Introduction of a Non-Traditional Assessment Method into a 2\textsuperscript{nd} Year Undergraduate Geography Module

A Case Study

Mary Murphy

Master of Arts in Digital Media Development for Education

University of Limerick

Supervisor: Joe Collins

Submitted to the University of Limerick, October 2013
Declaration

I declare that this is entirely my own work and that it has not been submitted for any other academic award in this or any other educational institution.

__________________
Mary Murphy

Student ID: 11092483

October 2013
Introduction of a Non-Traditional Method of Assessment into a 2nd year Undergraduate Geography Module

A Case Study

Mary Murphy

Abstract

Assessment of student learning is an integral part of the educational system and the development of technology offers the potential to design a range of non-traditional methods of assessment. It is necessary to review the introduction of new methods of assessment to determine if they can help promote student learning. This case study developed when a non-traditional method of assessment was required to help students engage with meteorological/weather conditions.

The visual has always been part of the teaching of Geography and this study shows how it can also be used in the assessment of student learning. The literature review considers research into the role of assessment in education and the tools and practices that are employed to engage and motivate students. Research into student and staff perceptions of assessment methods are evaluated.

The assignment created involves students using observational skills, fieldwork, digital imagery and a Blog. The Blog is used as the assignment submission platform which is a novel application of the technology.

The study analyses data gathered from a cohort of students and lecturers on their perceptions of non-traditional assessment practices. It is a small study consisting of data gathered from 59 of a class of 104 second year undergraduate students enrolled in a meteorology module and 13 academic staff members of a Geography Department.

The study found that both students and staff were in favour of using digital tools in assignments. It revealed that students’ digital literacy cannot be taken for granted. It discovered that this non-traditional method of assessment helped promote learning, assessed the students’ understanding of the theory and their ability to correlate the weather processes with the digital image they had captured. It also established that both staff and students believed that doing peer reviews stimulates learning. Furthermore, the study highlights conditions that may encourage students to participate in the peer review process.
Acknowledgements

I would like to express my deepest appreciation to the people who made this thesis possible:

My supervisor, Joe Collins. Without his advice, comments and encouragement this thesis would not have materialised.

My colleagues in the Geography Department, School of the Human Environment, UCC for their help. A special thank you to Dr Una NiChaoimh who introduced me to the topic for research and Roisin Murphy, my job-sharer, for her unfailing good humor and encouragement.

All of the students, who took part in the research, thank you.

Last but by no means least, Diarmuid, Ronan, Colin and my extended family for their enduring support during the last year.
Table of Contents

List of Appendices .............................................................................................................. ix
List of Abbreviations ........................................................................................................... x
List of Figures .................................................................................................................... xi
List of Tables .................................................................................................................... xii

Chapter One: Introduction ............................................................................................... 1
  1.1 Introduction and Context ......................................................................................... 1
  1.2 Statement of Topic .................................................................................................. 2
  1.3 Research Relevance .............................................................................................. 2
  1.4 Aims and Research Questions ................................................................................. 3
  1.5 Research Methodology .......................................................................................... 3
  1.6 Scope of the Research ......................................................................................... 4
  1.7 Research Limitations ......................................................................................... 4
  1.8 Structure of Thesis .............................................................................................. 4

Chapter Two: Literature Review ...................................................................................... 6
  2.1 Introduction ............................................................................................................. 6
  2.2 Teaching Geography ............................................................................................. 6
      2.2.1 Introduction .................................................................................................... 6
      2.2.2 Observation ................................................................................................... 7
      2.2.3 Fieldwork ....................................................................................................... 8
      2.2.4 Imagery in Geography ................................................................................. 9
          2.2.4.1 Photography ................................................................................ 9
          2.2.4.2 Satellite Imagery ........................................................................... 10
          2.2.4.3 Weather charts ............................................................... 10
  2.3 Assessment of Student Learning ............................................................................. 11
      2.3.1 Assignments/Assessment .............................................................................. 11
      2.3.2 Types of assessments .................................................................................... 12
      2.3.3 Reported effects of assessment ...................................................................... 13
      2.3.4 Methods of Assessment ............................................................................. 13
      2.3.5 Assessment and Motivation ........................................................................ 14
          2.3.5.1 Time demands and motivation .................................................... 15
      2.3.6 Formative Feedback ................................................................................... 16
          2.3.6.1 Issues with feedback ....................................................................... 16
          2.3.6.2 Lecturers concerns ......................................................................... 16
          2.3.6.3 Student concerns ......................................................................... 17
      2.3.7 Students Perception of Assessment and Modes of Assessment .................... 18
  2.4 Peer Assessment ................................................................................................. 19
5.2.3 Research Question 3 Students perceptions ..................................................... 68
   5.2.3.1 Digital tools in assignments ................................................................. 68
   5.2.3.2 Peer Reviews ..................................................................................... 68
   5.2.3.3 Reasons why the students did not participate in the peer review .......... 69
5.2.4 Research Question 4 Staff perceptions .......................................................... 69
   5.2.4.1 Digital tools in assignments ................................................................. 69
   5.2.4.2 Lecturers views on grading of electronic submitted assignments. 70
   5.2.4.3 Peer assessments .............................................................................. 70
5.3 Summary ............................................................................................................... 71

Chapter Six: Conclusion .............................................................................................. 72
6.1 Introduction .......................................................................................................... 72
6.2 Review of the Case Study ...................................................................................... 72
6.3 Research Outcomes ............................................................................................. 72
6.4 Designing the weather assignment ...................................................................... 73
   6.4.1 Recommendations to address the digital literacy and feedback issues .... 74
6.5 Did using digital tools in the assignment help students learn more and change the way
    they will observe the weather? ........................................................................ 74
   6.5.1 Recommendations .................................................................................. 75
6.6 What are the student’s perceptions of non-traditional methods of assessment? .... 75
   6.6.1 Using digital tools in assignments ........................................................... 75
   6.6.2 Recommendations when using a Blog as in this assignment: ............... 75
   6.6.3 Recommendations when using peer assessment: ................................. 75
6.7 What are the staff perceptions of using non-traditional methods of assignments? ... 76
   6.7.1 Using digital tools in assignments ........................................................... 76
   6.7.2 Recommendations to encourage staff to use e-assessment tools ......... 76
   6.7.3 Recommendations to promote the use of peer reviews in assessment .... 76
6.8 Conclusion ............................................................................................................ 76

Bibliography .............................................................................................................. 78

Appendices ............................................................................................................... 93
List of Appendices

Appendix A: Types of Assessment
Appendix B: E-Assessment Tools
Appendix C: The Weather Image Assignment
Appendix D: The Assignment on Blackboard
Appendix E: Samples of Award Winning Photographs
Appendix F: Instructions on How to Upload the Assignment
Appendix G: Student Questionnaire
Appendix H: Staff Questionnaire
Appendix I: Transcripts of the 1st and 2nd Interviews (Module Co-ordinator)
Appendix J: Transcript of the Student Group Interview
Appendix K: Notes from the Informal Interviews
Appendix L: Observation Record of Students Requesting Assistance and a page of Blackboard’s Record of the Activity on the Blog
Appendix M: Student Images
Appendix N: Blackboard Student Activity Log (No. of Views)
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLE</td>
<td>Virtual Learning Environment</td>
</tr>
<tr>
<td>UCC</td>
<td>University College Cork</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>HE</td>
<td>Higher Education</td>
</tr>
</tbody>
</table>
List of Figures

Fig. 3.1 Blog Page on Blackboard .................................................................32
Fig. 3.2 Example of a Weather Image..............................................................33
Fig. 3.3 Weather Chart and Write Up Example...............................................34
Fig. 3.4 Research Methods Employed in this Case Study............................35
Fig. 4.1 Three Assessment Factors that Influence Student Motivation to Learn...41
Fig. 4.2 Feedback given on the Blog..............................................................43
Fig. 4.3 Activity on the Blog shows that the student updated her submission.....43
Fig. 4.4 Students attitudes to responding to formative feedback....................44
Fig. 4.5 Students that received help from other student to upload the assignment48
Fig. 4.6 Students’ response to the statement in the title of the chart...............49
Fig. 4.7 Students’ preference for digital assignments..................................51
Fig. 4.8 Percentage of students who like/dislike using Blogs in the VLE ........52
Fig. 4.9 Students perception of the benefits of using a Blog......................53
Fig. 4.10 Staff interest in assessment tools on Blackboard...........................57
Fig. 5.1 Feedback provided on the Blog.......................................................64
Fig. 5.2 Additional chart added to the assignment.......................................64
Fig. 5.3 This assignment was viewed 42 times.............................................66
List of Tables

Table 4.1  Uploading Assignments to Blackboard..................................................47
Table 4.2  Digital Tools in Assessment.................................................................52
Table 4.3  Feelings on Peer Assessment ...............................................................55
Chapter One: Introduction

1.1 Introduction and Context

Over the last three decades more and more technology has been introduced into teaching and learning in higher education (HE) institutions. Today all colleges/departments employ technologies in their teaching and learning. One segment of the educational system that has not seen as much growth in the use of technology is the area of assessment of student learning. Traditional assessment methods are still the most commonly used practices in our third level institutions.

Assessment has many functions in the educational organization. It can be used to assess what the student has learned and also reveal if the mode of instruction used has been successful. Assessment of student learning is a large part of every student’s school/college experience and the manner in which it is carried out can influence the way the student approaches learning. Therefore, if assessment is part of the educational system and can influence how students learn it should as Keppell and Carless (2006) maintain, help in promoting learning as well as having the ‘traditional measurement’ purpose.

Over the last number of years the author has provided technical support to teaching staff in the Geography Department, School of the Human Environment, University College Cork. Assistance is also provided to students who are studying areas such as meteorology, environmental processes and physical geography. Furthermore, the position involves demonstrating to the 2nd year student cohorts from the BA, Earth Science and Environmental Science degree programs who register for atmospheric and/or environmental modules, how weather parameters are collected and logged.

The co-ordinator of a module that explores meteorological processes, expressed a concern about some students having difficulty engaging with the environment. A number of students find linking weather charts with real weather conditions complicated. All may know what rain, frost, snow and sunshine are but it is only when they are linked with the weather conditions for each event that they truly understand what the meteorologist sees when he/she studies the weather charts. This concern set in motion the design of a non-traditional assignment. It is hoped
that the students’ understanding of weather processes will be strengthened by completing this assignment. Weather processes along with other meteorology topics are covered in depth in lectures over the ten week period of the module.

As the vast majority of students taking this module would be considered digital natives it was decided to design an assessment using the digital tools/technologies that are readily available.

1.2 Statement of Topic

This case study examines the design considerations and the introduction of a non-traditional method of assessment into the Second Year Undergraduate Geography Module in a Third Level Institution.

1.3 Research Relevance

Designing an effective assessment involves the consideration of a number of key criteria but when technology is introduced into an assignment the tutors are presented with extra challenges that demand attention. Furthermore, introducing novel ways of using the readily available technologies also require examination.

With the development of technology and the investment given to introduce technology into the third level sector in Ireland new e-assessment tools are now available. Researchers have investigated the use of some of these tools, in different disciplines, but as there are various ways of using the technologies not all of the methods have been studied.

Gillet and Hammond 2009 claim that student focused assessment needs more diversity in the variety and scope of assessment assignments to cater ‘for different preferences and learning styles’. Sungenor 2013 looked at first year university students’ expectations of assessment practices and found that they expected that some assessment practices would have a “hands on and online element”.

If new assessment methods are being introduced into modules then it may be beneficial to understand what students’ perceptions are of these new ways of being assessed. It may also be useful to know what the lecturers’ perceptions of these new methods of assessment are and what impact these methods may have on their workload. Bloxham and Boyd claimed in 2007 that there had been little research
carried out into what students’ attitudes are to alternative forms of assessment. The Hunt Report 2011 lists creating innovative methods to assess students as one of a number of ways to improve Ireland’s third level education. Latham and McCormack (2007) studied the use of digital photos taken during a human geography fieldtrip and found that these could be used to broaden the range of assessment techniques used in the field and in class.

All third level institutions support a virtual learning environment (VLE) which Cosgrave et al 2011 have claimed are not being fully utilized. This research, if successful may help promote the use of the wide range of e-assessment tools that are available on the VLE.

1.4 Aims and Research Questions

The primary aim of this study is the examination of the introduction of a non-traditional method of assessment into a second year undergraduate Geography Module. The specific research questions of this study are:

- How can an effective assignment be designed using digital tools that are available to staff and students to assess students’ learning of how weather events occur?
- Has using a non-traditional method of assessment helped students to learn more about how different weather events occur and changed the way that they observe the weather?
- What are the students’ perceptions of non-traditional methods of assessment?
- What are lecturers’ perceptions of non-traditional methods of assessment?

1.5 Research Methodology

The methodology for this research centres on both primary research and secondary research sources. The secondary research concentrates on published literature i.e. books, journal articles, website articles and research papers relevant to the study.

The primary research was gathered from two groups using qualitative and quantitative research methods. The two groups will be described in the next section (1.6). Questionnaires and different forms of interviews were used to gather data
from the two groups. The activity that took place on the digital technology employed for the assignment was observed and recorded. A record was also kept of the number of students who contacted department personnel requesting assistance when submitting the assignment. Triangulation is possible when comparing the data gathered by all of these instruments which provides an objective approach to the research.

1.6 Scope of the Research

This research study focuses on two groups of individuals in the Geography Department. The first group is the second year undergraduates, of 2012, who enrolled in the module in which meteorology is the main discipline. These students, having completed this module, will be able to “analyse meteorological charts and satellite images in terms of theoretical meteorological processes for forecasting and diagnostic purposes”. This is one of a number of learning outcomes specified for this module in the Book of Modules (UCC Book of Modules, Geography, 2012).

The teaching staff members of the Geography Department are the second group of individuals who will be invited to give their perceptions of the use of digital tools in assessment practices and on non-traditional assessments.

1.7 Research Limitations

As already highlighted the study was centred on one cohort of students and the staff members of one department in one third level college of education.

The student questionnaire was anonymous and therefore could only be administered at one lecture, so it was limited to the students who attended on that day.

1.8 Structure of Thesis

This thesis contains six chapters. Chapter One: Introduction, outlines the context of the study, the justification for the research, the aims, the methodology used, the scope and the limitations of this research study.

Chapter Two: Literature Review, this chapter considers the role of assessment of student learning, assessment design, methods of assessment and the importance of
feedback in assessment. Research findings into the benefits or otherwise of employing fieldwork and imagery in Geography teaching and assessment are put forward. The use of Web 2.0 tools and how the VLEs are being utilized in higher education are outlined.

Chapter Three: Methodology, two methodologies are examined and the reasons as to why the Case Study methodology was chosen for this thesis are outlined. A comprehensive paragraph outlines the way the research was executed from the design of the assignment to the gathering of data using both qualitative and quantitative research methods. A complete picture of the Blog that was made available to the students is provided.

Chapter Four: Findings, this chapter presents all of the data collected during this study using the research methods outlined in Chapter three. The results are presented by research questions.

Chapter Five: Discussions, the findings are discussed in light of the research and literature identified in Chapter Two. Attention is given to where these findings correspond and differ with the literature reviewed. The research questions are answered in this chapter.

Chapter Six: The conclusions that can be drawn from the research findings are presented. Specific recommendations are given on issues that are highlighted throughout the research and areas that require further investigations identified.
Chapter Two: Literature Review

2.1 Introduction

The National Strategy for Higher Education up to 2030 (Hunt 2011) envisages University Education helping to strengthen Ireland’s reputation as an innovative, competitive and enterprising country. The report identifies areas in the university system where changes can be made to help make this vision a reality. Developing creative ways to assess student learning is recognised as one of these areas. Assessment can play a major role on how students take part in the learning process and traditional methods of assessment may not be an appropriate way to assess the learning objectives of all programmes provided by the universities (Brown and Knight 1994). Addressing the need to create new methods of assessment and evaluating the important role assessment has in education, this chapter will examine the relevant literature with specific reference to the teaching of Geography. It will identify how the use of fieldwork, visual techniques, digital technologies and peer assessment can enhance assessment practices. Research, both past and current, into student assessment, assessment design and the methods employed in third level education will be considered. How e-assessment tools, available on the VLE, are being utilized will be highlighted. Research into student and staff perceptions of using digital tools in assessment will also be outlined.

2.2 Teaching Geography

2.2.1. Introduction

The study of Geography at University level encompasses environment, socio-economic, cultural and political transformations across the earth (UCC Book of Modules, Geography, 2012). All of these disciplines have multiple sub disciplines. The physical geography module that explores various studies of the atmosphere has meteorology as a sub discipline. Meteorology is described as the study of the atmosphere and its effects on our weather (Education, National Geographic 2012). There are many tools and techniques used in the teaching of meteorology. These tools can also be used in the assessment of student learning. This section of the
literature will review the tools and techniques employed in the Weather Image assignment being considered in this case study.

### 2.2.2 Observation

“The most basic skill underlying real science is observation” (Fox 2005, p.4). Observation is used to bring the learner into the environment and help them see the weather. The weather has always been of interest to people living in Ireland and England (Harley 2003). Regan (2008) carried out a study on current conversation patterns in Ireland and found that weather was the most common small talk topic between people who weren’t related or weren’t friends. Farmers, fishermen and those providing tourist amenities are all interested in the weather and the weather forecasts.

