

ReflectQuest

A WebQuest to Support the Development of Learner Reflection Skills & Techniques

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Declaration

I declare that the work described in this dissertation is, except where otherwise stated, entirely my own work and has not been submitted as an exercise for a degree at this or any other university.

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~ Abstract ~

This study is concerned with learner reflection, the difficulties learners experience with the reflection process, and the use of technology to promote and facilitate the development of personal reflection skills and techniques so as to help learners overcome these difficulties.

Reflection involves the cognitive activity in which the learner remembers and reconstructs personal actions, events and thoughts with the overall purpose of increasing understanding (Eyler et al., 1996). Reflection, however, does make demands that some learners are not accustomed or able to meet (Boud et al., 1988) as 'not everyone finds reflection an easy manner of working' (Moon, 1999). There is a need to find ways to support the reflection process. Traditionally, support has been provided in the form of diaries, pro-forma documents and questionnaires. Studies have shown that these supports have not always proved successful and the difficulties that learners experience have persisted (Gustafson & Bennett, 1999; Powell, 1989; Department of Education & Science, 2002). Quality reflection takes time and practice and tools and supports must be made available to learners in order that they can develop the necessary skills.

This research presents an interactive web-based learning environment that not only helps to develop reflective techniques by its content but its inherent pedagogical strategies enables the learner to develop skills so as to enhance their reflective capabilities. The webquest model is put forward as a suitable prototype as it employs a constructivist approach (March, 2000; Dodge, 2002) more conducive to deeper cognition and the higher order thinking skills required to engage in the reflection process and, as such, provides a reflective-rich learning environment. For the purposes of this study a webquest was designed especially for, and evaluated by, senior cycle learners; the Leaving Certificate Applied (LCA) student cohort whose efforts in completing the Personal Reflection Task, as part of their overall course requirements, have, to date, met with limited success (Department of Education & Science, 2002).

The aim of this case study is to explore the effectiveness of ICTs in providing enabling learner reflection supports, specifically by means of an interactive web-based learning model.

Resultant feedback provided positive results in that the model did prove effective and enabling but particularly satisfactory was the outcome relating to appropriateness of the model to the Leaving Certificate Applied programme, not just with regard to the development of reflective skills and techniques, but its application to the wider programme syllabus.

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Chapter 1 : Introduction

A combination of the author's personal area of interest and findings from reading material provides the background to this project. The ideas in this project stem from an initial interest in alternative assessment methods and in particular the development of the portfolio in the learning environment and its use as an assessment tool. Current literature on the subject of portfolios indicates that reflection is a key element of portfolio work (and arguably the most important) as it is the element that signals the portfolio as a meta-cognitive and constructivist activity, activities that, from today's cognitive perspective make learning meaningful (Dietel, Herman & Knuth, 1991).

Reflection involves making connections between one experience and another and is a process of looking back on experience, seeing what went well, what went badly, questioning why things turned out as they did and what conclusions can be drawn. Lyons describes reflection as "a weaving, a threading together of experience, making connections" (Lyons, 1998). When learners are enabled to think about their learning experiences in this way the learning becomes more meaningful, and more personal, as learners become more involved in their own learning and thought processes. Reflection requires skill and practise and it does not come easily to learners. Learning of these difficulties aroused the curiosity of the author and further investigation of the topic prompted the shift in focus from portfolio work in general to the specifics of reflection and reflective writing in particular.

Research has clearly shown that learners find reflection difficult (Boud, 1988; Klenowski, 2002; Moon, 1999). Many reasons have been put forward for this, ranging from poor communication skills to difficulties of self-expression, from lack of supports to poor analytical ability (Santos, 1997; Department of Education & Science, 2002; England & Spence, 1999), and efforts to help have not always proved successful. Templates, questionnaires, handouts, diaries, have been used in the past but it appears that even with such supports in place promoting reflection among learners has remained quite difficult (Gustafson & Bennett, 1999).

