon completion of the project.

(6) Any data provided will be retained only until the completion of the research project; it will only be in existence in electronic form. The research investigators will be the only people with access to this data. The project outcomes will be disseminated in an educational context through teaching and learning seminars, research articles and presentation at conferences and exhibitions.

(7) Your involvement in this research study is completely voluntary, and if you at any time wish to withdraw before the completion of the study, or at any point during the study, there will be no penalty for doing so.

(8) This study has been considered from an ethical perspective by the Marino Ethics in Research Committee. If you have concerns about this study and wish to contact an independent person, please contact: MERC@mie.ie.

2. Informed Consent Letter

Dear Students,

We would like to invite you to take part in an interesting research project taking part in three colleges of education:

EN-EBLe: Embedding and Nurturing Enquiry-based Learning; Developing a two-level model of Initial Teacher Education through enquiry

Here is some information about the project, do ask if you have further questions.

Who is doing the research?

We are lecturers in SESE / Geography in three institutes of education. We have all worked on projects in teacher education before and would like to do more to investigate and share our practices in relation to enquiry based learning. Our details are overleaf.

What is this research about?

We would like to model incorporate enquiry into our teaching, so that you experience enquiry at two levels; as modelled for the primary classroom and as part of your teacher education modules. We would like to find out:

· How do ITE courses currently present enquiry-based learning to student teachers?

· How can a two-level model of learning through enquiry be incorporated into ITE courses at teacher education and classroom levels?

· What impact does a two-level model of enquiry in teacher education have on student teachers' understanding, confidence and practice?

For us, the project is about working together to enhance what we do. The project is situated within initial teacher education (ITE), as it relates to the Primary Curriculum and other priorities, such as Education for Sustainability. It also links directly to the priorities in current education research, such as those of the Teaching Council.

What are the benefits and risks of taking part in the research?

There may be some benefits to taking part in this research, for example: First, you will have an enhanced understanding of the action research process, which is part of teacher practice. Second, you will be carrying out a Research Project during your programmes, so you will have a better understanding of this type of research. Finally, during the project, you will have more opportunity to have your say about what we do in classes, according to your needs. Also, it is hoped we will all deepen our understandings of enquiry based learning in classrooms and teacher education. There are a few potential risks to taking part in this research project. You may feel under pressure to take part, or you may feel you do not have time to take part. These will be resolved by keeping your time commitment to a minimum, as outlined above. We hope these will help you see how useful and manageable data collection is. However, you are completely free to leave from the research project at any time with no consequences. Please be assured that your participation, subsequent withdrawal or lack of participation in this study will not adversely affect any character or academic reference that you may seek from the college in the future.

What will happen if I decide to participate in the research study?

If you decide to take part in the research, in year 1, we would like you to:

· Compete a questionnaire for 10 minutes

- Talk briefly to lecturers from the above institutions during one seminar

And in year 2, we would like you to:

- Compete a questionnaire for 10 minutes

- Talk briefly to lecturers from the above institutions during one seminar

- Take part in a group interview for 10 minutes with friends from your class

- The data collected may be used for dissemination in an educational context (journals, Teaching and Learning seminars and presentation at conferences).

How will my privacy be protected?

Your privacy will be protected in several ways:

- We work as a community of practice and will keep thoughts and ideas emerging in seminars anonymous.

- We will anonymize data in interviews and questionnaires.

- We will dispose of raw data, such as responses to questionnaires and interview recordings, after the project is complete. We will keep collated data in case of future comparative work.

How will I find out what happens with the project?

We will share our findings with you during the study within seminars. We will share any publications with you too.

Dr Susan Pike   susan.pike@dcu

Dr Sandra Austin   sandra.austin@mie.ie

Dr Richard Greenwood   r.greenwood@stran.ac.uk

Dr Karin Bacon   karin.bacon@mie.ie

This study has been considered from an ethical perspective by the Marino Ethics in Research Committee. Should you have any questions or concerns about the ethical approval or the conduct of this study, please contact MERC@mie.ie.