Doesken and Reges (2010) claim that American people have been watching the weather long before any weather stations were developed:

> Through two centuries of profound social, technological, and economic changes, we have maintained the rich national tradition of backyard weather observing that has served our country very well.  

(Doesken and Reges 2010, p.31)

These observers still contribute local storm reports to the American National Weather Service who use them to issue weather warnings. All of this interest in the weather means that the atmospheric environment module offered to second year undergraduate students studying for Environmental Science, Earth Science, Geology, Ecology and Arts degrees is often oversubscribed. A mix of Irish and visiting students from the US and EU enrol for this module (Geography Dept., UCC 2012).

Observation is a technique used widely in both physical and human geography (Jones and Basil Jones 2010). McIntyre et al (2005) maintain that watching how fog changes helps students to understand various cloud formations. “The observation of fog behaviour is an excellent way to have students familiarize themselves with different cloud conditions” (McIntyre et al 2005, p.70). It is also used in the workplace. Sharklin et al (2009) report that even though a lot of the meteorological conditions are recorded by automatic weather stations, observers are still required to log the visibility, cloud type and height. In the not too distant future this type of recording will also be carried out by instrumentation but there
will always be observers needed to record the type of precipitation and the more unusual events like “diamond dust, haloes, mirages and the aurora australis” (Sharklin et al 2009, p127).

2.2.3 Fieldwork

Boyle et al (2007, p.299) maintain that “fieldwork in higher education encompasses a wide range of activities from an hour-long local walk to a lengthy overseas project”. However, the bulk of available literature refers to fieldwork where the students visit a place of interest, stay there for a few days and work in groups. Although the fieldwork in this assignment may have included some days observing the weather, the students ultimately work on their own acquiring images and deciding on which one to use. Thus, study findings which emphasise the duration of fieldwork or importance of group work were not included.

Barrett and Woods (2012) report on how a fieldwork program created to increase an understanding of the atmosphere, was successful and confirms earlier research that students learn more when they are actively involved in the process (Scheyvens et al, 2008).

Student perceptions of fieldwork are extremely positive (Fuller et al 2003). A student in Boyle et al (2007) study ‘Is fieldwork good’ gave this response as to what he thought of fieldwork:

Finally being able to visualize my theoretical work in the field. This has helped me to understand the work much more.

(Boyle et al 2007, p.314).

Many practical skills are enhanced when attending fieldtrips in physical geography and one of these is the skill of observation (Fuller et al cited in Besenyei et al 2003/2004; Boyle et al 2007). In an evaluation of the effectiveness of fieldwork, students reported that they had learned more about the environment by carrying out the techniques that they had learned at lectures and that “their curiosity about the environment had been heightened” (Besenyei et al 2003/2004, p.69). Stokes et al (2011) study of first year geography and geology students views of fieldwork, found that fieldwork provides ‘a more memorable method of learning’ and rather than attending lectures, carrying out fieldwork allows them to view what occurs in the world outside. Munowenyu (2007) carried out a study in Zimbabwe with A
level geography students, employing experimental groups in the field and a control group in class. The students were asked to write essays to demonstrate what they had learned. Munowenyu found that the field groups showed ‘deep level processing’ whereas the control group displayed ‘surface level processing’.

One of the most recent published studies on European Geography Higher Education Fieldwork and the Skills Agenda (Speake and Wall 2012) supports Lee and Gold’s (2006) stance that cognitive learning in lectures can be strengthened by appropriate fieldwork.

2.2.4 Imagery in Geography

Some images can be very powerful and can put the observer in a space “middle zone between seeing, materiality, understanding and feeling” Burnett (2004, cited in Hundley 2005 p.151).

2.2.4.1 Photography

The visual has always played a part in most areas in the teaching of Geography (Fox 2005). Long before photography was developed, around 1839 (Marien 2006), artists travelled with explorers to sketch the landscape. Today student geographers sketch, as well as photograph, the landscape when they are on fieldtrips. In a study into the use of photography in the pedagogy of social geography, to undergraduate students, Sanders (2007) maintains that little has been done in recent years into how photography can help the understanding of how the landscape is changing. Employing this technique helps students to “see what they are studying in the world around them”, and then they can “gain an appreciation for what goes on in the classroom” (Sanders 2007, p.182). Sanders gives another benefit of using photography in geography education as “The photograph has the added advantage of appealing to today’s students’ fascination with the visual” (Sanders 2007, p.182). Page (2006 p.44) maintains that “digital photos provide immediate visual feedback, are easily stored and sent, and are of excellent quality”.

Mavroudi and Jons (2011) dispute the idea that not much has been done and says that the use of visual techniques has become more acceptable in recent times and when used in teaching and assessment can help graduates to be more imaginative. Hall (2009) considering photography as a means of research in human geography,
maintains that photography helps active engagement as it places the students own observation at the centre of what they are studying. Using a digital camera the student can record, as many times as they wish what they are observing. Having the images in digital format allows them to be used in the given assignment and other class projects (Latham and McCormack 2007).

In a study of how “digital stories” can be used as an assessment method for fieldwork, Wakefield and France (2010) found that students and staff were positive towards the assessment once they knew how to use the required equipment correctly. “A digital story refers to a collection of still images, video and audio produced with free and readily available software” (Wakefield and France 2010, p.63).

Recent studies have shown that the majority of students have mobile phones with built-in cameras, and access to digital cameras (Jeffries 2010; Kennedy et al 2008; Margaryan et al 2011).

2.2.4.2 Satellite Imagery

Satellite imagery is used for many very different purposes. The use of satellite imagery allows the monitoring and analysis of atmospheric phenomena including temperature, wind speed and direction, water vapour, cloud cover, precipitation, storms, and tropical cyclones. Satellites can also monitor how winds disperse smoke from wildfires or ash from volcanic eruptions (Medina 2010).

Students are introduced to and learn how these images relate to weather conditions, in the atmospheric environment module.

2.2.4.3 Weather charts

Weather charts are used in forecasting weather events and are also used to look at past weather conditions. Students are shown how to read and how to employ weather charts in the development of weather forecasts.

Observation, Fieldwork and Imagery are three important methodologies in Geography education at third level.
2.3 Assessment of Student Learning

This section considers different aspects of assessment, their use in HE and both staff and students’ perceptions of using different methods of assessment.

2.3.1 Assignments/Assessment

Determining what students have learnt during lectures has been part of the educational system since “at least the fifth century BC” (Newman 2011, p.117). Harlen (2006) supports this claiming that assessment of learning has been part of the education system for a long time. There are many reasons why assessment is employed in education. According to Broadfoot and Black (2004) the main reasons for assessing what students have learnt are:

- Assessment encourages learning by helping students discover their learning style and show them where their understanding of the subject is not up to the required standard.
- Both student and teacher get feedback on learning (Hanna and Dettmer 2004).
- Skills and competency can be tested and achievement records gathered.
- Students can be graded or ranked for progression, completion or selection purposes.
- Assessment confirms certification and licence procedures for professional practice.
- Assessment justifies benchmarks to be setup for standards for quality assurance procedures.

Expanding on the first reason Broadfoot and Black contend that if the students, at all stages of learning, know where their strengths and weaknesses lie they can then choose a way to learn that suits them. Harlen (2006) claims that assessment results can have an evaluative function, when the achievements or otherwise of a group of students is used to report on a class, teacher, school or part of the educational system. Harlen highlights that other criteria would also be taken into account. In third level education, other criteria considered are “management and resource allocation, education and development of students and the development of academic and professional quality for students” (Sirilap et al 2012 p.185).
Wiliam (2011) maintains that the only way to ascertain if a specific course of instruction has produced the intended learning is through assessment.

Wakeford (2003, p.42) reports that assessment of students learning has not been fully examined in all subjects in tertiary education. It may, therefore, not be thoroughly “understood”. It may be a fundamental part of the educational system but at times it is not considered until long after a new course has been designed and offered to students (Offerdahl and Tomanek 2011).

In a study on teachers’ ideas on assessment, ‘assessment of learning’ was found to have moved to ‘assessment for learning’ and is now moving towards ‘assessment as learning’ (Offerdahl and Tomanek 2011, p. 782). With all of these changes instructors are required to look at the ways they collect information on students learning (Black et al 2007). McGarr and Clifford (2012) note that, up to now, assessment was seldom seen as a way of encouraging students to discover their ‘potential’ or generating a way that students could show what they were capable of doing.

Ediger, (2001) claims that it is essential to assess geography students to identify what the students have learned.

### 2.3.2 Types of assessments

There are three main types of assessment practices namely, diagnostic assessment, formative assessment and summative assessment (Crisp 2007; McTighe and O’Connor 2005). (Appendix A)

- **Diagnostic assessment**
  This type of assessment takes place at the beginning of a section of study to assess what the learner knows and if/where difficulties may lie.

- **Formative assessment**
  Formative assessment is a way of constructing a record of the student’s achievements during a module of study. It is useful as it can be used to monitor a student’s progress and appropriate feedback can be given if and when required.
- **Summative assessment**

  Summative assessment is given at the end of the instruction and is an examination of former learning (Black and Wiliam 1998). These assessments can gather information over time and may be at the end of a number of lectures on a specific topic or, as already noted, at the end of the semester (Brookhart 2001).

### 2.3.3 Reported effects of assessment

Summative assessment has not always had positive effects as reported by Wiliam (2011) and Stobart (2008). Stobart maintains that summative assessment has been responsible for “social injustice over the centuries” and that using exams for selection can and has, as well as ruining careers, devalued self-esteem. Wiliam (2011) reports that it was in the late 1980s when teachers realised that assessment could both support and inhibit student learning and in the majority of cases “the impact of assessment practices was to limit, and even to reduce, student learning” (Wiliam 2011, p. 13).

Formative assessment has not been reported as having any negative effects on learning (Taras 2010). Summative assessment, if used properly, can also promote learning as formative assessment does (Keppell and Carless, 2006).

Successful students don’t differentiate between formative and summative assessment and consider both types to be educational (Brookhart 2001).

The assessment that is being examined in this thesis has components that fall into both formative and summative assessment.

### 2.3.4 Methods of Assessment

There are many methods of assessment employed in the teaching of geography and meteorology in third level education. The traditional methods of assessment, the essay, project report, oral presentation (Gillett and Hammond 2009) and multiple-choice tests (Dikli 2003) are still very much in use. McKenzie (2004a) claims that the essay is the only method of assessment that gives the student, in final year, an opportunity to show some creativity and help attain a first class degree. Some top Irish employers would support the writing of essays as they maintain that graduates ‘can’t write well enough’ (Walshe 2010). Lombardi (2008) maintains that
traditional forms of assessment assess the students’ ability to recall the theory that has been covered in lectures whereas newer methods assess the student’s understanding of the theories. The newer methods include the use of Blogs, Wikis, Online Discussions, Poster Projects and Self and Peer Assessment. The use of these methods of assessment is helped by the advances in Web 2.0 tools which provide both possibilities and challenges to the way assessment can be carried out (Daly et al 2010; Bloxham and Boyd 2007). There are many e-assessment tools (Appendix B) available on the VLEs in all Irish universities (Cosgrave et al 2011). VLEs will be considered in more depth in section 2.6.2.

Surgenor (2013 p. 299) study on the expectations of assessment of first year students in an Irish university reports that students “were keen to experiment with newer methods, particularly those involving an online or more practical, hands-on component”. Surgenor also points to the fact that many lecturers used the more established methods and that very few used methods that were new or appealing to students. Sternberg et al (2008 p.486) researched and published a paper on learning and thinking styles and contend that two students who may both comprehend the material covered in lectures may not be able to demonstrate what they know in the same way. One student may do better in the traditional multiple choice test whereas the other may do better in a method that “encourages creative use of the material that has been learned”.

2.3.5 Assessment and Motivation

Motivation to learn is essential and keeping students engaged in the learning process can increase the motivation. All students have some level of motivation but that level varies among students (Briggs and Tang 2011). If students have a personal interest in what is being taught they will be motivated to learn but if that interest isn’t there then the use of assessment may help develop an interest (Stiggins 2001; Harlen 2006), especially if the assessment is relevant and constructive (Briggs and Tang 2011). The relevance of the assignment is also one of three elements that affect students’ motivation to learn highlighted by McTighe and O’Connor (2005 p.15). The other elements are “task clarity” and the “potential for success”. Task clarity is achieved when the student knows what the aim of the learning is and what is required to gain a good grade in the assignment. The student
will perceive that there is ‘potential for success’ by knowing what has been covered in lectures will have provided them with the knowledge to do a good assignment. Providing students with feedback on their assessments and getting them to participate in the learning may help develop some personal interest (Stiggins 2001). Assessment has also the potential to destroy the students willingness to learn making it one of the most powerful tools teachers have:

Some students approach tests with a strong personal academic history and an expectation of success. Others approach them with a personal history and expectation of very painful failure…..As a result, high stakes assessment will enhance the learning of some while discouraging others and causing them to give up. (Stiggins 2002, p. 761)

Stiggins and Chappuis (2005) claim that if students continually receive low grades they may decide that learning isn’t worth the effort. Choosing a mixture of traditional and non-traditional methods of assessment may help students achieve better grades in some assessments therefore encouraging and motivating the student to continue learning (Wen and Tsai 2006).

If students are enjoying what they are learning (intrinsic motivation), where their level of engagement is high Kellaghan et al (1996) claim that this promotes ‘conceptual understanding’ and employs ‘higher level thinking skills’.

2.3.5.1 Time demands and motivation

Time is valuable to both students and staff. Student motivation will be reduced if they have to spend more time, than they had planned, producing or uploading their assignments (Dabbagh 2002). France and Wakefield (2011, p.138) asked students to design an electronic greeting card using Power Point to “visualise the impact of climate change” as part of an assessment. Reporting on how the assignment was received by students they point to comments made by a minority of students expressing misgivings about the assignment stating ‘a lot of time was wasted editing’ images even though the overall student response to this assignment was favourable.

Providing clear instructions on how to upload the assignment may help reduce the time required to carry out the task efficiently (Keramidas et al 2007).
2.3.6 Formative Feedback

Formative feedback is part of the formative assessment process. Feedback can be provided to the students in many ways. It can be written on the assignment, given by email or it can be provided in conversation with the student (Duncan 2007). Even though there has been much development in technology, feedback is still predominantly given in written format. Clarifying where an assignment is good, where it can be built upon and returning the assignment to the student within a specified time provides good feedback (Bloxham and Boyd 2007). Teachers interviewed for a study, carried out in two UK universities, on teacher perceptions of feedback gave the role of feedback as instructional and motivational but only if the students used it effectively (Macfarlane-Dick and Nicol 2006; Bailey and Garner 2010).

2.3.6.1 Issues with feedback

Feedback is seen as a very valuable asset to the learning process by both staff and students (Williams and Kane 2010). Research into formative feedback reveals that some lecturers and students have issues with the feedback that is given, the way it is provided and also the time when it is given (Williams and Kane 2010; Bailey and Garner 2010).

2.3.6.2 Lecturers concerns

Feedback is no longer just communication between the teacher and student (Bailey and Garner 2010). There are other stakeholders in this process, namely the universities and the department of education who form and manage the rules and regulations. Some lecturers feel, because of this, that they are not only writing feedback for the student but that colleagues and externs may view it also.

Due to the two semester academic year in some institutions some teachers voiced concerns that the students would have moved on to a new module before they received the written feedback. Miline et al (2008) research into technological support for assignment assessment reported that there was unease among lecturers about students’ perception of feedback. The majority of lectures interviewed for the study gave feedback with the grade achieved and claimed that the students were only interested in the grade. This view supports the findings of Gibbs (2002, cited
in Wong 2010) study of what impact feedback had on student learning behaviour. Students do not seem to appreciate that the feedback given in one assignment may be of some help with a future assignment (Duncan 2007).

Students’ lack of understanding of the language used in the feedback is another issue of concern. The student may read the feedback but that doesn’t mean that they understand the message. A lecturer, taking part in a study on the value of feedback, reported using different phraseology for more capable students than the phraseology used for weaker students to help address this problem (Bailey and Garner 2010).

Taras (2003) suggests that the dilemma of grades and feedback could be overcome by not releasing the grade until the feedback had been read by students. Handlay and Williams (2011, p.97) contend that “time shifting of feedback” is one way that may help students engage with the feedback. The feedback is provided on a draft assignment so the assignment can be edited before final submission. Wilson and Scalise (2006, p.643) concur stating that “feedback is most valuable when students have the opportunity to use it to revise their thinking as they are working.” A drawback of this, they highlight, is that the tutor’s assignment marking workload would double.

**2.3.6.3 Student concerns**

Results of a National Student survey on Institutional Experiences of Student Feedback (1996-2007) carried out in the UK reported that some students were not interested in collecting their corrected assignments. The reasons stated were the length of time it took to receive the feedback and that the grade attained was the only thing of interest (Williams and Kane 2008).

In a study employing focus group interviews with lecturers and students in 20% of Psychology departments at HE institutions in the UK, Crook et al (2006) found that students had difficulty reading some of the feedback that they had received. The students felt that everyone got the same feedback and wondered if the lecturer had read their assignment or just skimmed through it. Crook et al confirm the lecturers’ perception that students do not see how feedback in one assignment can have any bearing on another assignment.
The issue of reading the written feedback may be overcome by using technology, e.g. email or Blog, to provide the feedback (Milne et al 2008). Williams and Kane (2008) study on assessment feedback found that some tertiary colleges in the UK have responded to the students concern regarding the timing of the feedback. In one college the assessment feedback is now given in class and another provides the feedback within two weeks. These changes may not suit all colleges/faculties due to class sizes and modes of assessment employed.