This author proposes an alternative approach by offering support to the learner by means of a web-based learning tool that, not only helps the learner practise reflective techniques, but also builds capacity in that the inbuilt pedagogical strategies help to promote development of the skills required for reflection, such as the ability to analyse, self-evaluate, problem-solve, and other higher order thinking skills. The Web quest model is presented as a suitable learning tool as the higher order skills required to complete the webquest mirror those required to engage in the reflective process, and as such, provides a reflective-rich learning environment.

It is the opposites of learners' inability to reflect, on the one hand, and the importance of reflection to learners' learning, on the other, that motivated further exploration of the topic and ultimately prompted the ideas for this project. Learner support mechanisms and their apparent lack of success is a significant problem in the area of learner reflection and one which, this author felt, merited further examination. The provision of learner supports to aid reflective practice, the nature of those supports and their possible impact on learners' reflective capabilities are, therefore, central themes of this particular study. The project explores the various issues involved and proposes a strategy for developing learners' reflection skills and techniques that may prove effective in meeting the challenge.

The project comprises three parts. The design and production of an artefact, in this case the webquest, testing and evaluating the artefact and the production of an accompanying narrative that provides a descriptive account of the material and the processes involved. The story of how the study came about, how it evolved and the outcomes of the study are documented in the accompanying narrative. The narrative, or document, comprises six chapters.

Chapter one (this chapter) introduces the project to the reader. It sets out the context and background to the study and outlines the aims and objectives of the work. Chapter one also introduces the reader to the topic of reflection, provides background information, presents key features of reflective practice with particular reference to the difficulties that learners have in producing reflective work. The aim of Chapter one is to provide an overview of the subject matter and provide an overall context for the research study.

Chapter two is an account of reading material that has been published in the area of learner reflection. This chapter references current views on reflection and reports on the various difficulties learners experience with reflective practices. There are references also to the various supports currently in use to help develop learners' capacity to reflect and the fact that these have met with limited success. Chapter two aims to bring the reader up to date by referencing appropriate documentary material as evidence of current thinking on the subject.

Chapter three presents the design approach. The webquest model is presented and the underlying pedagogical strategies and reasons why the webquest was selected as a suitable learning tool are explained to the reader. It is in this chapter too that the reader is first introduced to the target participant group. These are current Leaving Certificate Applied (LCA) learners for whom the tool has been especially designed and who will be testing the application and performance of the artefact in their school. The purpose of this chapter is to inform the reader of the reasons for the selection and design of the artefact, and the selection of LCA learners as the appropriate test group, linking both these factors to the documentary evidence described in Chapter two.

How the artefact was developed and implemented is described in Chapter four. The webquest itself is described in detail and the purpose(s) and suitability of the content discussed. Information as to the technologies used to develop the learning environment are included and an overview of its implementation provided.

Chapter five details the evaluative and measurement strategies adopted by the author for the purpose of assessing the application and usefulness of the artefact and reports on the activities of the test participant group. Feedback from learners is presented as key findings and outcomes of the study are put forward for consideration. The aim of chapter five is to document the evaluative process so as to demonstrate authenticity and illustrate transparency of method and to inform the reader as to the outcomes of the study.

The final chapter, chapter six, revisits the aims of the study and provides an overall summary of the project. It completes the picture for the reader, presenting the project in synopsis, outlining its main features and resultant conclusions.

Chapter 2 : Literature Review

This chapter gives an account of reading material that has been published in the area of learner reflection. This chapter references current views on reflection and reports on the various difficulties learners experience with reflective practices. The purpose of this chapter is to bring the reader up to date by referencing appropriate documentary material as evidence of current thinking on the subject.

Reflection is a circular, continuous meta-cognitive activity that involves thinking deeply about experiences from multiple perspectives (Bull et al., 2002). It is a process of three dimensions described by Cooper as the mirror, the magnifying glass and the binoculars. The first involves thinking about the experience in an insightful way so as to get a clear reflection of the self and how the self connects to and with the learning experience. The second relates to making the small experience larger whereby the learner teases out the issues and thinks about the wider implications of the experience. The third involves making what appears distant seem closer so that the learner can identify underlying or overarching issues, relate them to possible future experiences and fit them in an overall context for the future (Cooper, 2000).