3. Peer Observation Template

Framework of Inquiry	Facilitated by	Examples of Classroom Modelling of IBL	Examples of Intrinsic IBL in Teacher Education
Creating a need to know			
Using Resources			
Making Sense			
Reflecting on Learning			
Exploring, wondering, questioning			
Experimenting, playing with possibilities			
Making connections between previous learning and current learning			
Making predictions			
Collecting data and reporting findings			
Deepening understanding through the application of a concept			
Researching, seeking information			
Taking and defending a position			
Solving problems in a variety of ways			
Reflecting			

4. Survey Questionnaire Template

Initial Survey on Inquiry Based Learning (IBL) _ Marino Institute of Education

Welcome!

Thank you for taking the time to respond to this questionnaire. This survey is being undertaken as part of an evaluation study into Inquiry-based Learning (IBL) in Initial Teacher Education (ITE).

This project is examining:
1. Your experiences of IBL when in school
2. Your experiences of IBL in college - for example, lecturers modelling what can be done in schools, you asking questions during geography topics, etc.
3. Your experiences of IBL in college - for example, you being involved in IBL and decisions about your learning in your ITE courses, etc.
4. You responses and thoughts about how we do IBL in your ITE courses.

Timing
The survey should take no longer than 10 minutes to complete.

Consent
Please note that your contribution to this project is entirely voluntary. We will anonymise your responses. You are welcome to leave the project at any time.

Your completion of this questionnaire confirms that you understand the purpose of this study and that you freely consent to participate in it.

About you...

1. My institution is...
Mark only one oval.

◯ Stranmillis University College

◯ Marino Institute of Education

◯ DCU Institute of Education

2. The module I am taking part in is:
Mark only one oval.

◯ MIE: Social, Environmental and Scientific Education (PME)

◯ MIE: Creative technologies and Inquiry-based Learning (BEd2)

◯ SUC:

◯ DCU: BEd3 GEO Specialism

◯ DCU: PME2 Geography Education

3. My gender is...
Mark only one oval.

◯ Male

◯ Female

◯ Please describe:

4. _____

61

5. I am a mature student
Mark only one oval.

◯ Yes

◯ No

6. My programme of ITE is:
Mark only one oval.

◯ Bachelor of Education

◯ PGCE

◯ PME

7. My highest qualification in Geography is:
Mark only one oval.

◯ GCSE / Junior Certificate

◯ A level / Leaving Certifcate

◯ Degree level or above

8. My highest qualification in History is:
Mark only one oval.

◯ GCSE / Junior Certificate

◯ A level / Leaving Certifcate

◯ Degree level or above

9. My highest qualification in Science is:
Mark only one oval.

◯ GCSE / Junior Certificate

◯ A level / Leaving Certifcate

◯ Degree level or above

10. I take Geography / History / Science as a specialism...
Check all that apply.

☐ Geography

☐ History

☐ Science

☐ NONE

IBL in my own education

11. I first learnt about what IBL is in:
Mark only one oval.

◯ Primary School

◯ Secondary School

◯ In college, during ITE

62

12. Ideas about IBL
Mark only one oval per row.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Do not know
I had choices about my learning in primary school	◯	◯	◯	◯	◯	◯
IBL was rare in my secondary school experiences	◯	◯	◯	◯	◯	◯
IBL (experienced) is rare in my teacher education course	◯	◯	◯	◯	◯	◯
IBL was rare in my primary school experiences	◯	◯	◯	◯	◯	◯
I had choices about my learning in secondary school	◯	◯	◯	◯	◯	◯
I have choices about learning in my teacher education course.	◯	◯	◯	◯	◯	◯
IBL (modelled) is rare in my teacher education course	◯	◯	◯	◯	◯	◯