### 2.3.7 Students Perception of Assessment and Modes of Assessment

In the introduction in Bloxham and Boyd’s (2007) book Developing Assessment in Higher Education: A Practical Guide, it is maintained that even though students may attend all the lectures and practical sessions provided for them in a module it is only when assessments loom that they fully partake in the learning process. Gibbs and Simpson (2004) contend that all aspects of students’ learning are controlled by the form of assessment that is used in the module they are studying. If the activity does not contribute to their final grades some students, in some courses, may not take part in the process (Boud 2000). A review of research into students’ perception of assessment carried out by Struyven et al (2005) reveals that students learn differently according to the format of assessment employed. It also highlighted that if students think that the format is unsuitable it will only encourage surface learning although suitable methods may not always promote deep learning:

> Assessment methods which are perceived to be inappropriate ones encourage surface approaches, and ‘appropriate’ evaluation modes are not sufficient to evoke a deep approach to learning.

(Struyven et al 2005, p.329).

In Struyven et al study students were engaged in producing portfolios but one of the findings was that students put “much less effort” into the process when marks had not been given for the activity. The study also found that the students were open to new modes of assessment. Escudier et al (2011) found that the majority of 266 dental undergraduate students at King’s College London Dental Institute approved of an online format of a MCQ summative test. The students perceived that the online format was fairer as it reduced the ability to cheat and students could review and revise their answers before submitting the test.
2.4 Peer Assessment

To give students every opportunity to flourish in HE, knowledge of how assessment is carried out is necessary (Bloxham and West 2004). Elwood and Klenowski (2002, p 249) suggest that “to improve student performance it is essential that teachers and students share common understandings of what is required for success in assessment tasks”. Taking part in peer assessment is one way for this to happen as the student takes the role of the tutor and assesses another student’s assignment (Joordens et al 2009). The student has to evaluate the assignment and provide feedback.

2.4.1 Peer Assessment Strengths

Research reveals that both teachers and students are positive to this type of assessment (De Grez et al 2012). Students carrying out peer reviews have the opportunity to benefit both from the feedback provided and also from taking part in the activity itself.

The feedback can be complementary; can offer advice on where the assignment could be improved and can also highlight where it may be wrong Lui and Carless (2006, cited in Bay 2011).

By assessing others, students learn more about the subject, they learn how to assess themselves better and may make more of an effort to produce a good assignment when they know one or more of their peers will be assessing it (Bay 2011). It helps to engage and foster a deeper approach to learning according to Reese-Durham (2005). The value may not be in giving a grade for the assignment but in providing coherent feedback and also being able to accept feedback (Boud 2000 cited in McConlogue 2012). Joordens et al (2009, p.15) examined ‘the pedagogical anatomy of peer- assessment’ and concluded that students who partake in peer assessment would “not only possess knowledge”, but also strengthen their skills “to criticize, analyse, synthesize, and create”. McGarr and Clifford (2012) note that peer assessment is one of many ways that assessment can enhance the learning process.
2.4.2 Peer Assessment Weaknesses

Sullivan (2009, cited in Bay 2011) and McConlogue (2012) point to some negativity towards peer assessment, as some students perceive it as a waste of time and that they are only interested in the lecturer’s grade. Papadopoulos *et al* (2012) researching how pre service teachers, at University of Western Macedonia, Kozani, Greece, carried out this activity, found that due to ‘peer effect’ students felt that they couldn’t carry out the process correctly. Wen and Tsai (2006) confirmed previous research findings that students do not like receiving criticism from their peers and some think that peer assessment is unfair Osmond (2000, cited in McConlogue 2012). Peer assessment may be carried out easier in some assignment methods than in others depending on the type of responses required (McConlogue 2012). Assignments requiring divergent responses, such as essays, may prove more difficult than those requiring ‘closed’ responses. Some researchers raised concerns about the reliability of the grades given by students. Freeman (1995, cited in De Grez *et al* 2012) research shows that there isn’t any evidence that the grades the students give are very different to those which the tutor gives. Other research studies carried out between 1994 and 2004 agree with this finding (De Grez 2012).

There are many issues to consider when organising peer assessment activities. Students new to the practice of peer assessment may lack confidence in their ability to do the task (Sullivan *et al* 1999 cited in Wen and Tsai 2006). There is much debate on whether and on how students should be taught assessment practices (De Grez 2012). Wen and Tsai (2012) express the view that students need direction. Sadler (2008, cited in McConlogue 2012) disagrees stating that providing instruction on the exact way to make assessment will not make the assessment any more ‘reliable’.

Not all students will want to participate in peer assessment, so to help encourage them to do so, marks may be given for the effort they put into the process (Bloxham and West 2004; McConlogue 2012).

2.4.3 Implementation of Peer Assessment

Setting up peer assessment facilities takes a lot of lecturer’s time but using the tools available on the VLEs will help reduce the time required. Having the backing of all
staff members involved in the module also aids implementation (Pharo and De Salas 2009).

2.5 Designing Assessment Practices

2.5.1 Designing an Effective Assignment

The design of an assessment is fundamental as it has the power to promote or hinder learning. Baillie and Toohey (1997) claim that the way assessment is carried out can promote either surface learning or deep learning. Therefore, assessment is important to both student and lecturer (Price et al 2010). The assessment has many roles to fill, in motivating, promoting learning and testing the student (Broadfoot and Black 2004; Gibbs and Simpson 2004). Students ‘abilities, achievement, skills and potential’ should be accurately indicated by the grades given in assessment (Wakeford 2007, p.59). It should be designed to give students confidence in their present and future learning (Boud and Falchikov 2006). Technology should only be used if it can enhance student learning (Mayer 2005).

Research into assessment design reveals a number of areas that need considering when designing assignments/assessment (Bloxham and Boyd 2007).

2.5.2 Assessment Alignment

All assessments should be aligned with the learning objectives of the module. Briggs (1996) refers to this alignment as ‘constructive’ where the student develops the understanding and the mode of teaching is coordinated with that of the assessment. Students should know what the lecturer wants in an assignment but it may be difficult to express what is in the lecturer’s head. The lecturer will recognise a good assignment when they see one (Sadler, cited in Bloxham and West 2004). Handley and Williams (2011) research looked at using exemplars to engage students with assessment criteria and feedback and they claim that 2nd year undergraduate students need examples of a good assignment as well as the assignment instructions. One way that this issue may be addressed is to provide an example on the VLE system.

2.5.3 Assessment Validity and Reliability

Assessment validity is evident if the assignment is assessing at least one of the learning outcomes of the module given in the course description (Bloxham and
Boyd 2007, p.34). Reliability is harder to demonstrate but if different lecturers give comparable grades in the same assignment then this goes some way in demonstrating reliability. If the learning is assessed by different methods and the same grades are obtained this would also help establish that the assessment is reliable (Bloxham and Boyd 2007). Due to the complicated nature of some of the learning in tertiary education it is difficult to assess reliability Knight (2006, cited in Bloxham and Boyd 2007). The constant need for assessment reliability was highlighted by O’ Grady (2013) research into the increasing number of higher degrees attained in Irish tertiary institutions (2005-2009). It concluded that to allay employers concerns about the standards that graduates have achieved the universities must maintain their standards and fail the students who don’t achieve them.

2.5.4 Assessment Must Be Fair

The assessment method and marking must be seen to be fair. Students should be aware of what is expected of them, be supported in developing ‘academic’ writing techniques, understand how the assignment will be assessed and whether it is a formative or summative assessment (Bloxham and Boyd 2007). Supports provided by the institution on any of these issues should be highlighted to the students.

Equity in assessment may be demonstrated by using different methods of assessment (Suskie 2000). As all assessment methods benefit some learning styles over others, it is essential to give students a range of methods to demonstrate what they have learned (Sternberg et al 2008).

As some geography modules, especially those that involve field work, have a wide range of learning outcomes the conventional ways of assessment may not be able to assess the learning that has taken place (Bloxham and Boyd 2007). Technology may be used to create new means of assessment that can help assess these learning outcomes (McGuire 2005).

2.6 Technology and Assessment

2.6.1 Introduction

The increasing technology available to students and staff is creating a new way of incorporating digital technologies into Higher Education assessment.

(Wakefield and France 2010, p.63).
As Wakefield and France (2010) suggest there are many Web 2.0 tools available for staff to employ in assessment. The following section explores the tools available on the VLE system having first looked at the VLE platform itself.

### 2.6.2 Virtual Learning Environment (VLE)

All universities and HE institutions in Ireland support a VLE. There are many different providers of VLEs including Blackboard, Moodle and A Tutor. Cosgrave et al (2011) state that VLEs can promote higher order thinking:

> VLEs offer a variety of useful tools including discussions, Blogs, chat, assessment and assignments tools which when combined with an appropriate instructional strategy can help to develop… higher –order thinking.

(Cosgrave et al 2011, p.2).

The survey carried out by Cosgrave et al 2011, on the usage and uptake of VLEs in Ireland, in five Irish higher level institutions in 2008 and again in 2009 found that the VLEs were not being utilised to their full extent. One of the reasons that students weren’t using their institutions VLE more efficiently was their lecturer’s unwillingness or lack of skills to engage with the VLE. One of the concerns highlighted in Prescott et al (2013, p.10) recent study carried out in the American University of Sharjah on the usage of the VLE, is that the VLE is not very easy to use. They concluded that ‘the existence of other freely available applications offering greater ease of use and more flexibility’ was an issue regarding the lack of use of the University’s VLE. Tutors perception that using the VLE would reduce the face to face meetings with students was another concern raised in this study.

VLEs can supplement traditional teaching methods by providing easier to use tools to communicate with individual students and groups of students (Dutton et al 2004). The assignment submission section on the VLEs offers an easier way for students to submit their assignments and in time may end the physical delivery of assignments (Weir 2004). Bridge and Appleyard (2008) add a note of caution claiming that some students worry that the entire assignment may not have uploaded even though a receipt had been issued and others had difficulty uploading assignments with multiple images:

> By far the largest cause of concern for the students was the receipt system. Forty-three per cent were unsure that their assignments had been safely received…. there were a large number of students (32%) who reported ‘image handling’ problems.

(Bridge and Appleyard 2008, p.646).
Lecturers’ concerns about the large amount of time involved in online teaching and setting up online assessment methods have been highlighted in many studies according to Salmon (2002). Lingard (2007) found that one, of a variety of issues highlighted in his research, of lecturers non-use of the VLE in a UK university, was that it didn’t fit in with the lecturer’s style of teaching.

In UCC Blackboard 9.0 is the VLE system that is used. Assignments are posted on Blackboard by some lecturers and students can collaborate in their assigned groups sharing their maps, data etc, they can partake in online discussion and can upload their assignment as specified in the assessment.

2.6.2.1 Tools, available in VLEs that can be employed in assessment

Of the many e-assessment tools available on Blackboard this literature review focuses on Blogs, Wikis and online discussions. To employ these tools efficiently both the lecturer and the student must have a set of skills ‘referred to as digital literacies’ (Gilster, cited in Duffy and Burn 2006 p.31).

2.6.2.2 Blogs

“A Blog can be described as an online journal with one or many contributors” (Duffy and Burns 2006). Blogs were developed in the late 1980s and became very popular in social media in the 1990s when Blogger.com was launched (Huffaker 2005). They provide a medium for learning that can be accessed in or out of the university campus and at times convenient to the learner. Text, images and hyperlinks are typed into the Blog and can be published immediately or at a specified date and time. Comments to the published posts can be easily entered and are recorded by date (Huffaker 2005). EduBlogs refer to Blogs used in education (Williams and Jacobs 2004) and can be employed in all disciplines (Huffaker 2005).

There are two types of Blogs, an individual Blog and a Blog that is open to a group of learners (Bartholomew et al 2012). In education the open Blog is favoured as it promotes ‘community building, cooperative problem solving and lateral communications’ (Bartholomew et al 2012, p. 22). Blogging is very popular with today’s university students in social media and some will have the skills required to Blog as they are continually responding to posts (Smith et al 2009). These skills
could and are being developed to be used in an educational setting (Duffy and Burns 2006). Although Lenhart et al 2010 report that, in social media, Blogging among young adults (18 to 29 years) is declining.

Richardson (2006) found that “critical and analytical thinking” can be fostered by the use of Blogs. Cameron (2012) points to Oikonomidoy’s (2009) study carried out in multicultural education classes in the University of Nevada where the research looked at the ‘collective conceptual reflections’ of pre-service teachers to a class Blog. It found that although the students were using the appropriate vocabulary their postings were “superficial and oversimplified”.

Blogs can provide a platform for “brainstorming” where others students can comment and help advance the ideas suggested (Richardson 2006). Valuable information on where to find research and articles on the topics being discussed can be posted on the Blog. Feedback can be provided in the comment box (Avci and Askar 2012) and research shows that students using Blogs expect and want continuous feedback on their entries (Ion et al 2012).

Research into assessment Blogs carried by Olofsson et al (2011) highlighted that peer-to-peer support was evident on the Blog controlled by the students, with the tutors remaining invisible. Students were ready to help each other “further understand” the learning rather than pointing to errors in their understanding.

### 2.6.2.3 Wikis

A Wiki is a tool for communication and collaboration on the web (Kardong-Edgren et al 2009). Those who have been given access to the Wiki can develop, sort, rewrite and structure the content collectively (Kardong-Edgren 2009). It differs from a Blog as it is used by many whereas the Blog is considered more individual (Cameron 2012). Choy and Ng (2007, cited in Elgort 2007; Boulos et al 2006) report that their use in HE is growing. Changes that are made to Wikis are logged and all the original material is stored making them useful tools for assessment and also for giving group members the opportunity to look back at changes that have taken place (Kardong-Edgren 2009). Witney and Smallbone’s (2011) study found that students don’t appear to collaborate even though they do co-operate when allocated to different groups. They maintain that the use of Wikis can help overcome this challenge and that students demonstrated that they have the
ability to analyse their peers work. A further advantage of the Wiki is that it helps develop students IT skills (Elgort 2007).

2.6.2.4 On-line Discussion

An On-line Discussion is a conversation that takes place online. There has been a growth in the use of discussion boards in education and it looks as if that growth will continue (Wijekumar and Spielvogel 2006). Scheyvens et al (2008) study on the effects of active learning claim that to aid deep learning students have to think about and explain what they have learned. In the study an on-line discussion assessment was set up on California State University’s VLE system for first year geography students. Students were given guidelines on the responses required to the questions posed by the lecturer. The majority of the cohort of 38 students felt that it helped them to understand the subject better. Lecturers felt that even though it was difficult to assess the quality of the discussion, as all students had to take part, it gave the more timid students an opportunity to join in a discussion.

There are some issues all tutors should be aware of when deciding if any of the above tools are appropriate to promote and assess learning in the program they teach. Students should be advised on how their contributions to the assessment tool chosen will be assessed as this may reduce any anxiety that the student may feel. The amount, length and what rules apply to the contributions should also be specified (Bloxham and Boyd 2007; Scheyvens et al 2008). Tutors may decide to take part in the discussion or Blog only when the information entered is incorrect, discussion is heading off the subject or the language being used is inappropriate (Cameron 2012). Others may decide to take an active part and this as already noted is preferred by some students (Ion et al 2012).

2.6.2.5 Theories of Learning

The features of a Blog (referred to in 2.6.2.2) have the potential to provide a constructive learning environment for students (Cameron 2012). The use of Wikis in education matches both the constructive and the cooperative learning environments according to Cole (2009). The Discussion Forum also offers a constructivist learning environment where the students and tutor are able to respond and ask questions on the topics posted (Rovai 2004).
2.6.3 Digital literacy

Literacy relates to a person’s ability to read but digital literacy has different meanings. Some define it as the ability to use the new technologies being developed and others define it as the critical use of the information accessible by using these technologies (Buckingham 2010). Prensky (2001) named anyone born after 1980 a ‘digital native’ and those born before 1980 a ‘digital immigrant’ and claimed that they learn in different ways. He went further to say that as digital natives have grown up using digital tools they’d have the skills to use any technology they encountered. These assertions are now a cause of much debate as there is no factual proof to back up these claims (Kennedy et al 2008; Smith et al 2009; Helsper and Eynon, cited in Ng 2012).

The majority of digital natives will have the digital literacy skills to use social media technologies but they would not be in favour of using these tools for educational purposes, “students may be uncomfortable with the application of social technologies in educational contexts” (Margaryan et al 2011, p.438). A study of 2000 first year university students in Australia found that 31.8 % agreed with the use of social networking sites for educational purposes but the authors added that it is “difficult to expect students to have the expertise to judge how to best use emerging technologies for educational purposes” (Kennedy et al 2008, Discussion, para.8). They agree with the findings in other studies that students have little knowledge of how technology can strengthen their learning so lecturers will need to show and support students in the use of educational technology (Ng 2012; Lai et al 2012). Conole et al (2008) disagree as their research into students’ use and perception of technology concluded that students are able to choose the technologies that suit their learning style as they are educated using a range of technologies.