Essentially reflection is a mental process requiring critical thinking to examine experiences, question the relevance and significance of those experiences and draw conclusions based on the results of that examination. Dewey refers to it as a learning loop where the process “runs back and forth between the experience and the relationships being inferred” (Dewey, 1933). Reflection is considered to be key to learning and a fundamental principle of the learning process (Dewey, 1933; Kolb, 1984; Schön, 1983, 1987), and according to Moon ‘reflection is part of learning itself’ (Moon, 1999). The link between reflection and learning is widely acknowledged, Moon writes that ‘reflection is intimately linked with the process of learning’ and that ‘the list of outcomes or purposes of reflection could also be drawn to coincide with the list of outcomes from the process of learning’ (Moon, 1999) and the value of reflection to the learning process is generally accepted (Schön, 1987).

However, emerging from the literature, there is also a view that learners find the reflection process difficult (Boud et al, 1988; Klenowski, 2002; Moon 1999). Lack of knowledge or information, insufficient time available for reflection, lack of guidance, poor meta-cognitive skills, an un-reflective environment, inadequate communications skills and inability to see the importance, or indeed relevance, of ‘self’ to the learning process have all been put forward in the literature as possible reasons why learners find reflection difficult (Santos, 1997; Nicholls, 2002; Boud et al., 1988, Department of Education and Science, 2002; England and Spence, 1999).

Lack of practical support is the reason most often given as to why learners have difficulty with reflection. Learner support can be many things: availability of relevant and appropriate information; provision of examples of good practice; clear guidance, coaching and practical assistance in the form of handouts, templates, prompts, exercises; providing positive feedback; allowing space and time for reflection and providing opportunities for practice, are variously described in the literature as support (Boud et al., 1988; Schön, 1987). Suggestions as to why this support may not be forthcoming varies from lack of reflection skills on behalf of teachers themselves to the fact that current traditional teaching and learning environment does not lend itself to reflective activity, lack of awareness and resources and insufficient time made available for reflection have also been suggested (Klenowski, 2002; Martin-Kniep, 2000; Hatton & Smith, 1995). According to Hatton & Smith it is not always a matter of encouraging reflection but removing the barriers that make reflection difficult.

While the provision of supports has not always proved successful (Gustfson and Bennett, 1999; Powell, 1989), and indeed in some cases was positively unhelpful, “personal expression in many statements was curtailed due to the imposition of a rigid format, ie specific headings, questionnaires etc.” (Department of Education and Science, 2002) it is widely accepted that learner support is essential to the process and that without the necessary supports learners cannot be expected to produce meaningful reflection (Eks and Willmann, 2000; Stone, 1998) and without encouragement and practice (Martin-Kniep, 2000; Schon 1987) reflection will remain difficult and elusive. A fact evidenced in a recent Department of Education and Science document which reported that “a significant number of (reflection) tasks had great potential but remained underdeveloped due to

absence of direction or guidance” noting that “the level of guidance greatly affected the quality of the reflection task” and concluded with the observation that “guided reflection is vital if skills are to be cultivated” (Department of Education and Science, 2002).

The same document, reporting on learners’ reflective work, stated that learners “often failed to analyse their experiences in any depth and failed to draw conclusions” illustrating the point that learners often experience difficulty with the deeper cognitive processes required for reflection (Boud et al., 1988). Learners who are unused to thinking deeply about their experiences and are unpractised at thinking at the higher levels of analysis, synthesis, and evaluation (Bloom, 1956) lack the ability to reflect. Learners’ meta-cognitive skills may be under-developed as they might not have had the opportunity to use and practise these skills, most likely because their particular learning environment is not conducive to the process (Santos, 1997). Integrating reflective practices, such as questioning, action-reflection-action cycles, making connections, problem-solving activities, work in progress approach to tasks, (Department of Education and Science, 2000) into everyday teaching and learning practice, creates a reflective culture that could ultimately result in greater reflective awareness and the development of learners’ skills. England and Spence (1999) describe a reflective environment as an environment where learners can participate in ‘practice sessions to prepare them for learning while doing’. What appears important, from the readings, is that learners, in an appropriately reflective environment, can develop and mature as reflective practitioners as Moon suggests ‘reflection comes about when conditions in the learning environment are appropriate (Moon, 1999).