IBL on School Placement

13. An example of IBL I observed on SP was:

_____

_____

_____

_____

_____

14. An example of IBL I taught on SP was:

_____

_____

_____

_____

_____

63

15. I think...
Mark only one oval per row.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Do not know
IBL helps children develop more generic skills.	○	○	○	○	○	○
IBL is a good way to teach History	○	○	○	○	○	○
IBL is a good way to teach Geography	○	○	○	○	○	○
IBL helps children understand concepts better.	○	○	○	○	○	○
IBL is a good way to teach Science	○	○	○	○	○	○
IBL takes too much time to do in classrooms	○	○	○	○	○	○
IBL helps children learn more subject specific skills.	○	○	○	○	○	○
IBL means children remember what they learn more.	○	○	○	○	○	○
Inquiry based learning is happening in primary schools	○	○	○	○	○	○
IBL helps children to understand concepts in SESE / WAU	○	○	○	○	○	○
IBL is difficult to implement in the classroom	○	○	○	○	○	○

IBL in Teacher Education Programme

16. I think...
Mark only one oval per row.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Do not know
My lecturers involve me and my class in planning our modules.	○	○	○	○	○	○
Being more involved in planning what and how I learn in ITE will help me become a better teacher.	○	○	○	○	○	○
My lecturers use IBL to model classrooms on our modules.	○	○	○	○	○	○
I have a say in how my module is taught.	○	○	○	○	○	○
I have been involved in inquiry based learning. in my teacher education programme	○	○	○	○	○	○
Being more involved in planning what and how I learn in ITE will help me on School Placement.	○	○	○	○	○	○
My lecturers enable me to use IBL in my teacher education modules.	○	○	○	○	○	○

64

5. Focus Group Interview Template

Introduction

·   Introduce self, explain purpose of FG interview, research aims.

Thank you for taking the time to attend today. This interview is being undertaken as part of an evaluation study into Inquiry-based Learning (IBL) in Initial Teacher Education (ITE). This study is examining:

1. Your experiences of IBL when in school.

2. Your experiences of IBL in college - for example, lecturers modelling how teachers can set up inquiry, you experiencing inquiry learning as a child would, your lecturer modelling what a teacher would do etc

3. Your experiences of IBL in college - for example, you being involved in planning of or decisions about your learning in your ITE courses, you asking questions during lectures, seminars, workshops, etc.

 etc.

4. Your responses and thoughts about how we do IBL in your ITE courses.

·   Make participants aware that session is being recorded.

·   Give reassurances regarding anonymity – make sure to secure agreement from group members that they will respect confidentiality.

·   You can withdraw at any time.

·   NAMES

Warm-Up

·   Please introduce yourself – your first name, what would you like your pseudonym to me? (ice-breaker)

·   What do you understand by the phrase 'inquiry-based learning'? [What does that phrase mean to you?]

·   What do you think are some characteristics of inquiry-based learning?

Main Body

·   Can you describe a time when you experienced IBL as a learner – in school?

·   Can you describe a time when you experienced IBL as a learner – in college?

·   Have you observed IBL when on school placement? Can you give an example?

·   Have you used IBL in your teaching? Can you give an example of a time when you used IBL in the classroom?

·   What do think are some of the benefits of IBL? For teachers? For learners?

·   What do you think are some of the challenges of IBL? For teachers? For learners?

·   Do you feel you had choices about your learning – in school? (e.g. that you could make decisions about what topics/issues you researched or investigated?)

·   Do you feel you have choices about your learning – in College?

·   In your experience:

> o Do your lecturers use IBL to model classroom practice?
>
> o Do your lecturers enable you to use IBL in your own teaching?
>
> o Do your lecturers involve you and your classmates in planning your modules?
>
> o Do you have a say in how your module is taught?

·   Do you feel that you are learning through inquiry in your seminars? Can you give an example?

Cool-Down

·   Have you any other thoughts, ideas, opinions about IBL you would like to share?

·   What do you think of this process (the research project)? Anything else we could have asked? You were expecting to be asked?

Closure

Thank you to everyone for participating.

Prompts:

In your opinion…..	Can you give me an example of that?
How would you describe….	Tell me about...
How.....	You mentioned that….
What would you say…	