Prescott et al (2013, p.2) state that one of the findings in Morgan (2003) study of the usage of the VLEs across the 15 institutions in the University of Wisconsin System was that the students were not as ‘tech savvy as many’ of the lecturers assumed. Not all students will have the same range of digital skills, Margaryan et al (2011) study of university students’ use of digital technologies found engineering students used a larger range of digital tools than those studying social
work. Smith et al (2010, p.12) study of students’ use of technology, gathered from over 100 US institutions concluded that “when it comes to technology” there is no such thing as a “stereotypical student”.

2.7 Summary of Literature Review

In the teaching of Geography many technologies from the digital camera to the use of satellite imagery are employed and the advantages of using these have been outlined. The importance of the role of assessment in teaching and learning has been considered. Technologies such as Blogs, Wikis and on-line discussion boards can be employed in teaching and in non-traditional methods of assessment in all disciplines. Combining the research discoveries in the three sections and taking students and staff perceptions of using these technologies into consideration an effective assessment can be created incorporating appropriate digital technologies.
Chapter Three: Research Methodology

3.1 Introduction

A research methodology is a “procedural plan” that is followed to obtain valid, objective and accurate answers to the research questions (Kumar 2011). This chapter sets out the research questions and the research setting for the study. Methodologies used in educational research are explored, two are explained, and the rationale for the methodology chosen is provided. Research instruments used for the data collection are examined. The means by which the data will be analysed is outlined. The reliability and validity of this research are considered. Finally, the ethical considerations and the limitations of the study are addressed.

3.2 Aim of this Research and the Research Questions

This research was undertaken to help create an effective assignment using digital technologies and to provide evidence that this new method of assessment was fit for purpose. In carrying out this research it was also decided to explore the students and lecturers perceptions of the use of digital tools in assessment practices. Exploring the perceptions may highlight areas where support for either staff or students may be required. Providing this support may help ensure that the VLE in UCC is fully utilized.

The students’ perceptions were gathered during the first semester, after the submission deadline for the assignment at the end of November, 2012. Information regarding the lecturers’ perceptions was gathered in January/February 2013.

3.2.1 Research Questions

The research questions that are the focus of this research are:

- How can an effective assignment be designed using digital tools that are available to staff and students to assess students’ learning of how weather events occur?
- Has using a non-traditional method of assessment helped students to learn more about how different weather events occur and changed the way that they observe the weather?
• What are the students’ perceptions of non-traditional methods of assessment?
• What are lecturers’ perceptions of non-traditional methods of assessment?

3.3 Student and Lecturer Participants

The student cohort encouraged to participate in this research were the second year students who were studying meteorology as part of a geography module. One hundred and four students enrolled for this module in September 2012 (UCC, Administration Office).

The lecturers who participated in the research were the course coordinator and the other teaching staff members in the Geography Department, UCC.

3.4 Research Methodologies

Newby (2010) describes research methodology as the gathering of research tools and the adherence to proper research standards. Bell (2010) claims that the methodology chosen should provide all the information required to produce a complete piece of research.

3.4.1 Action Research

Action research involves identifying an issue, deciding what action to take and then to ascertain if the change in practice has addressed the issue (Newby 2010). Whitehead and McNiff (2006 p.22) put forward two grounds for action research as it “can improve learning in order to improve educational practices” and “it can advance knowledge and theory, that is, new ideas about how things can be done and why”. They maintain, because of these reasons, that it is a unique research methodology. Cohen et al (2011) and Newby (2010) claim that there are many ideas on action research but that they are all concerned with making an improvement based on the evidence provided by the data collected.

There are limits to this methodology. The researcher is “not detached” and when groups are involved in deciding what action is to be taken compromises have to be made (Newby 2010).
3.4.2 Case Study

A case study is defined as an analysis of a ‘single entity’ which is carried out in ‘detail and great depth’ (Mathews and Ross 2010 p.128) and in the natural setting (Yin 2006). Yin (2009, cited in Cohen et al 2011 p. 289) maintains that a case study can ‘explain, describe, illustrate and enlighten’. Hitchcock and Hughes 1995 (cited in Cohen et al 2011) points to one characteristic of case studies as, it looks at one individual or group and explores their perceptions of the event. Neuman (2010 p.42) claims that “case studies have a detailed focus but tell a larger story”. The case study methodology can utilize research instruments such as questionnaire, interview and observation to collect data. It can also use information from ‘documentary sources, statistics, external reports and evaluations’ (Newby 2010 p. 52):

The case study method is best applied when research addresses descriptive or exploratory questions and aims to produce a first-hand understanding of an event. (Yin 2006 p.112).

The Case Study methodology is the methodology chosen for this research as it looks at one case within a particular context, it uses both qualitative and quantitative data collection tools and it takes a comprehensive view of the subject.

3.5 Research Setting

Assessment of this Geography module is carried out over the ten week duration of the module where students are given four weather analysis assignments, a multiple choice exam and a main project to complete. To help promote student learning the coordinator of this module, requested assistance to incorporate digital tools/technologies into one of the assignments. Following investigation into the use of imagery in the teaching of geography and the use of digital tools such as Blogs, Wikis and Discussion Forums in assessment practices, an assessment was created. Students were requested to use digital imagery and a Blog. The Blog was chosen as the assignment submission platform because:

- Images can be uploaded.
- Permission settings can be specified so that a student has access to change or delete their own entry only.
- All users can view all entries
- The comment area can be used to provide feedback
- The comment area can also be used for student peer reviews.

In the assignment (Appendix C) the student observes the weather, takes a digital image of a weather event, links the event to the local weather data i.e. weather charts and satellite imagery, produces a report and uploads it to a Blog on Blackboard.

### 3.5.1 Blog

The ‘campus Blog tool’ on Blackboard was chosen as the submission Blog as this student cohort was well acquainted with the VLE environment.

The assignment was placed in the module assignment section of Blackboard (Appendix D) at the end of October. Two reference web sites given in the assignment contain award winning photographs of weather events (samples of these photographs: Appendix E).

The Blog (Fig.3.1) was made visible to the students two weeks before the assignment submission deadline.

Instructions on how to upload the assignment using Windows 7 and using other operating systems were placed on Blackboard and copies were also available at lectures. (Appendix F).

![Fig.3.1 Blog Page on Blackboard](image)

### 3.6 Classroom discussion

The Blog was shown to the students at the lecture on the 15th Nov. 2012 and a class discussion took place. A completed assignment example was also shown (Fig 3.2 and 3.3). Students were advised that they could upload their assignments to the Blog well in advance of the submission date and feedback would be provided.
Having read the feedback students would have the opportunity to update the assignment up to the submission date. Nearing the end of the discussion, time was given to the author to address the students.

Initially the research objectives were outlined. To help with the research students were asked to carry out three peer reviews. The students were made aware that the peer reviews were not part of the assignment so it would not be marked. The following instructions on how to carry out a peer review were given: “having viewed an assignment on the Blog please indicate two positives about the assignment and give one suggestion on how it could be improved”.

The author explained what research methods would be used to collect data. Five volunteers were requested to attend a group interview. An email was sent to all the students containing contact details, through the module section on Blackboard. Students were asked to make contact if they were willing to come to the interview.

The lecturer placed an announcement on the module section a week later, again requesting help with the research. Four students got in contact and indicated they were happy to join the group interview.

Fig. 3. 2 Example of a Weather Image
3.7 Research instruments

3.7.1 Introduction

The research instruments chosen for the collection of relevant data depend on the research questions (Mathews and Ross 2010). Research instruments employed in case studies can be either qualitative or quantitative or both (Yin 2006; Newby 2010). Employing many research instruments helped enhance the case study (Yin 2006).

3.7.2 Qualitative and Quantitative Methods

Qualitative methods are used to delve into people’s opinions, experiences and beliefs (Mathews and Ross 2010). This data may be collected by interview, observation and diary keeping.

Quantitative methods are concerned with data that can be expressed in numbers, can be measured or are quantifiable. This type of data can be collected using questionnaires and surveys (Neuman 2011).
3.7.3 Questionnaire

Cohen et al (2011) maintain that the questionnaire is a popular and valuable method for collecting substantial amounts of data. Both structured and unstructured questions can be used in questionnaires (Newby 2010). Neuman (2011 p.318) warns against the many pitfalls when designing questions, advising against using “jargon, slang, emotional language, double-barrelled or leading questions”. Questionnaires can be delivered in multiple ways, face to face, email, drop and collect and telephone (Newby 2010).

For this study, two questionnaires (Appendices G and H) were designed and before being administered a pilot-test was carried out with two staff members and two students (Mathews and Ross 2010; Batterson 2012). The student questionnaire had 27 questions (18 relating to using digital tools in assignments and 9 questions on peer assessments). The staff questionnaire requested responses to 22 questions (18 relating to the use of digital tools in assignments and 4 on peer assessments).

At the last lecture of the module a questionnaire was handed to each student entering the lecture theatre. Time was allocated to complete the questionnaire at the
start of class; all questionnaires were collected before the lecture commenced. Sixty two students were in attendance and fifty nine completed the questionnaire.

The questionnaire designed for staff members were hand delivered, over a period of two weeks, and returned in the internal post system. Thirteen were delivered and all were returned.

3.7.4 Interview

Savenye and Robinson (1996 p.1056) describe an interview as a “conversation” that the researcher takes part in to collect data to help answer the study’s questions. Cohen et al (2011) think that an interview is different from an everyday conversation as it is pre planned and the questions are structured, asked by the interviewer and answered by the interviewee. Like all methods of data collection there are strengths and weaknesses to using interviews. An interview “can obtain breadth and depth of information” but they are “time consuming, it has a limited number of participants and is dependent on the interviewer rapport” according to Ho and O’Farrell (2006 p.211). Scott and Morrisson in 2007 (p.137) contend that the interview will always be an effective method in educational research once the weaknesses are acknowledged. One drawback highlighted is that interviews centre on “what people say they say, write, and do rather than what they necessarily do say, write or do”.

Questions to be asked at an interview can be open, semi-structured or structured (Cohen et al 2011). A semi structured format has the advantage over a structured format. When an interesting point has been raised it allows for the interviewer to probe further if it is thought necessary (Brenner 2006).

The lecturer was interviewed on two occasions (Appendix I). The first interview took place at the design stage of the assignment (October 2012) and the second took place when the assignments had been corrected (May 2013).

3.7.4.1 Group Interview

Group interviews pose a different set of challenges for the researcher but offer many advantages (Cohen et al 2011). Matthews and Ross (2010) claim that group interviews offer “apparent validity” and the results can be considered reliable:
High apparent validity, that is, this is an approach that is intuitively obvious in intent/content and therefore easy for everyone to understand. Thus, the results will be credible.

(Mathews and Ross 2010, p. 250).

The group interview took place in December 2012 (Appendix J). Four students agreed to come for the group interview but one was unable to attend on the day.

3.7.4.2 Informal Interview

Informal interviews took place, during a weeklong fieldtrip in March 2013, with twenty students who had completed the weather image assignment (Appendix K). Patton (1980 cited in Cohen et al 2011 p. 413) claims that informal conversational interviews “increase the salience and relevance of questions”. Interviews that take place in an informal setting, according to Rubin and Rubin (1995) can promote greater debate.

3.7.5 Observation-- record of student’s activity on the Blog

Once the Blog was made visible to the students it was checked daily to help detect if students were experiencing difficulties uploading their assignments (Appendix L). All of these incidents were recorded. Emails received by the lecturer requesting help with this issue were also logged.

3.8 Reliability, Validity and Limitations of the Research

To help increase the reliability of the research a clear and precise plan was constructed for the study. The methods used for collecting data were researched and carried out in accordance with good practice. Multiple methods were employed and pilot versions of the questionnaires tried out before the final questionnaire was administered (Neuman 2011).

3.8.1 Triangulation

The aim of using a number of research methods “is to obtain as representative a range of responses as possible to enable” the researcher “to fulfil the objectives of the study and to provide answers to key questions” (Bell 2010 p.122). It also provides a way to “cross check findings” (Bell 2010). Using a number of methods is known as triangulation, viewing something from different perspectives to
confirm or challenge the findings of one method with the findings from another (Laws et al. 2003).

3.8.2 Validity
There are two types of validity (Scott and Morrison 2007). These are known as internal validity which is concerned with how accurate the findings are to reality and external validity which is how the findings can be related to other studies. To enhance validity the methodology was precisely set out so that other researchers could replicate the study in another setting (Yin 2009).

3.8.3 Limitations of this study
The research was carried out with a small cohort of students and lecturers in one department in a single third level institution. Hodkinson and Hodkinson in 2001 (p.10) state that “case studies can make no claims to be typical”, therefore the results of this case study cannot be taken as “representative of some larger population”. As the questionnaire was anonymous it could only be administered at one lecture so for that reason it was limited to those students attending on that day.

3.9 Data Analysis
The interview recordings were transcribed which allowed the data to be examined thoroughly and is considered the initial step in the analysis of audible data (Bailey 2008; Kvale and Brinkmann 2009). The data collected in the questionnaires was coded and then entered into the IBM SPSS statistics software. Statistical functions in this software package help with the data analysis and allow the results to be presented in a readable format.

3.10 Ethical Issues
Ethical issues are about the rights and protection of the participants and the researcher. The misappropriation of the information gathered and the obligation to report the findings accurately are also considered ethical issues (Newby 2010).

Having explained the research project to the Head of the Geography Department and the module coordinator, access approval to the research setting was received.
To gain informed consent from the student cohort, they were informed as to what the research was hoping to achieve and how data would be gathered. They were also informed that:

- They were under no obligation to participate.
- The questionnaire was anonymous.
- The results were confidential.

The students who attended the group interview gave permission for the interview to be recorded and were informed that their identity would not be disclosed in any part of the research. Their consent was obtained orally (Cohen et al 2011).

The staff members who were asked to complete the questionnaire were informed as regards the aims of the research and that the questionnaire was anonymous and confidential.

The results obtained in both questionnaires were examined and reported accurately. The interviews were recorded and later accurately transcribed.

**3.11 Conclusion**

The objectives, research questions and participants who took part in this study have been outlined. The case study was considered the appropriate methodology for this research. A mixture of qualitative and quantitative methods was used to cross check the data collected from both students and staff. The manner in which the research was conducted has been explained and the limitations of this study defined. In the next chapter the findings gathered will be presented.
Chapter Four: Research Findings

4.1 Introduction

The methodology used in this case study was outlined in the last chapter. In this chapter the data gathered using the following qualitative and quantitative instruments is presented:

- Student questionnaires (Appendix G).
- Lecturer questionnaires (Appendix H).
- Record of student activity on the Blog and students requesting assistance to upload the assignment (Appendix L).
- Two interviews with the module’s lecturer (Appendix I).
- Student group interview (Appendix J).
- Informal interviews with twenty students during a weeklong fieldtrip (Appendix K).
- Trends arising from the comparison of the results that students attained in this digital assignment with those attained in a traditional assessment method, a multiple choice test, were studied.

The analysed data will be organised in accordance with the research questions considered in the previous chapter and under the heading of the topics that were explored (imagery in geography, assessment of student learning, formative assessment and digital literacy) to help answer these questions. Before the data is presented a short profile of the research participants is presented.

4.1.1 Research Participants

One hundred and four students registered for the 2nd year undergraduate meteorology module in September 2012. The vast majority of these students were ‘digital natives’ 19 years old (+/- 1). Fifty nine of the sixty one students present at the lecture where the questionnaire was distributed completed and returned the questionnaire.

The students who attended the group interview were all 19 years old and use digital technologies in social communication daily and less frequently in learning. The students who attended the field week were all 19 or 20 years old.
There are 13 academic staff members in the Geography department and all completed and returned the questionnaire. The majority of these lecturers have many years teaching experience and possess varying amounts of expertise using digital technologies in teaching and assessment. Some staff members are very active in employing new technologies in teaching, learning and assessment.

4.2 Findings

Pooling all of the information gathered using each of the research instruments listed above, the following are the findings in relation to each of the research questions.

4.3 Research Question 1: How can an effective assignment be designed using digital tools?

The three factors that influence student motivation to learn were considered in the design of the assessment. In the 1st interview with the lecturer/co-ordinator of the meteorology undergraduate module the aims of the new assessment were explained as follows:

- The assessment needs to be “observational and more holistic”
- It should take the students away from the “scientific data into the real world to look at the whole picture”. By doing this “hopefully it will pull them
away from looking at data as just numbers and to link them [the data] to the real environment”.

- It also needs to “synthesize their observation a little bit more to what is actually around them”.

### 4.3.1 Why use digital tools?

In the interview process the lecturer stated why using digital tools may help promote learning:

A lot can be learned if students see each other’s images, they may give them some ideas.

They see what is permissible, students have a strong sense of what is allowed and not allowed and I want to break that idea as they can do [take images of] whatever [weather event] they want.

It will get them to look at the world as they’ll see through other people’s eyes. They may notice things that they may never have thought of as weather.

Making the images visible to all may help to up the standard especially that of the middle range students when they see what the better students have produced.

It may also be a different entry point for students who may find it difficult in the classroom work, the theories and looking at data so if they see it in real life they may get it this way if they haven’t got it in class.

I may be able to give pointers before the final submission date and it might be helpful if it was possible for the students to upload peer reviews they carry out on each other’s assignments.

(Lecturer 1st Interview)

This assessment will assess the student’s ability to ‘analyse meteorological charts and satellite images in terms of theoretical meteorological processes for forecasting and diagnostic purposes’ which is one of the learning outcomes stated in the UCC Book of Modules 2012/2013.