Lack of technique is a consideration in that learners often do not have the vocabulary or understand the type of language to use when producing reflective work. Reasons for this include difficulty with self-expression, inability to communicate thoughts and feelings, unused to using first person singular in the learning environment and lack of practice and experience (Santos, 1997; Gustafson and Bennett, 1999; Costa and Kallick, 2000), few have confidence in their capacity to think (Boud et al, 1988) and fear of self-analysis (Moon, 1999) are factors indicated in the literature.

Almost all writings on learner reflection recognize and promote the necessity for practice. Schön (Schön,1998) states that “students learn skills by practising them” as does Martin-Kniep (Martin-

Kniep, 2000) declaring that “reflective activities should be on-going and practiced” while England and Spence note that “Practice makes Progress”. The Department of Education and Science reporting on the leaving certificate applied student personal reflection task noted that the ability to reflect had developed with practice and “generally better skills were apparent in Year 2” adding that “learners will not achieve unless they have practiced the skills of reflection and for this they need time, mentoring and guidance on an on-going basis”. It is clear, therefore, that opportunities must be given for practice so that learners can acquire the skills and techniques necessary to develop their reflective capabilities (Schon, 1988; Martin-Kniep, 2000, England and Spence, 1999, Department of Education and Science, 2002).

According to Rath “reflection develops learner’s awareness of his/her own agency”(Rath, 2000) meaning that reflection is about ‘self’ and the self’s interactions and involvement with learning. Although reflection can be collaborative, in that others may be involved at times during the process, such as when giving or receiving feedback, it is predominantly a highly personal activity. The learner is the focus of the process and the learner controls the process. It is learner-centred. Learning environments, have traditionally, tended towards teacher-centredness, with the teacher, rather than the learner, as the central focus, where the teacher gives instruction and information and learners receive it. It is difficult for learners, in an environment such as this, to see themselves as key to their own learning or to understand what input, if any, they might have to the process (Main, in Boud et al., 1988; Costa and Kallick, 2000).

Reflection requires that learners involve themselves in their own learning and take responsibility for that learning. This shift, from reactive to proactive, can be difficult for learners unused to playing a central role and who are, very often, inexperienced at internalising or personalising their learning requirements or achievements (Department of Education and Science, 2002). De-centralising the classroom, introducing learner-centred activities and encouraging learner autonomy are ways in which learner’s sense of self in the learning process can be facilitated (Lattimore, 1999). Acquiring this self-awareness ultimately leads to learners taking more responsibility for their learning - an important element in developing learner reflection skills.

In summary, the importance of learner reflection in the teaching-learning cycle and the fact that learners find reflection difficult is widely acknowledged in the literature. There is no single reason for this: it is more likely to be a combination of factors. Lack of time and support, under-developed thinking skills, lack of confidence, poor communication skills and not recognising or valuing the role of self in the learning process are the reasons most widely reported. It is also clear, from the readings, that strategies can be adopted to help learners overcome these difficulties. Creating a reflective rich environment, allowing sufficient time and space for reflective activities, teacher development and the provision of learner supports are some of the strategies identified (Conrad and Hedin, 1986; Department of Education and Science, 2002; Bull et al., 2002 ; Jolly, 1999; Moon, 1999). Providing learner support has not always proved successful in the past as evidenced in reports in Ireland, UK and US (Department of Education and Science, 2002; Powell in Boud, et al.,1988; Gustafson & Bennett, (1999)).

It may, however, be possible to address learners' difficulties with reflection through well-targeted teaching and learning strategies; a strategy that not only helps to promote the development of reflection techniques but where the learner is enabled to develop skills so as to enhance their reflective capabilities; where reflection is intrinsic to the curriculum, does not conflict with other aspects of the learning programme, but 'fits in and becomes part of the overall' (Moon, 1999).