The staff in the Learning Technology Unit in UCC assist departments with the integration of the e-assessment tools, offered on Blackboard, into any module. Advice on the options available on the different Blog tools and help to set the Blog up was provided by the unit’s personnel.
4.3.2 Feedback

This study found that a number of students requested feedback on the images they had gathered before and after lectures in the two weeks preceding the submission date. One student requested feedback by email. Feedback as in pointers, to help students improve the assignment was also given, on the Blog. The following (Fig. 4.1) is an example of the feedback provided by the lecturer.

Fig. 4.2 Feedback given on the Blog

Observation of the activity (Fig. 4.1) on the Blog shows that the student updated the assignment having read the feedback the lecturer had provided in the comment box.

Fig. 4.3 Activity on the Blog shows that the student updated her submission.

Observation of the Blog activity also reveals that not all students acted on the feedback given.

The activity also shows that 24.5% of the 104 students uploaded their assignments a week before the submission date. In the informal interviews two students of the twenty said they had uploaded their assignments early so that feedback could be given. Neither had received feedback on the Blog so they assumed their assignments were ‘ok’. In the group interview Student B said he had put his assignment up in time to receive feedback.

The students’ perceptions of receiving feedback in the comment area of the Blog were also explored. A small majority (52.5%) of the 59 of the students, who completed the questionnaire, agreed that using the Blog to provide feedback was a good idea. Two students who did not concur with this view felt strongly enough to leave these comments:
I am not sure this is a good idea for everyone. Many people like to keep their results to themselves and might not like other people seeing their feedback (unless it is positive of course!)

(Student questionnaire)

I think that would be unfair on those who had already completed the assignment

(Student questionnaire)

The large majority (89.9%) of the 59 students who completed the questionnaire and 17 of the 20 students who took part in the informal interviews indicated that they would have their assignment completed in time so that they would receive some feedback:

I think this is a great idea as the odd time I am not 100% confident in the way I pick up the question or the way I have chosen to respond.

(Student Questionnaire)

This was reinforced by the following comment:

Usually we don’t get feedback on summative assignments so I think this is a good way and the summative ones are important.

(Informal Interviews)

The students’ attitudes regarding the reading and acting in accordance with the feedback provided, was also looked at. The bar chart (Fig 4.4) shows the response to the question asked on the questionnaire.

![Students' attitudes to formative feedback](Fig.4.4 Students’ attitudes to responding to formative feedback.)
The chart (*Fig 4.4*) reveals that all of the following would read and act in accordance with the feedback to improve their assignment before the submission deadline.

- the three students who attended the group interview
- the twenty students who took part in the informal interviews and
- 89.9% of the 59 students who completed the questionnaire

The following comment emphasized how one student felt about the question posed:

> Definitely, I would set the deadline date a week in advance in my diary. I think this would really help achieve a better result.

(Student Questionnaire)

Student B gave the following response to the feedback provided revealing that the feedback given to one student might have an impact on how other students do their assignments:

> The issues that the lecturer raised with the first assignments showed what was needed and if the lecturer said a chart would improve the assignment that meant more marks so of course you would do the same.

(Student Group Interview)

As outlined most of the students thought getting feedback on the Blog was a good idea but the lecturer raised concerns about the amount of time required to provide feedback to all of the students.

The main issue was the class size:

> Realistically, there is no way that I could pre-mark assignments for a class of this size. I was able to give a few pointers to people who had submitted early but if all of the assignments were submitted early I would not be able to do them all.

(Lecturer 2nd Interview)

### 4.3.3 Digital Literacy

A number of issues relevant to the area of the students’ abilities to upload to a Blog emerged during the assignment submission period. Some students requested assistance uploading the assignments. To gain the students perceptions on these issues the following questions were put to them in the questionnaire and asked at the group interview. Students were asked if they agreed with the statement “I had
no difficulty uploading the assignment to the Blog”. A majority (54.3%) of the students surveyed indicated that they did not have problems with the uploading of the assignment. This opinion was supported by the following student comment:

I had no problems uploading to the Blog and was happy with how it looked.

(Student Questionnaire)

Students B at the group interview maintained that it only took him twenty minutes to upload the assignment.

Observation of the entries made on the Blog indicates that 29.8% of students experienced problems when uploading. These problems were mostly related to the addition of the image. Some students had problems inserting the image, some with resizing the image and others with aligning the image and text. The information on what problems students were encountering was gathered when students contacted staff members for help with their submission and by observation of the activity on the Blog (Appendix L).

Here is an example of a student requesting assistance with uploading the image:

Just a question on the uploading of the weather image. When I go to upload my assignment it doesn’t seem to work. When I click on the tree icon and then on the browse button it is blocking me. I’m using college computers. What should I do? Any information would be greatly appreciated.

(Student Email)

Problems with the uploading were also highlighted by Student A:

It took me three days to upload it, I thought I’d never get it done; I was so frustrated wasting so much time in the end I asked one of my housemates for help.

(Student Group Interview)

The activity on the Blog showed that Student A did not manage to upload the assignment correctly.

Student C also had problems:

It took me about three hours, I put it up, deleted it, put it up again, deleted it, it seemed to go on for ever. I didn’t know how to crop the image and in the end left it although I would have preferred if the image was smaller.

(Student Group Interview)
Responses to the question as to whether the student had used the instruction sheets provided on how to upload the assignment show that a large majority (83.1%), who completed the questionnaire, agreed that they had followed the instructions. This was particularly reinforced by this comment:

The instructions given were easy to follow and this made uploading the assignment easy.

(Student Questionnaire)

Student A and Student C (Group Interview) both said they had followed the instructions but as noted both experienced problems when uploading their assignments.

The staff members were asked if they thought students had difficulty with submitting assignments through Blackboard. The belief that students did not have difficulty submitting assignments through Blackboard is supported by a majority (61.5%) of the lecturers surveyed. 15.4% thought that some students did experience problems (Staff Questionnaire).

The students were probed further, in the questionnaire, with a more general question on how they found using Blackboard for uploading assignments in general. The answers to this question are in the following table (Table 4.1).

<table>
<thead>
<tr>
<th>Question</th>
<th>Agree</th>
<th>Disagree</th>
<th>Undecided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uploading assignments to Blackboard is Easy?</td>
<td>67.8%</td>
<td>8.5%</td>
<td>23.7%</td>
</tr>
</tbody>
</table>

*Table 4.1 Uploading Assignments to Blackboard*

This comment was left regarding this question:

I prefer to put my assignments through Blackboard as I’m well able to do it and find it easier than other people would.

(Student Questionnaire)
At the group interview the three students agreed that submitting assignments through Blackboard was usually “ok” but voiced a concern that some lecturers asked for a paper copy as well as submitting the assignment through ‘Turnitin’. Turnitin is a software package used to detect plagiarism and can be used for online grading. They thought that one form of submission should be enough.

As already mentioned the Blog activities show that more than a quarter of students experienced difficulty uploading the assignment and the record log shows that 10% of students requested help to do this task, therefore, another question was posed to the students.

*Did they receive help from friends to upload the assignment to the Blog?*

![Fig. 4.5 Students that received help from another student to upload the assignment](image)

The response, *Fig. 4.5.*, shows that 20% of students received help to do so.

The lecturers’ questionnaire gave a wide range of views on students’ digital literacies. One stated that students do not have problems but then went on to highlight an issue students encounter when uploading assignments:

> Students are not given an option to delete their own work so if they accidentally upload the wrong document, they cannot delete it. Staff members are then flooded with emails about this problem and have to delete the document for the students. This staff member ended this comment saying that these hassles turn people off using technologies.

(Staff Questionnaire)

Another lecturer expressed the view that the differing computer literacies of the students can significantly hamper some if digital tools are the basis of the assignment. This respondent also expressed surprise at how much some students
struggle with a variety of digital tools (Staff Questionnaire). The module co-
ordinator claimed that as some students are not acquainted with digital tools a lot of

time is spent resolving technical issues (Lecturer 2nd Interview).

4.4 Research Question 2: Has using a non-traditional assessment
method helped students to learn more about how different weather
events occur and changed the way they observe the weather?

Nearly all of the students 83.1% (Fig.4.6) who completed the questionnaire gave a
positive response to the statement that this assignment would change the way they
look at weather. Almost all (93.2%) agreed that the assignment motivated them to
learn more about the conditions of the weather event that they had photographed.

A student who requested help with uploading the assignment made the following
comment when asked where the image had been taken:

I came out of the science building and was thinking about the assignment and I
looked up and couldn’t believe what I saw. I took my phone out and took this
image which shows a front. It was great to see what we studied in the lectures- it
makes it real.

(Student’s Comment)

The following email was received requesting guidance. It shows the student was
trying to work out the relationship between theory and the real atmosphere by
posing questions about it:

I was just wondering if a ridge of high pressure can cause cloud?.....in my photo
there is cloud coming in from the north along the coast but the only thing near it on
the map is a ridge?!

(Student email)
4.4.1 Use of the Blog

The questionnaire responses highlight that the vast majority of students (96.6%) viewed other assignment entries before they uploaded their own and the majority of this group (76.3%) thought that they had learned more on the assignment topic by doing so.

Student A and C agreed that viewing other assignments helped them to learn more.

Student A strengthened this perception with this comment:

> You could see how others are doing the assignment and if you left out something that someone else did you could do it before uploading. Some were up before I had started [the assignment] so that helped.

(Student Group Interview)

Student B said he only looked at the entries with images of fog but did agree that it helped him to learn more about fog formation:

> I only looked at the ones that had fog as their topic as that was what I was doing so yes I suppose it did.

(Student Group Interview)

4.4.2 Capture of Weather Images

The study found that a majority (54.4%) used mobile phones to capture the image that they used for the assignment.

Two of the three students at the group interview had used their mobile phones to capture the weather image and were happy with the images obtained.

4.4.3 Use of Imagery

The vast majority of the images of weather events uploaded to the Blog were of a very high quality (Appendix M). The vast majority (87.8%) of assignments had a weather chart, a satellite image, or both. The percentage of assignments that also had a diagram explaining the weather event and/or temperature/humidity readings from a nearby weather station was 21.3%.
4.4.4 Students Results Trend

In this assessment 90 students out of 104 students uploaded their assignment to the Blog. The grades the students attained in this non-traditional assignment and the grades attained in a traditional assignment (MCQ) cannot be given due to confidentiality restrictions. Both sets of grades were compared and the general patterns can be included without breaking any restrictions.

The trend that emerged shows that the students who did not perform well (28 - 40%) in MCQ assessment increased their grade by an average of 23.9% in the weather image assignment.

The middle range students those who attained a score of 41 - 60% in the MCQ increased their grade by an average of 9.1% in the weather image assignment.

The students who attained grades above 60% in the MCQ decreased their grade by an average of 4.1%. The percentage decrease ranged from 1 to 21%.

4.5 Research Question 3: Students perceptions of using non-traditional assessments.

4.5.1 Digital tools

On the question of digital assignments versus paper assignments a small majority (Fig.4.7) of students were in favour of digital assignment (54.2%).

![Fig. 4.7 Students’ preference for digital assignments.](image-url)
The study found that this cohort of students were positive towards the use of Blogs in assessment. The data gathered in relation to each of the digital tools i.e. Blogs, Wikis and Discussion Forums (on the questionnaire) show that less than half of the students had previously used a Blog created on Blackboard and a significant minority (24%) had used Blogs outside of this platform.

When asked if they liked using Blogs in the Blackboard environment (Fig. 4.8) a majority (64.4%) agreed with the statement put to them.

![Fig. 4.8 Percentage of students who like/dislike using Blogs in the VLE.](image)

The following table (Table 4.2) shows the percentage of students who have used the digital tools in assignments and the percentage of students who liked using them.

<table>
<thead>
<tr>
<th>% of Students</th>
<th>Blogs</th>
<th>Wikis</th>
<th>Discussion forums</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students who had used this tool in assignments.</td>
<td>46%</td>
<td>20.5%</td>
<td>33.9%</td>
</tr>
<tr>
<td>Students who liked using the tools.</td>
<td>64.4%</td>
<td>11.9%</td>
<td>15.3%</td>
</tr>
</tbody>
</table>

*Table 4.2 Digital Tools in Assessment*
When students were asked if they found using this Blog, for uploading the assignment useful the majority agreed or strongly agreed (Fig. 4.9)

![Bar chart showing students' perceptions of using a Blog](image)

**Fig. 4.9 Students perception of the benefits of using a Blog.**

Student C response to this question was as follows:

> I think it was good to use the Blog, now I know it worked and the world is a technology driven place so it’s good to use these technologies.

(Student Group Interview)

Another student remarked that it was ‘nice’ to see their assignment on the Blog (Informal Interviews).

This study found that a small percentage of students (10%) found the weather image assignment more challenging than the traditional MCQ (Informal Interview).

### 4.5.2 Peer reviews

The students were requested to carry out a peer review on three assessments/entries to the Blog. Only one student made an attempt to do so.

A number of students (18.7%) commented on why they had not carried out the peer reviews. Most of these comments related to the large number of assignments they had to do around the time of this assignment:

> I just didn’t have time I have so many other assignments to finish. Some other modules were finishing at the same time, there are lots of assignments to get through and a MCQ test also. I forgot about the peer review part.

(Student Questionnaire)
This issue was also highlighted at the informal interviews. Only one of the students (informal interviews) mentioned that ‘no marks’ would have been gained by carrying out the peer review. This point was also brought up by Student B:

\[\text{it \{the peer review\} wasn’t being marked so there was no need to do it}.\]

(Student Group Interview)

The questionnaire results show that 44.1% of students would have attempted to do the peer assessment if it had been anonymous and one student left a comment stating that it would be better if all peer reviews were anonymous.

Student A responded when asked why he had not done the peer review task:

\[\text{It would have been better if it were anonymous}.\]

(Student Group Interview)

This idea was also voiced during the informal interviews with one student saying that anonymous peer reviews put less pressure on the student doing the review.

The majority (58.8%) of students (questionnaire) responded positively to the statement ‘I learn from doing peer reviews’ and 52.9% thought that carrying out peer reviews was a valuable exercise. Students in the group interview all thought that they learned from doing peer assessments and one made this comment supporting that view.

Student B:

\[\text{If you know a peer review was going to be done then you make sure your work was sharp but you wouldn’t spend a lot of time at it if the peer assessment mark wasn’t going to be part of your overall mark}.\]

(Student Group Interview)

A majority (55.9%) of the 59 students surveyed had carried out peer reviews previously. Table 4.3 shows the response students gave to whether they liked doing peer assessments and if they felt uncomfortable carrying out peer assessments.
A significant minority of students (26.6%) do not find it difficult to give an impartial assessment of their friends’ assignments whereas a larger percentage of students (32.4%) find it difficult to remove personal feeling when carrying out this task (questionnaire). The students at the group interview agreed that they would increase their friend’s marks to make sure that they would pass and even if it was anonymous they would be able to tell if it was their friend’s assignment.

Students were asked if they thought peer reviews were unfair. This study found that a minority of the 59 students (17.6%) who completed the questionnaire believe that they are unfair and 41.2% disagreed with this statement. When asked if they like being assessed by their peers 29.4% answered positively and 32.3% disagreed.

4.6 Research Question 4: Staff perceptions of using non-traditional assessment methods.

4.6.1 Using digital tools in assignments

Staff members were asked if they request students to use digital tools in assignments. The response shows that a majority (53.8%) of lecturers did ask students to use digital tools. When asked if their students were asked to submit the assignments through Blackboard, a majority of 69.9% (yes) responded with a positive response.

The study found that a majority of the lecturers’ surveyed (61.5%) were aware of the assessment tools that are available on Blackboard but that only 38.5% thought that setting assignments using these tools was easy.
The following responses were given:

In one assignment I set for 3rd year students I ask them to produce a blog using Wordpress. Students don’t have difficulties with it. They can show their work to friends and family very easily. It is not as easy to do this if the blog is on Blackboard. The procedure to use some Blackboard assessment tools are over complicated.

(Staff Questionnaire)

This stance was supported by this comment:

I would use more of the assessment tools if the menus on Blackboard were more straightforward.

(Staff Questionnaire)

Not surprisingly there were some positive comments also:

It’s important to allow students a mix of assessments so the “traditional” essay can now be complemented by a range of other assessment types using the technology whether it is on Blackboard or not.

(Staff Questionnaire)

This thinking was supported by this comment:

I have more interaction with students since I started using digital tools.

(Staff Questionnaire)

The following chart, *Fig. 4.10*, shows the response received when the staff were asked to indicate their level of agreement with this question ‘I am interested in using some of the assessment tools that are available on Blackboard’. The majority of staff (76.2%) agreed or strongly agreed with the statement. No one disagreed with the statement.
Fig. 4.10 Staff interest in assessment tools on Blackboard.

The staff members gave a broad range of ideas relating to the use of Blackboard. Here are some of the ideas given:

(a) One lecturer requested the students to submit their assignments by email as this lecturer preferred to correct assignments online. (Staff Questionnaire)

(b) Another lecturer indicated that he felt he gave better grades when correcting paper assignments. (Staff Questionnaire)

(c) A lecturer wrote that asking the students to put their projects online saved the students money as it could cost up to €30 to have a poster printed and that this also reduced the number of charts/posters on the floor in the office. (Staff Questionnaire)

4.6.2 Peer Reviews

A minority of the 13 academic staff (30.8%) surveyed had asked students to carry out peer assessments.

The majority of lecturers surveyed believe that students learn from doing peer reviews (69.2%).

A large majority (84.6%) of the staff thought peer reviews would work better if they were anonymous:

Anonymous peer assessment can work well for the older year groups who are more mature in their attitudes.

(Staff Questionnaire)
Some staff members wrote comments on peer assessment, two comments related to the challenge of large class sizes, the time it takes to organise the task and the time it takes to follow up on it. A small majority of staff believe that it is difficult to organise peer assessment tasks online.

Finally a very strong comment went as follows:

Students HATE the idea of peer reviewing each other’s work! I have tried this a few times and got downright hostility and refusal from them each time. However, if they can be persuaded to try, I think the potential as a learning experience is huge.

(Staff Questionnaire)

4.7 Summary
This study has found that an assessment using digital tools can be designed following the same guidelines that are followed when designing any effective assignment. It found that both students and staff are favourable towards using technologies in assessment. Some issues and concerns have been highlighted by some students and staff members in using digital tools and the way they are utilized in assessment practices.

In Chapter 5 these findings will be examined in relation to each research question and also discussed in light of the literature review.
Chapter Five: Discussion

5.1 Introduction

This chapter will analyse and discuss the findings that have been presented in Chapter Four. The findings will be discussed in relation to the research questions and in light of the relevant research cited in the literature review.

5.2. Research questions and research findings:

5.2.1 Research Question 1: How can an effective assignment be designed using digital tools?

Bloxham and Boyd (2007) assert that many factors should be considered when designing an assignment in higher education. The research findings analysed in this section of the discussion were all issues taken into consideration at the design stage of the assignment.

5.2.1.1 Students use of imagery in this assignment

As outlined in the last chapter, the vast majority of students included visual illustrations to demonstrate their understanding of weather processes. This student cohort’s use of imagery strengthens Sanders 2007 view that ‘today’s students’ have a ‘fascination with the visual’.

5.2.1.2 Developing Observation skills

Many researchers claim that field work activities help develop students observational skills and also that learning is promoted by being actively involved with the process (Barrett and Woods 2012; Scheyyens et al 2008; Boyle et al 2007; Besenyei et al 2004). Having taken these findings on-board an element of fieldwork was included in the assignment. The students’ reaction to this part of the assignment was very positive. This is consistent with Fuller et al (2003) research which found that students’ views of fieldwork were also very positive.

The vast majority of students surveyed felt that taking an image of a weather event and having to consider the process that created the event had changed the way they would look at the weather. This compares favourably with Barrett and Woods (2012) findings that the fieldwork program which was created to increase an
understanding of the atmosphere was successful in developing students’ interest in meteorology.

The following comment resembles a student’s comment in Boyle et al (2007) research on the value of field work (quoted on p.8):

I came out of the science building and was thinking about the assignment and I looked up and couldn’t believe what I saw……. It was great to see what we studied in the lectures, it makes it real.

(Student’s Comment)

The majority (93.2%) of students also agreed or strongly agreed that carrying out this task helped motivate them to learn more about the conditions that produced the weather event they had photographed. At the group interview Student A explained why, he thought, having to take an image motivated him to learn more as follows:

When I read the details of what we were asked to do I was on the lookout for a good image to take. I took some images of fog and a few cloud types and had gone over the lecture notes about the conditions for all of these. Then I saw what I thought would make a better picture so having to take the photograph did motivate me to learn more.

(Student A, Student Group Interview)

A student attending the field trip made the following comment when asked about the practical section of the assignment:

I think a good image was important as it is the first thing that is seen on [your entry on] the Blog. It was good to get out and take an image rather than just explaining the conditions in an image someone else had taken, you had to learn for the image you took.

(Informal Interviews)

These comments confirm that the students felt that the activity of taking the image helped motivate them to learn more.

5.2.1.3 Choosing the digital tools and getting assistance setting up the tools

The literature review provided insight into the use of some of the e-assessment tools that are available on Blackboard (Duffy and Burns 2006; Smith et al 2009; Kardong- Edgren 2009; Witney and Smallbone’s 2011; Scheyvens et al 2008). Using a Wiki for this individual assignment was rejected as being more suitable for
group work. The discussion forum tool does not offer an option to add an image so therefore it was not suited. The campus Blog was selected as providing the tools required i.e. students could upload their individual assignment and include as many images as they wanted.

Students seldom have the chance to see a range of their peers’ assignments (McConloque 2012). Using the Blog as a platform for students to upload their assignments is an innovative way of providing students with an opportunity to view their peer’s assignments.

Blackboard has a range of ‘easy to use’ e-assessment tools, such as the Blog, available for lecturers to use. The study found that even though assistance is available to staff, on how to introduce all of the e-assessment tools on Blackboard into a module assessment practice, 15.4% of lecturers prefer to use other freely accessible applications, such as WordPress. A significant minority of students, who completed the questionnaire, claimed that as part of assessment in other modules they had created Blogs and contributed to Blogs using WordPress. One of the reasons, given by the lecturers for using these applications is that they are easier to use than the applications on Blackboard. This finding replicates the research of Prescott et al (2013) who found that the VLE in their institution was not being fully utilised due to the availability of free online user-friendly applications. If lecturers used these tools it may help address the under use of VLE platforms in Irish universities highlighted by Cosgrave et al (2011).

Assignments can be created around the technologies that are readily available to both staff and students (Wakefield and France 2010). Since it can be assumed that the majority of students have mobile phones (Margaryan et al 2010) with in-built cameras (Jefferies 2010) it may be inferred that the most readily available technology for students is the mobile phone. This study found that the majority of this cohort of students used their mobile phones to capture the image for the assignment.

5.2.1.4 Digital Literacy

Research into the digital literacy of ‘digital natives’ referred to in the literature review indicates that there is some debate as to whether it can be assumed that all
digital natives are digitally literate (Kennedy et al 2008; Smith et al 2009; Helsper and Eynon, cited in Ng 2012). Findings in this study show that 29.9% of students (observation of the Blog activity and students requesting help to upload the assignment) had difficulty uploading the assignment even though 83.1% of students who completed the questionnaire, stated they had followed the instructions provided. A student left a comment on the questionnaire about the instructions provided stating that they were “easy to follow” whereas two of the students who attended the group interview maintained they had followed the instructions and still experienced a lot of difficulty uploading the assignment. This would endorse Smith et al (2010) opinion that when it “comes to technology” there is no such thing as a “stereotypical student”

This study highlights that the majority of lecturers surveyed thought that their students did not have difficulties using digital technology. This opinion supports Morgan’s (2003 cited in Prescott et al 2013) view that not all students are as ‘tech savvy’ as their lecturers believed. When the results from the lecturers’ survey are looked at more closely they show that the lecturers who support this claim are the lecturers who did not use digital technologies in their assessment practices. Those that did use digital technologies agreed (100%) that some students do experience difficulties. The following comment reinforces this view:

“In practice, the differing computer literacies of our students can significantly hamper some if digital tools are the basis of the assignment. I use a variety of web-based media…..services for assignments and am surprised at how much some struggle with these tools.

(Lecturer questionnaire)

5.2.1.5 Formative Feedback

Formative feedback was provided in many different ways during the weeks before the submission deadline. Several students showed the images they had taken to the lecturer on their mobile phone and wanted to know ‘whether they were suitable images’ (Lecturer 2nd interview). Feedback was also provided in the comment area of the Blog. Boud in 2000 claims that feedback is only effective if the student uses the feedback to improve the assignment. Some students in this study uploaded their assignments to the Blog in time to receive feedback. Activity on the Blog shows that 50% of the students who received feedback used it to “close the gap”
(Macfarlane-Dick and Nicol 2006; Bailey and Garner 2010) before the submission deadline. A student wrote the following on the questionnaire:

If the feedback points something out to you I would think this is because it is something that needs fixing so I would fix it before the date it is due in.

(Student questionnaire)

The study also showed that feedback given was read not only by the student whose assignment it referred to but by other students also. The other students used the feedback to improve their own assignments (interview with students and comments given on the questionnaire).

The lecturer did have some concerns with this method of providing feedback. The number of students in the class was too large to provide feedback to all who had their assignments up in time and as the assignment would have to be marked twice the workload would double. This downside was highlighted in the research carried out by Wilson and Scalise in 2006. The lecturer also found that it did not fit in with the style in which feedback is usually given. This supports Lingard (2007) study where the lecturers’ style of teaching was one reason given for the non-use of the VLE in UK universities.

There were advantages also, as highlighted by the lecturer in the interviews, to having the assignments on the Blog:

- When a student asked for feedback after a lecture or called to the office the lecturer accessed the assignment on the Blog with them.
- When wrong information was given (by the student), in the text accompanying the image, it was corrected in the comment area so that when other students were viewing the assignments they would know that there was an error in the text.
- Images on the Blog were shown during the lectures and the weather conditions required to produce the event were discussed. The lecturer felt that by doing this, positive feedback was being provided and other students were being encouraged to do the assignment.
If the grade is given with the feedback on the assignment studies have indicated that students will not read the feedback (Miline et al 2008; Gibbs 2002, cited in Wong 2010). Therefore, Taras (2003) recommends that the feedback be given separately and before the grades. The feedback, on this assignment, was given well in advance of the submission deadline providing the student with an opportunity to update the assignment before the grading process.

The following feedback given on the Blog (Fig 5.1) shows what Bloxham and Boyd (2007) may consider as good feedback: clarifying where it is good, where it can be built upon and returned in time so that it can be updated before the final submission date.

Record of the activity on the Blog (Fig 5.2) provided evidence that this student used the feedback effectively and added the additional data as recommended.

Although the majority of students indicated that the comment area was a good place to receive feedback, two students expressed valid reasons as to why they thought it was not an appropriate place. This is an area where further studies are needed.
5.2.1.6 Time demands and motivation

Dabbagh (2002) maintains that if it takes students more time than they had anticipated to upload their assignment, their motivation to complete the task as planned is reduced. Accurate guidelines were given, as recommended by Keramidas et al. in 2007, on how to upload the assignment. Nonetheless it took some students longer than what they had expected it would take to do the task. Dabbagh (2002) and France and Wakefield (2011) research into the production of an e-card highlighted that some students were critical of the time they had to spend editing the images and considered the time spent as ‘time wasted’. In this study a number of students claimed that they were frustrated by the amount of time it took them to upload the assignment (questionnaire, observation of the activity on the Blog, group interview and informal interviews). Some students gave up editing their submission even though the assignment did not appear on the Blog as they had envisaged.

The following quote emphasises this issue:

   I spent three hours trying to upload the assignment. I thought I’d never get it done. It took me a while to crop the picture as I couldn’t resize it. I wish it looked better but I had to give up and leave it.

   (Student C, Student Group Interview)

5.2.2 Research Question 2: Has using a non-traditional assessment method helped students to learn more about how different weather events occur and changed the way they observe the weather?

As previously noted the vast majority of students confirmed that this assignment has changed the way they will look at the weather. They also said that they had learned from viewing other assignments on the Blog. Students’ viewing of other assignments is also evident by the activity that took place on the Blog. The sample answer provided by the lecturer was viewed 65 times. It also shows that the assignments that were uploaded shortly after the Blog was made visible and those uploaded close to the final submission date were the ones that were viewed the most. Example: Fig. 5.3
Fig. 5.3 This assignment was viewed 42 times.

The campus Blog on Blackboard records the number of times each student looks at the Blog. These records (Appendix N) show that students viewed the Blog between 3 and 46 times up to final submission date. The exact reason why a student would look at the Blog 46 times is unknown but the students at the group interview all confirmed that they had viewed other assignments. They claimed that viewing the Blog helped them to learn more about the topic. This was also corroborated by students who took part in the informal interviews and those who completed the questionnaire.

The lecturer highlighted the following: Here is an example of an email from a student who was looking for guidance with what the image she had taken was showing, the student is becoming more discriminating in her approach to the environment. The student is trying to work out the relationship between theory and the real atmosphere and posing questions about it:

I was just wondering if a ridge of high pressure can cause cloud?.....in my photo there is cloud coming in from the north along the coast but the only thing near it on the map is a ridge?!..

(Student email)

This is the reply given to the student:

Good question!! A ridge of high pressure will usually inhibit cloud formation but it is possible to have some layer clouds. It could just be a little local cloud that has nothing to do with the ridge. Or it could be the edge of some other system. I suggest you use the satellite image to see the bigger picture in relation to cloud and then make up your mind.

(Lecturer’s reply)

Student learning was probed during the second interview with the lecturer. In response to the questions on this subject the lecturer expressed the view that
students had to apply their recent understandings of meteorological processes to actual weather events so this had helped them to learn about the atmospheric processes involved:

I see a development in their confidence in applying the theory….that is usually a difficult step for students to make as they have no way of checking their answer.

(Lecturer 2nd interview)

Not all students managed to upload the assignment. In three assignments the weather image was uploaded with no accompanying text so no grade was given.

The high grades allocated to the other students, for this assignment, also emphasizes that learning had taken place.

5.2.2.1 Comparison of Students Grades

The comparison of the grades achieved in this assignment and those achieved in the traditional multiple choice quiz (MCQ) indicate:

- That most of the students who performed unsuccessfully in the MCQ test got better grades in the weather image assignment.
- The majority of students who attained average grades in the MCQ also achieved average grades in the weather image assignment.
- A large number of students who had attained very high grades in the MCQ had their continuous assessment grade reduced slightly by the mark they achieved in this assignment.

These findings support Sternberg et al (2008) conclusion that the MCQ method of assessment does not suit all students’ learning and thinking styles and that alternative assessment methods do not suit all students’ learning and thinking styles either.

About 10% of students who took part in the informal interviews maintained that the weather image assignment was more challenging than the MCQ test. All agreed that understanding the theory that produced the weather event was important. One of the students at the group interview found this assignment more challenging than the MCQ. When asked if completing this assignment had helped develop their understanding of how weather events occur, one student gave the following reply:
I had decided to take a photograph of fog, as there seemed to be a lot around, and I knew how that was formed but then I saw a rainbow when I was coming out from town so I took [an image of] that instead. Then I had to go over what conditions produces a rainbow. I don’t think I’ll ever forget what conditions produces a rainbow.

(Student Group Interview)

This finding compares favourably with Struyven et al (2005) assertion that students felt that alternative assessment methods required them to understand the theory rather than learn by rote. The lecturer made the following comments when asked about the assignment and if it had worked well:

Many students are applying their recent understandings of meteorological processes to actual weather events so I’m assuming that this is helping them to learn about the atmospheric processes involved.

It worked well from my perspective in that many students were clearly thinking about what they were seeing and how they might interpret it.

(Lecturer 2nd Interview)

5.2.3 Research Question 3: What are the students’ perceptions of using non-traditional assessment methods?

5.2.3.1 Digital tools in assignments

More than 50% of the 59 students surveyed expressed a preference for digital assignments to paper assignments. Two students at the group interview and the students who took part in the informal interviews all agreed that using digital tools in assignments were the “way to go”:

Student C

I know I had problems putting the image on the Blog but if I had to do it again I’d know how to do it so you learn when you have to use them so I suppose having some assignments using them is the way to go.

(Student Group Interview)

This finding substantiates Surgenor (2013) claims that university students expect and want assignments that have a ‘hands on and/or online’ component.

5.2.3.2 Peer Reviews

The questionnaire results tell us that the idea that students learn from doing peer reviews is supported by 58.8% of the students. It also reveals that 50% of the
students enjoy doing peer reviews. This percentage is less than that found in the McGarr and Clifford study published in 2012 where the vast majority of students enjoyed carrying out the task.

The majority of students (73.4%) claimed that it is not difficult to keep their personal feelings out of the task. This high fraction would appear to contradict Papadopoulos et al (2012) who found that the “peer effect” was a significant issue in the way student teachers, in Kozani, Greece carried out peer assessments.

5.2.3.3 Reasons why the students did not participate in the peer review

Boud (2000) points to three grounds why some students will not participate in assessment tasks. Different disciplinary cultures, diverse pressures of competition and dissimilar staff ideologies were the reasons that he cited. This study revealed three specific reasons why the students, surveyed in this research did not carry out the task:

- Too many other assignments to complete around that same time as the peer reviews were requested.
- The peer assessments were not anonymous.
- A small number of students brought up the issue that “no marks” would be gained for the extra work.

Disappointingly, only one student made a somewhat weak attempt at a peer review. The other students chose not to complete this section; a number of students listed the three reasons above as justification for not doing so.

5.2.4 Research Question 4: What are lecturers’ perceptions of using non-traditional assessment methods?

5.2.4.1 Digital tools in assignments

The majority of staff expressed interest in using e-assessment tools but only 50% had actually done so. A reason for not making use of these tools was the perception that a substantial amount of time and technical competence would be needed to set up the assignments. The time required to monitor the activity taking place on Blogs, Wikis and Discussion Forums also has a negative effect. Time is a resource that is very limited with staff cut backs and increasing student numbers. This finding, that the perceived cost in terms of time reduced the use of the VLE system,

This study found the Blog campus tool on Blackboard to be very easy to set up, with technical help available on campus. However, monitoring the activity daily did take some time. The author and lecturer felt that when running this type of assignment in future the time involved in monitoring activity could be reduced by setting times to check into the Blog. Allocating specific times when students, needing help to upload the assignment, could call would also help reduce the time spent on managing the assignment.