Chapter 3 : Artefact Design

This study focuses on the difficulties that learners experience in reflecting on their learning and the provision of strategies to address those difficulties. As highlighted in the previous section, the literature identified the various problems that learners have with reflection, illustrated the various reasons for these, demonstrated measures that have been employed to address the problems and how these measures have not always proved entirely successful.

According to the literature learner difficulties range from lack of time and support, under-developed thinking skills, poor communication skills to not understanding or valuing the role of self in the learning process. Efforts to help learners with reflection tend to focus on the provision of supports, such as templates, handouts, guided diaries and other documentary, often prescribed, material. These supports, although helpful, are both limited and limiting in that they do not address the broader issues for learners such as, the inability to think at the higher order levels nor do they create a suitably reflective environment or provide opportunities for self-expression. While completing a pro-forma document may deliver the required outcome, ie the production of a reflective piece, in the shorter term, attempts to develop and encourage lifelong learning strategies, such as the skills necessary for reflection, are overlooked and opportunities for learner development missed.

Introducing the Design Approach

This study suggests an alternative approach. A single model, addressing the identified difficulties in a combined and integrated way, that through its inbuilt pedagogical strategies (Joyes, et al., 2002) encourages the development of learners' reflective capabilities, is put forward for consideration. The webquest model, an instructional method pedagogically sound, that aims to empower learners and thinkers, is proposed as an appropriate strategy to encourage and facilitate reflection and to increase learners' reflective capacity.

A webquest is a web-based learning tool. Bernie Dodge (1997, 2002), its originator describes the webquest as an enquiry oriented activity in which almost all the information that learners interact with comes from the internet. There are short-term and long-term webquests, the difference between

them being that the longer one involves higher level thinking skills, such as comparing, deducing, analyzing, constructing or abstracting.

Webquests conform to a standard structure and process. A webquest comprises six main sections and includes tasks that are engage-able and do-able. A clearly defined process is provided, breaking down tasks into clearly defined steps, so that the learner is able to complete tasks in their own time and at their own pace. Information sources, to support the learner and the learning, are also provided. Evaluation, in the form of a rubric, is included where learners can self-evaluate as they move through the tasks. Finally a conclusion wraps everything up and puts closure to the webquest. Webquests can also include motivational tools such as role-plays or scenarios and can involve individual or group activities (Dodge, 2002; T. March 2000, Christie, 2002).

There are several pedagogical principles that webquests effectively support as they bring together some of the most effective instructional strategies into one integrated activity (March, 2000). They incorporate student motivation and authenticity, provide real resources to work with and provide potential for role-playing and other peer/group related activities. Webquests use scaffolding to break tasks into specific meaningful pieces and the problem-question-task model prompts higher-level thinking, forcing students to transform and make use of information they acquire. As webquests are developed from a problem-based process they encourage use of reasoning and critical thinking skills enabling learners to identify similarities and differences, assess credibility of information, make decisions about an issue, and to hypothesise and form conclusions in order that they can complete the given tasks. (March, 2000; Christie, 2002).

The WebQuest model employs a constructivist approach (March, 2000; Dodge, 2002) more conducive to deeper cognition and the higher order thinking skills required to engage in the reflection process and, as such, provides a reflective-rich learning environment. The task-based approach central to the webquest also provides a suitably reflective environment as Moon suggests 'If reflection is to be guided the structure of a task provides the best guide for reflection' (Moon, 1999). The parallels are evident in many respects; they both (the webquest model and reflection) encourage learners to construct understanding and meaning from information they source or use (Dodge 2002; Douillard et al., 1999; Christie, 2002), each are controlled by the learner and are

learner-centred (Lattimore, 1999; Arter, 1995), both require thinking at the higher levels of analysis, synthesis and evaluation (Dodge, 2002; Hopkins-Moore, 2002; Bull et al., 2002).