One lecturer highlighted that using a digital means of submitting assignments cuts costs for students as posters are expensive to print off. This suggestion supports one of Bridge and Appleyards (2008) research findings that students save money when they can submit their assignments digitally.

Many assignments across the geography discipline require the input of images and these can cause difficulty when being submitted electronically. A significant minority (23%) of lecturers and a student (group interview) posed the idea that a short video tutorial might be of benefit. Bridge and Appleyards (2008) considered an extra tutorial to address a somewhat similar issue in the discussion section on their research findings.

5.2.4.2 Lecturers views on grading of electronic submitted assignments.

Although one lecturer requests all assignments to be emailed to him, as this is his preferred way to correct essays the study found that 69% of lecturers do not think it is easy to correct assignments online. The lecturer/co-ordinator stated that:

> Short assignments are ok to mark on the Blog. I can see if they are being descriptive or analytical, you can see it all in front of you.  
>  
> (Lecturer 2nd interview)

5.2.4.3 Peer assessments.

The majority of lecturers agree that students learn by doing peer reviews and almost one third (31%) had made use of them in their assessment practices. These peer reviews were used when students had presented posters that they had designed
to demonstrate their understanding of a specific topic. Their peers were then requested to assess the posters.

The lecturers’ perceptions with regard to students’ reluctance to take part in the peer review process replicate Sullivan (2009, cited in Bay 2011) and McConlogue (2012) findings that the students are not willing to co-operate. One lecturer commented on the use of anonymous peer reviews as ‘anonymous peer assessment can work well for the older year groups who are more mature in their attitudes’.

It will be interesting to establish if this cohort of students will be keen to take part in peer assessments when they reach fourth year.

5.3 Summary

A substantial number of issues were highlighted during this research into the use of digital tools in the weather image assignment. As indicated the findings on most of these topics endorse previous research in this field while others illustrate that other methods of carrying out part of the assessment procedure should be investigated. Parts of the assessment worked very well i.e. capturing the weather image and uploading the assignment to the Blog. However, some students were frustrated with the submitting process. Providing feedback to large class size before the submission deadline may not be feasible but the comment box in the Blog is an acceptable place to deliver the feedback. Carrying out peer assessments are perceived to be beneficial and certain conditions may help persuade students to do these tasks. Non-traditional methods of assessment are favourable to both students and staff.

The next chapter will develop the conclusions that can be made from this case study and outline where further research should take place so that lecturers and students will be satisfied to take part in all sections of the assessment practice, considered, using digital tools that are available to them.
Chapter Six: Conclusion

6.1 Introduction

Assessment of student learning is a fundamental part of the educational system. The method of assessment used can influence the manner in which students approach learning. Sternberg et al (2008) contend that not all students may be able to demonstrate what they have learned in the same way.

Students coming into third level education expect and want some assessment practices that have a ‘hands on and online’ component (Surgenor 2013).

All higher institutions, in Ireland, support a VLE which are not being fully exploited. Making appropriate use of the e-assessment tools that are available on the VLEs would help address this issue and can also help promote higher order thinking (Cosgrave et al 2011).

The Hunt Report (2011) set out the National Strategy for Higher Education up to 2030. Assessment of student learning is highlighted in the report, as one of a number of areas where creative development is required.

Taking these four statements into consideration a case study was created to design and study the introduction of a non-traditional method of assessment. The new assessment was introduced into a 2nd year undergraduate Geography module to assess the students understanding of weather processes.

6.2 Review of the Case Study

On approaching this research study four areas of interest were identified:

- How to design an assignment incorporating digital tools and fulfil all the necessary criteria required to create an effective assignment.
- Would using technology in an assignment help students learn more about the topic being assessed and change the way they observe the weather?
- What is this cohort of students’ perceptions of non-traditional assessments?
- What are the lecturers’ perceptions of non-traditional assessments?
The case study methodology chosen was intended to allow a thorough understanding of the situation under analysis. Each stage of the research process was documented and any issues highlighted in one stage helped to guide the research in the next.

Following analysis of the findings a synopsis of the main results of this study will be presented in this chapter. Recommendations will be put forward where appropriate and areas that require further study will be highlighted.

6.3 Research Outcomes

Gathering information using many research instruments provided an opportunity for several issues to be highlighted by both staff and students. Starting with how an effective assignment can be designed these are the topics that were uncovered in this case study.

6.4 Research Question 1: How can an effective assignment be designed using digital tools?

Imagery is extensively used in the teaching of many areas of Geography and this use appeals to many of today’s students. Photographs, satellite images and weather charts play an important role in the teaching of meteorology.

There is a vast amount of research published, both current and past into assessment design. A significant amount of the recent assessment design research concentrates on the use of Web 2.0 tools in assessment practices. The Web 2.0 tools considered for this research are available on the VLE.

The research, referred to in the literature review, highlighted the factors that have to be taken into account when designing an effective assignment. These topics are assessment alignment, assessment validity and reliability and how the assessment method must be seen to be fair. Having studied these issues the designed assignment centred on the student capturing a digital image of a weather event, relating it to the current weather charts and uploading the finished assignment to a specifically designed Blog that was made available on the VLE.

The students were happy with the practical element of the assignment but a number of students did experience problems when uploading the assignment. The lecturer raised concerns that providing feedback to all students who had uploaded their
assignment in advance of the submission date would have the effect of doubling a tutor’s workload. As the class size average is in excess of 100 students this would be impractical. A minority of students surveyed were not in favour of having their feedback open to all in the comment area of the Blog. The explanations for this were that some students thought others might ‘piggy back’ on their hard work and the fact that not all students would be happy to see negative feedback being made public.

6.4.1 Recommendations to address the digital literacy and feedback issues

- A short video demonstrating how to upload the assignment could be provided on the assignment section of the VLE, which may help students who are experiencing difficulties with uploading the assignment.
- The Blog may work better for smaller classes, providing time for the lecturer to provide feedback for all students who upload their assignment at least a week before the final deadline.
- Blackboard has an option where a journal can be set up for each student. Access to the journal is to the tutor and student only so entries to the journal are private. This journal tool could be used as a place to provide feedback on the uploaded assignment.

6.5 Research Question 2: Has using a non-traditional assessment method helped students to learn more about how different weather events occur and changed the way they observe the weather?

The students felt that this assignment helped them learn more about the weather event that they had photographed. Having completed this assignment the majority of students believed that they would observe the weather differently in the future. The students maintained that having to go and capture an image for the assignment motivated them to learn more about the weather event they had photographed. Having the opportunity to view the other students’ assignments on the Blog also helped students learn more about the topic being assessed.

The trend of the grades that the students were awarded for the assignment shows that this assignment suited some students better than a traditional assignment. A minority of students found that the weather image assignment was more challenging than a traditional assignment (MCQ).
6.5.1 Recommendations

- To help make the assessment of student learning process fair a mixture of traditional and non-traditional methods of assessment should be used. Offering a range of alternative assessment methods will help address students perceptions of what assessment should be like in HE. It will also provide students with different thinking and learning styles with the opportunity to show what they had learned in a manner that suits them.
- Geography is a discipline where various digital technologies are used in teaching and therefore could also be used in assessment. It is therefore a subject where a number of non-traditional assessments could be utilized.

6.6 Research Question 3: What are the student’s perceptions of non-traditional methods of assessment?

6.6.1 Using digital tools in assignments.
This cohort of students was happy to use their mobile phones to complete the fieldwork section of the assignment. The majority were comfortable using the Blog even though it was an unusual way of operating a Blog. Disappointingly the students did not attempt to carry out the peer reviews that were requested. Three reasons for not doing the peer reviews were put forward,

- A number of other assignments were due in around the same time as this assignment.
- The process was not anonymous.
- No extra marks would have been gained for carrying them out.

6.6.2 Recommendations when using a Blog as in this assignment:

- As uploading an assignment to a Blog in this manner is an innovative way of using a blog further research is required to substantiate if students of other disciplines are comfortable using a Blog in this way.

6.6.3 Recommendations when using peer assessment:

- At the time that this assignment was given the students also had a number of additional assignments (from other modules) to carry out. To encourage them to complete the peer review section of an assignment it would be
worthwhile to have the peer reviews anonymous and to allocate marks for completing the task.

6.7 Research Question 4: What are the staff perceptions of using non-traditional methods of assignments?

6.7.1 Using digital tools in assignments

The staff all expressed interest in the e-assessment tools that are available on the VLE. There is a perception among the staff that a substantial amount of time is required to set up and monitor assessments using e-assessment tools. Some use digital tools that are freely available outside of the VLE platform thinking that they are more user friendly than those on the VLE. Lecturers acknowledged that students learn from taking part in peer review activities. The lecturers also agree that there is some reluctance from students to participate in the process.

6.7.2 Recommendations to encourage staff to use e-assessment tools

- As all staff expressed interest in the e-assessment tools this interest could be advanced by encouraging staff to attend the courses run by the Learning Technology Unit who promote the use of the VLE.

6.7.3 Recommendations to promote the use of peer reviews in assessment

- Implementation of the recommendations to encourage students to take part in the peer review process may also inspire staff to incorporate peer reviews as part of their assessment practices.

6.8 Conclusion

While the study was small in scale and scope students and staff were found to be favourably disposed towards the use of digital tools in assignments. Although this may be the first time that a Blog used in this manner has been examined, this research has shown that the students believed that they had learned more about weather processes by carrying out this assignment. It also offered students a different way to demonstrate their understanding of how a weather event occurs. The success of using the Blog tool in this style has not come without further concerns to be resolved. Students’ digital literacy and their perceptions of getting feedback where it is available for all students to see are matters that need to be
considered. The Blog tool worked well for the majority of this cohort of students but students’ digital literacy cannot be taken for granted.

Both staff and students agree that peer reviews help learning. Students may have attempted the peer reviews if they had fewer assignments to complete, if the reviews were anonymous and if marks had been given for the task.

E-assessment tools that do not require much time to set up and monitor are available on the VLE. Help to use these tools is offered on campus and staff that avail of this support may discover that these tools fit into all styles of teaching.

Traditional forms of assessment assess the students’ ability to recall the theory that they have covered in lectures. This non-traditional method of assessment did more by:

- Helping to develop the students’ knowledge of how weather events occur.
- Assessing the students’ understanding of the theory.
- Assessing their ability to correlate the weather processes with the digital image of a weather event that they had captured, using weather charts and/or satellite images.

By offering a mixture of traditional and non-traditional forms of assessment all students may have an opportunity to demonstrate what they have learned in a manner that suits their way of learning and thinking.
Bibliography


Appendices
Appendix A:

Types of Assessment

Blackboard, UCC.
Appendix B:

E- Assessment tools available on Blackboard 9.0.

Blackboard, UCC.
Appendix C:

The Weather Image Assignment

Assignment 2

Photograph a weather event that occurs at latest by the end of November.

A weather event can be cloud (from above or below), dew, frost, rainfall, snowfall, thunderstorm, lightning, winds, drizzle, approaching front, departing front, low pressure, rainbow, fog, mist, evidence of heat, evidence of cold, rime, glaze, sunshine, atmospheric colours etc. etc. etc.

Describe the event *briefly* – what is it, how long did it last, where did it happen, what effects if any did it have?

Link the event to local weather data (see Blackboard for links to data sites).

Explain how/why the event occurred.

We will be covering all of these weather events in lectures so you will have a chance to see how they are formed as we go along. Be on the lookout for a good weather image over the next few weeks.

Online presentation.

(100--200 works is sufficient).

Some examples:

http://www.irishmetsociety.org/ims-competitions

http://www.emetsoc.org/?id=319
Appendix D

Screenshot of where the Student accessed the Assignment on Blackboard.
Appendix E

Weather Images as seen on the Irish Meteorological Society Website.
Appendix F

Instructions on How to Upload the Assignment:

Uploading your assignment to the Weather Image Blog on Blackboard.

Using Windows 7

1. Open your assignment prepared as a Word document.

2. Click on Start Button (lower left corner) and then on Snipping Tool

3. Highlight all of your assignment (including the images)

4. Click save

5. Ensure that the Save As box reads jpeg


7. Click Weather Image button at the end of the menu.

8. To add your assignment click on

9. Add a title for your image

10. Click on the tree icon;
11. Click on the image to the right of Image URL box.
12. Browse to where you have saved your assignment and insert.

**NOT USING WINDOWS 7**

1. Log onto Blackboard →GG2016: Atmospheric Environment module as you usually do.
2. Click Weather Image button at the end of the menu.
3. To add your assignment click on

![Add New Entry Button](image)

4. Add a title for your image
5. See if you can copy and paste your image into the blog
   If not:
6. Click on the tree icon

This screen appears:
7. Click on the image to the right of Image URL box.

8. Browse to where you have saved your image(s) and insert.

You can click on the image when it has been inserted and resize as you would in Word.

9. (Optional) To reposition the images click on the image then on the Appearance tab; click on alignment and choose where you would like the image to be placed beside the text.

10. Copy the text that you have prepared.

11. Click on the paste from word icon and paste in the text → click on insert.
Appendix G: **STUDENT QUESTIONNAIRE**

This questionnaire aims to seek your opinion on the use of *digital tools in assignments* and on *carrying out peer reviews*. The questionnaire is anonymous.

*Please indicate your level of agreement/disagreement with the following statements by ticking the appropriate response.*

1. Having to go out and take an image of a weather event has changed the way I look at weather
   
   ![Strongly agree](image)
   ![Agree](image)
   ![Neutral](image)
   ![Disagree](image)
   ![Strongly disagree](image)

2. Having to go out and take an image of the weather motivated me to learn more about the conditions that contributed to this weather event
   
   ![Strongly agree](image)
   ![Agree](image)
   ![Neutral](image)
   ![Disagree](image)
   ![Strongly disagree](image)

3. I used my mobile phone to take the image I used for the assignment
   
   Yes  ![Yes](image)  No  ![No](image)  NA  ![NA](image)

4. I had no difficulty uploading this assignment to the blog
   
   ![Strongly agree](image)
   ![Agree](image)
   ![Neutral](image)
   ![Disagree](image)
   ![Strongly disagree](image)

5. I followed the instructions on the handout given at the lecture
   
   ![Strongly agree](image)
   ![Agree](image)
   ![Neutral](image)
   ![Disagree](image)
   ![Strongly disagree](image)

6. A friend helped me to upload the assignment
   
   Yes  ![Yes](image)  No  ![No](image)
7. I looked at other entries on the blog before I uploaded my assignment.
Yes □ No □

8. Viewing other entries helped me learn more about the assignment topic

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. It has been useful to have an opportunity to use a blog for uploading an assignment on Blackboard

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. I prefer digital assignments to paper assignments
Yes □ No □

11. **Feedback:** If feedback was provided before the final submission date would you have you assignment done in time to get feedback (about a week before the deadline for handing in)? Yes □ No □

12. The comment box in the blog is a good place to receive feedback
Yes □ No □

13. I would read and act on the feedback given in the comment area of the blog Yes □ No □

14. I find using Blackboard easy for uploading assignments

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. When doing assignments please tick, which tools you have been requested to use or contribute to, on Blackboard.
Blogs Wikis Discussion boards/forum

□ □ □
16. Please tick the tools you have liked using in assessments
   Blogs                Wikis                Discussion boards/forum
   [ ] [ ] [ ]

17. When doing assignments please tick which tools you have been requested to use outside of Blackboard.
   Blogs                Wikis                Discussion boards/forum
   [ ] [ ] [ ]

18. Please tick the tools you have liked using in assessments outside of Blackboard
   Blogs                Wikis                Discussion boards/forum
   [ ] [ ] [ ]

**PEER ASSESSMENTS**

19. If the peer assessment had been an anonymous I would you have been more likely to do it
   Strongly agree   Agree   Neutral   Disagree   Strongly disagree
   [ ] [ ] [ ] [ ]

20. Have you ever engaged in peer reviews before   Yes [ ] No [ ]

   **21. If Yes:** I enjoy assessing other student’s assignments
   Strongly agree   Agree   Neutral   Disagree   Strongly disagree
   [ ] [ ] [ ] [ ]

   22. I learn from doing peer reviews
   Strongly agree   Agree   Neutral   Disagree   Strongly disagree
   [ ] [ ] [ ] [ ]
23. I felt uncomfortable assessing my peers

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

24. I like being assessed by my peers

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

25. Peer assessment is unfair

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

26. Peer assessment is a valuable exercise for students to engage in

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

27. I find it difficult to remove personal feelings when assessing my fellow students

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If there is anything you would like to add about the use of digital tools in assignments or peer reviews please feel free to do so:

Thank you so much for helping me with my research- it is very much appreciated.
Mary
Appendix H: *Staff Questionnaire*

This questionnaire aims to seek your opinion on using digital tools in assignments and on using asking students to do peer reviews (assessments) as part of assignments.

Digital tools ---digital camera, video or creating, contributing to Blogs, Wikis and Discussion Forums.

1. In assignments I sometimes ask students to use one of the above tools.
   - Yes □
   - No □

2. Most assignments I set are submitted using Blackboard.
   - Yes □
   - No □

3. If No how do your students submit their assignments?
   ________________________________________________________________

Please indicate your level of agreement / disagreement with the following statements by ticking the appropriate response.

4. Students don’t have problems using Blackboard to submit assignments

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. I’m aware of the assessment tools that are available on Blackboard

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. I find Blackboard easy to use for setting assignment

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. Which, if any, of the following have you asked your students to use in assignments?

Blogs on Blackboard  □  Wikis on Blackboard  □  Discussion board on Blackboard  □  N/A  □

8. Which of the following have you asked your students to create or participate in, not using Blackboard?

Blogs  □  Wikis  □  Discussion forum  □  N/A  □

9. If you ticked one or more boxes in question 8 please give reason for not using these tools on Blackboard.

__________________________________________________________________________

10. I think students like using Blackboard for assignments.

Strongly agree  Agree  Neutral  Disagree  Strongly disagree

11. I think using digital tools has the potential to help students learn more about the topic covered in the assignment

Strongly agree  Agree  Neutral  Disagree  Strongly disagree

12. I think students can be motivated by using digital tools in assignments

Strongly agree  Agree  Neutral  Disagree  Strongly disagree

13. I find it easier to correct essay assignments online

Strongly agree  Agree  Neutral  Disagree  Strongly disagree
14. I find correcting blog entries easy

Yes [ ] No [ ] NA [ ]

15. I find correcting Wiki entries easy

Yes [ ] No [ ] NA [ ]

16. I think it is worthwhile organising a discussion board where the students can participate in a topic as an assignment.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. I am interested in using some of the assessment tools that are available on Blackboard

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18. I would require some technical help to put assignments/more assignments on Blackboard.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Peer Reviews (Peer Assessments)**

19. I have asked students to do peer reviews

Yes [ ] No [ ]

20. I think peer reviews help students to learn more

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
21. I think the peer review students do on each other’s assignment work better if they are anonymous to the other students

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22. I think peer reviews are difficult to organise online

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If there is anything you would like to add about assessment/assignment practices / peer review please free to do so:

Thank you for taking the time to fill out this questionnaire and helping me gather information for my research. Mary
Appendix I

Transcripts of the 1st and 2nd Interviews (Module Co-Ordinator)

1st Interview

Question 1: Why do you want to introduce a non-traditional assignment into the module?

I want a new assignment that is observational and more holistic, the students have assignments that involve looking at weather in one location but what happens there is they have difficulty looking at the big picture. They have another looking at the weather charts and understanding the weather that the chart produces so this takes them away from the ‘scientific data’ into the real world to look at the whole picture. Hopefully it will pull them away from looking at data as just numbers and to link them to the real environment.

And the second thing I want them to do is to synthesize their observation a little bit more to what is actually around them.

Question 2: Why do you want to use a digital platform to display the assignments?

Making images is a waste if I’m the only one that gets to see them, a lot more can to be learned from seeing each other’s images, so when they see each other’s images

(a) They give them some ideas, they see what is permissible, they have a strong sense of what is allowed and not allowed and I want to break that idea as they can do whatever they want.

(b) It will get them to look at the world as they’ll see through other people’s eyes- they may notice things that they may never as thought as weather.

(c) Making the images visible to all may help to up the standard especially that of the middle range students when they see what the better students have produced.

(d) It may be a different entry point for students who may find it difficult in the class room work, the theories and looking at data so if they see it in real life they may get it this way if they haven’t got it in class.

(e) I may be able to give pointers before the final submission date and it might be helpful if it was possible for the students to upload peer reviews they carry out on each other’s assignments.
2nd Interview

Question 1: What do you think of how the students uploaded the assignment?

The students who had difficulty uploading the assignment were those who weren’t from a class structure as such as the geology students helped each other but the art students who found it difficult. The group of American students all did it together and helped each other on the technical side.

My sense is that some students are good at following instructions, may not be the best students but they feel they won’t get it done unless they go step by step and will let me know if there is something wrong with the instructions.

Question 2: Did it take time to help the students who experienced problems uploading the assignment?

It always involves a lot of time sorting out technical problems as students are not familiar with the tools.

Question 3: Do you find it easy to mark assignments online?

Short assignments are ok to mark on the blog. I can see if they are being descriptive or analytical you can see it all in front of you.

However, I never find it particularly easy to assess student work but given that they were asked to carry out something fairly straightforward I was able to see whether they had achieved that.

Question 4: How did you provide formative feedback to the students?

I worked a fair bit with the images they had put up as they were related to what they were doing in class. I did a lot of it before the deadline so they if they waited till the last day there was nothing I could do. I pick out the images and examined them to encourage others to log in and look at them. I talked about the processes that was involved but I didn’t critique them as such but talk a about the image a little so that whoever had put it up there might see other angles—didn’t critique in public.
Loads of students came and showed me their images this was constant. They had them on their phones and some wanted to know whether they were ‘suitable’ images. Some also sent on emails asking if the image showed what they thought it did. A lot did fog as there was a lot of fog around at the time and it is so straightforward, it’s something that they get. There were very few storms so very little wind so got very few wind related images.

Question 5: How did you find giving feedback to this group of students?

Realistically, there is no way that I could pre-mark assignments for a class of this size. I was able to give a few pointers to people who had submitted early but if all of the assignments were submitted early I would not be able to do them all.

Question 6: Do you often ask students to do peer reviews?

I did it in the past with presentations but haven’t lately due to lack of time. When they hear others describe things they think they know they spot gaps in their own understanding. Create their own understanding so when they hear others describe it they may think they did not get it completely or the other student did not get it.

It is hard to organise with large classes and the time isn’t there to follow up on it.

Question 7: Do you think the assessment worked well?

It worked well from my perspective in that many students were clearly thinking about what they were seeing and how they might interpret it.

Question 8: Do you think the students learned from doing it?

Many students are applying their recent understandings of meteorological processes to actual weather events so I’m assuming that this is helping them to learn about the atmosphere processes involved. I also see a development in their confidence in applying the theory – that is usually a difficult step for the students to make as they have no way of ‘checking their answer’.

Question 9: Would you use this assignment again?

Yes.
Appendix J

Transcript of the Student Group Interview

*Author:* Welcome and thank you for coming. You can be assured that the information you give will be completely confidential and used solely for the purpose of this research. No student names are required for this group interview. With your permission the interview will be recorded.

**Question 1. Having to go out and take an image of a weather event has changed the way I look at weather.**

All agreed – Student A – it is a really good way of learning as you have to go over all of your notes to be able to describe what had happened in the photograph you took.

**Question 2. Having to go out and take an image of the weather motivated me to learn more about the conditions that contributed to this weather event**

All agreed

Student C – I had decided to take a photograph of fog, as there seemed to be a lot around, and I knew how that was formed but then I saw a rainbow when I was coming out from town so I took that instead and then I had to go over what conditions produces a rainbow. I don’t think I’ll ever forget what conditions produces a rainbow. But I think it was worth it as the image I took was good, but may have being better at a different angle.

Student B- you had to go over everything about what the photograph showed so yes it did motivate me to learn.

Student A- When I read the details of what we were asked to do I was on the lookout for a good image to take. I took some images of fog and a few cloud types and had gone over the lecture notes about the conditions for all of these. Then I saw what I thought would make a better picture so having to take the photograph did motivate me.

**Question 3. I used my mobile phone to take the image I used for the assignment**

Student C and A used the mobile phone, the other student used a camera.
Question 4. I had no difficulty uploading this assignment to the blog
Student B – I had no difficulty and had it up in 20mins. (on further probing it became clear that Student B shares a house with a guy “who’s good with computers”).

Student A – I had an awful lot of trouble – I tried so many times but I couldn’t get the image to upload properly- it took 3days to get it up, a friend showed me how to do it.

Student C it took me about 3hours to do it but I got it done. It took me a while to crop the picture as I couldn’t resize it. I wish it looked better but I had to give up and leave it.

Would you think you are good at using different technologies?
All three said yes – great at Facebook.

Would you mind telling me what age you all are?
Student A--- 19, Student B--- 19 and Student C---18 (almost 19).

Question 5. I followed the instructions on the hand-out given at the lecture
All used the instructions provided all said yes. Student B said the image of the icon to upload the photography helped him.

Question 6. A friend helped me to upload the assignment
As already noted Student A and B got help from friends.

Question 7. I looked at other entries on the blog before I uploaded my assignment.
All agreed. Student A – You could see how others are doing the assignment and if you left out something that someone else did you could do it before uploading. Some were up before I had started so that helped.

Student B – the issues that the lecturer raised with the first assignments that went up showed what was needed and if the lecturer said a chart would improve the assignment that meant more marks so of course you would do the same.
Question 8. Viewing other entries helped me learn more about the assignment topic
Student B – I only looked at the ones that had fog as their topic as that was what I was doing so --- yes I suppose it did.

Student A and C said it helped with their assignment.

Question 9. It has been useful to have an opportunity to use a blog for uploading an assignment on Blackboard
Student A – we haven’t used Blackboard much until this year. Now we have to put assignments through ‘Turnitin’.

Student C – I think it was good to use the Blog, now I know it worked and the world is a technology driven place so it’s good to use these things.

Question 10. Digital assignment versus paper assignment

Student B- I prefer paper ones as you don’t know for sure if all of the assignment went up.

Student C most of the assignments we get are paper, I liked this assignment.

Questions 11–13 About feedback what do you think – would it be good to get some before the final submission date- comment area is that an appropriate place for it?

Student B Yes I put mine up in time to receive feedback.

Student C I would try to have them done

Student A Not sure about having it done, I would only like feedback (in the comment area) if it was positive or a pointer to add something that was missing like what was done on this blog.

Would you act on it if you got some feedback?

All agreed that they would.
Question 14. I find using Blackboard easy for uploading assignments

Student B – I think it is ok uploading assignments through ‘Turnitin’ but I think that should be enough as most lecturers what a paper copy also and one should be enough.

Student A – I agree it should be one or the other.

Student C – yes it all takes time.

Questions 15-18 General conversation about Blogs, Wikis and Discussion Forums & Blackboard.

Student C – what’s a Wiki?

Student B- it’s a website

Student A – we have a Facebook page for the class where we can ask questions and someone else will answer- you won’t get all the information for the assignment but you’ll get some.

Student C- I’d follow a Blog but I wouldn’t add to it I just see what others are writing. I’d also follow a Discussion for things outside of college. There easier to get into compared to the one on Blackboard—too many steps to get to it.

Some lecturers don’t put their lecture notes on Blackboard and some just put slides up so if you miss the lecture you won’t know what’s it all about—they want you to come to class.

Student A- I might not check Blackboard for three weeks only if I know there is something I need to go and do on it. It just takes too long to get in to the module section. There should be a section on the front where you could see if one of your lecturers had put something new up say a speak bubble! With Blogs you can’t put large assignments on the Blog so the assignments have to be smaller.

Why did no one do the peer review do you think?

Student A – A lot of other assignments to do around now. It’s near the end of some of the modules I’m doing. We also have exams- I have one for this module in about 2hours. It would have been better if it were anonymous.

Student B – it wasn’t being marked so no need to do it.

Student A, B and C said they had done peer reviews and agree that you do learn from them.

Student B – said if you know a peer review was going to be done then you make sure your work was sharp but you wouldn’t spend a lot of time at it if it peer mark wasn’t going to be part of your overall mark. The amount of work you do depends on the amount of marks given for the assignment.

Student C- it’s hard if the person reviewing your poster or oral presentation is an expert in the field that you have done your assignment on and tells you that your theory is wrong. It’s something you won’t forget.

Student A – yes you do learn from peer reviews.

When asked if they were reviewing their friends work would they be able to keep their personal feelings out of it.

Students A, B and C said they would not be able to fail their friends even if it was anonymous as they usually see their friends' assignments before they are handed in.

Peer reviews are good then? All three said yes.

Author: Thank you so much for coming for the interview and best of luck with the exam this afternoon.
## Appendix K

**Informal Interviews: Log of Topics Covered and Students Comments**

*Noted during the days of the field week.*

<table>
<thead>
<tr>
<th>Peer Reviews</th>
<th>Comments/Reasons:</th>
<th>No. of students who agreed with the comment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Why did you not attempt to carry out the peer reviews?</td>
<td>1. Too many other assignments</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>2. Should be Anonymous</td>
<td>8 [see comment (a)]</td>
</tr>
<tr>
<td></td>
<td>3. No marks being given for the task.</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feedback</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Do you think it is good to get feedback?</td>
<td>All agreed that it was good to get feedback [see comment (b)]</td>
<td></td>
</tr>
<tr>
<td>3. Do you think the blog is a good place to get feedback on the blog assignments?</td>
<td>11 students agreed 9 disagreed</td>
<td></td>
</tr>
<tr>
<td>4. Would you have assignment finished in time to get feedback?</td>
<td>2 students said they had uploaded their assignment but received no feedback so thought their assignments were ok. 17 students said that they would have the assignments done in time to get feedback.</td>
<td></td>
</tr>
<tr>
<td>5. Would you read and amend your assignment if you got feedback on it?</td>
<td>All students agreed that they would.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Viewing other assignments</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Did looking at other assignments help you learn more about how weather events occur?</td>
<td>Yes was the overall response to this question [see comment (c)]</td>
<td></td>
</tr>
</tbody>
</table>
### Digital Assignments or paper assignments?

The response to this question was mixed [see two favourably comments (d and e)].

All of the other students thought that a variety of methods would be good.

### UPLOADING THE ASSIGNMENT

8. Any difficulty uploading the assignments

Two students said they had a lot of trouble and requested help from the lecturer. [see comment (f)]

### Image

9. Did having to take an image motivate you learn more about weather events?

All students agreed. [see comment (g)]

### MCQ / Digital Assignment

10. Did you fine this assignment easier than the MCQ test?

2 students found the weather image assignment more challenging.

Comments:

(a) There is less pressure on the student if peer reviews are anonymous.

(b) Usually we don’t get feedback on summative assignments so I think this is a good way and the summative ones are important.

(c) I stopped looking once I had mine up, yes it did help to see how others were answering the question and yes I did learn more.

(d) The weather image assignment was nice as it was something different and it was well executed.

(e) I liked using the blog for submitting it was nice to see my assignment on the blog.
(f) It took me ages to get it done, the image was the problem, I managed to put the text up but the minute the image went on the screen the whole layout went wrong. Very frustrating.

(g) I think a good image was important as it is the first thing that is seen on [your entry on] the blog. It was good to get out and take an image rather than just explaining the conditions in an image someone else had taken, you had to learn for the image you took.
Appendix L

Observation Record of Students Requesting Assistance and a page of Blackboard’s Record of the Activity taking place on the Blog.

<table>
<thead>
<tr>
<th>Date:</th>
<th>Number of students</th>
<th>Called to the office</th>
<th>Emailed</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>22nd Nov.</td>
<td>2</td>
<td>2</td>
<td></td>
<td>Both students having difficulty inserting the image.</td>
</tr>
<tr>
<td>23rd Nov</td>
<td>1</td>
<td>1</td>
<td></td>
<td>Difficulty inserting the image</td>
</tr>
<tr>
<td>24th Nov</td>
<td>1</td>
<td></td>
<td>1</td>
<td>Difficulty inserting the image</td>
</tr>
<tr>
<td>26th Nov</td>
<td>1</td>
<td></td>
<td></td>
<td>Unable to resize image</td>
</tr>
<tr>
<td>27th Nov</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>Students who called to the office were experiencing problems when the image was inserted. It appeared too large and they were unable to reduce the size. The student who emailed requested help with inserting the image.</td>
</tr>
<tr>
<td>29th Nov</td>
<td>2</td>
<td></td>
<td>2</td>
<td>These students were unable to upload the image they had taken to the Blog but when they followed the instructions (to the letter! in the office) they managed to put the image into the assignment.</td>
</tr>
</tbody>
</table>
This page of the activity taking place on the Blog was taken on the 24\textsuperscript{th} of November 2012 (6 days before the final submission date). It shows one student deleting their entry many times. It also shows where some feedback has been given (“added a comment”)

All names and student numbers have been erased.
Appendix M

Student Images of Weather Events.

Some of the weather images (with titles) that the students submitted to the Blog.

Images that are displaced are done so with the students consent.

Cirrocumulus Clouds 21/11/12

Towering Cumulus over Limerick
Sea Fog at Dungravan.

Mist over a field, walking to UCC, Cork City 22/11/12
Fog from my window: Hospital, Co. Limerick

Snowfall on the Comeragh Mountains [12.00 26/11/12]
Stratus Clouds Fermoy 16/11/2012

Cold Front over Cork 22/11/12
Warm Front Over Kenmare 13/9/12

Fog Over Youghal [7.30 14/11/12]
## Appendix N

### Blackboard Student Activity Log (No. of Views)

A page of Blackboard’s record of the no of times each student logs into the Blog. The students’ names have been removed.

<table>
<thead>
<tr>
<th>Time</th>
<th>Total Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/20/12 2:15 PM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 3:54 PM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 5:38 PM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 6:54 PM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 10:18 AM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 1:07 PM</td>
<td>3</td>
</tr>
<tr>
<td>12/20/12 11:38 AM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 10:28 AM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 12:46 PM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 12:21 PM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 10:53 AM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 12:39 PM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 12:37 PM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 12:17 PM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 12:34 PM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 12:41 PM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 12:31 PM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 12:30 PM</td>
<td>1</td>
</tr>
<tr>
<td>12/20/12 12:29 PM</td>
<td>1</td>
</tr>
</tbody>
</table>