It is in recognising and acknowledging these similarities that the webquest model is put forward as an appropriate learning tool to enhance learners' reflective abilities. The webquest model addresses the need to develop learners' reflective techniques, by engaging in tasks, practice and learning by doing, but equally the model addresses the broader cognitive requirements for reflective practice such as problem solving, decision making, deep thinking, analyzing, extrapolating and evaluating (Carolina University College of Education, 2003)

Introducing the Target Group

The artefact or webquest developed for the purpose of this study is entitled 'Learning to Reflect'. It is a long-term webquest comprising three progressively more difficult tasks and is aimed at secondary school level, and specifically at Leaving Certificate Applied Learners.

The traditional, established Leaving Certificate is the terminal examination marking the end of formal schooling for Irish school-goers, and, until recently was the only option available to those completing secondary schooling. Recognising that the traditional programme did not adequately meet the diverse needs of all learners a further two Leaving Certificate options were developed by the National Council for Curriculum & Assessment (NCCA) in the mid-nineties. The Leaving Certificate Applied (LCA) is currently one of three Leaving Certificate options available to learners in the Irish senior cycle system.

The aim of the LCA programme is to recognise the talents of all students and provide opportunities for development in terms of responsibility, self-confidence, teamwork, co-operation, independence and initiative. It is designed for those who do not wish to progress immediately to third level education or for those whose needs, aspirations and aptitudes are not adequately catered for by other Leaving Certificate programmes. Structured around three main elements – vocational preparation, vocational education and general education, the programme is characterised by educational experiences of an active, practical and student-centred nature and is underpinned by seven key principles

- personal and social development
- integration across the curriculum
- team work
- basic skills (literacy for example)
- active teaching and learning methodologies
- reflection
- links with the community.

The LCA is an integrated programme with the concept of integration as a key element of the programme structure and of the participants' learning experience. It provides opportunities to develop participants' processes of self-evaluation and reflection and promotes the use of a broad range of teaching methodologies and participant centred learning. The programme is characterised by the use of teaching styles that actively involve the participants in locating and using relevant information and which promotes personal responsibility, initiative, independence and co-operation. (Department of Education & Science, 2000)

Similar to the webquest a central feature of the programme is the completion of Tasks. The main purpose of the Student Task is to underpin a key educational principle of the programme, that of integration. Participants are required to complete a total of seven tasks throughout the two-year period of the programme, one of which is the Personal Reflection Task, introduced for the first time in 2000. The aim of the Personal Reflection Task is to provide the student with an opportunity to reflect on his/her personal experiences of the programme on an on-going, progressive basis and to apply this understanding to future learning and career planning.

While the reflective process is on-going and progressive (it is recommended, although not always practised, that students keep a log of reflections throughout the programme to help them in the drafting of reflective statements) the Personal Reflection Task is completed in the form of reflective statements to be presented for assessment, by an examiner, at the end of Year 2. Two statements, presented in written, video or audio form, are required

- At the end of Year 1 students reflect on aspects of his/her learning experiences during the year

- At the end of Year 2 reflective statements are more vocationally-focused, with specific reference to work experience and other elements of the programme that have contributed to students' current thinking and plans for the future.

While some students present the Personal Reflection Task in video/audio form (less than 2% of the total, Department of Education & Science Examiners Report, 2002) the majority of participants submit work in written format. The ability to write good reflective pieces is, therefore, important for this group of learners.

There is evidence to suggest that the general standard of answering is disappointing (Examiners Reports 2000 and 2002) in that a 'significant number of candidates failed to grasp the central thrust of the task and simply wrote a narrative of experiences with no element of reflection in the task' and 'since the introduction of the Personal Reflection Task in 2000 there has been little change in the general level of achievement'.

The Department of Education & Science maintains the standard of reflection has remained poor 'for some or all of the following reasons'

- Reflection is seen as being a built-in talent and not a skill to be taught
- Reflection is an ability attainable only by high academic achievers
- Reflection is not specifically timetabled in schools
- No specific teacher is appointed to anchor the task
- The concept is poorly understood and therefore not practised
- Teachers are not provided with adequate/appropriate in-service training
- Candidates are not receiving guidance/direction and in some cases are given inaccurate instructions (extract from Examiners Report, 2002).

These echo somewhat the views expressed in the literature (see Chapter 2) as to the difficulties associated with reflection. The general lack of support, lack of relevant and appropriate information; the need for clear guidance, coaching and practical assistance; the provision of space and time for reflection and few opportunities for practice, are all referenced throughout the above list.

The Department of Education & Science literature offers some guidance for schools and also provides the additional resource of the LCA Support Service. However, in the main it is up to

individual teachers to implement methodologies to promote and encourage reflective practice in their own schools.

Links between the webquest model and the development of the skills required to engage in reflective practice have already been established in this chapter. Similarly it is possible to draw parallels between the webquest model, its underpinning methodologies, and how they equate to, and are in tandem with, the principles of the Leaving Certificate Applied programme (see table below for some examples).

LCA Principles	WebQuest Model
<ul style="list-style-type: none"> ▪ Personal & Social Development 	<ul style="list-style-type: none"> ▪ Encourages use of reasoning and critical skills ▪ Promotes decision making ▪ Learners assess credibility/usefulness of information ▪ Promotes communications skills ▪ Enables learners to take responsibility for own learning ▪ Promotes self-confidence/independence ▪ Encourages initiative
<ul style="list-style-type: none"> ▪ Integration 	<ul style="list-style-type: none"> ▪ Ideal for implementing cross-curricular approaches, for example <ul style="list-style-type: none"> ○ IT skills (word-processing) ○ English (writing/literacy skills) ○ Work Experience/any other subject (can be the subject matter of individual tasks)
<ul style="list-style-type: none"> ▪ TeamWork 	<ul style="list-style-type: none"> ▪ Provides opportunities for peer/group activities ▪ Role-plays ▪ Peer evaluation
<ul style="list-style-type: none"> ▪ Basic Skills 	<ul style="list-style-type: none"> ▪ Promotes development of literacy skills ▪ Provides opportunity for selective reading
<ul style="list-style-type: none"> ▪ Active Teaching/Learning 	<ul style="list-style-type: none"> ▪ Learner-centred approach ▪ Promotes autonomous learning ▪ Situated learning/appropriate learning environment ▪ Hands-on/practical/task-based approach ▪ Facilitates achievement via short-term goals (tasks) ▪ Teacher as facilitator
<ul style="list-style-type: none"> ▪ Reflection 	<ul style="list-style-type: none"> ▪ Encourages reflective skills ▪ Includes self-assessment/evaluation ▪ Reviewing material/own learning ▪ Promotes higher order thinking skills
<ul style="list-style-type: none"> ▪ Community Links 	<ul style="list-style-type: none"> ▪ Can relate to subject matter of tasks, work experience or community issues for example.

Table 3.1 LCA Principles linked to the WebQuest Model

Working with the webquest model, it is clear that the development of reflection skills and techniques can be incorporated into normal everyday learning without moving away from the underlying culture or curriculum of the LCA programme. In particular the webquest facilitates the idea of integration and cross-curricular approaches (a central tenet of the programme) as it does active participant-centred learning, and the wherewithal to realize short-term goals. It is just such a situation that Moon espouses that ‘reflection will be more effective if supported through a curriculum’ and ‘reflection is best set into the context of a curriculum in which reflection itself is valued not added on but seamlessly part of the core curriculum’.

Summary of the Design Approach

It is the parallels drawn between reflection, the webquest model, the principles of the Leaving Certificate Applied programme, and the evident common denominators, that provided the foundation on which to develop the artefact central to this study. The Webquest model was the methodology or tool chosen, and the target participants, current learners of the Leaving Certificate Applied programme.

The model as outlined proposes a solution to address LCA learners’ difficulties with reflection in that it

- promotes the development of reflective techniques and allows opportunities for practice
- promotes learner responsibility and autonomy allowing teacher as facilitator
- provides a reflective-rich learning environment
- promotes the development of higher order thinking skills
- provides sources of information, direction and guidance
- provides a platform to facilitate integration
- promotes self-confidence, independence and initiative.
- Reflects the underpinning principles and objectives of the LCA programme.

This chapter outlines the design approach and the reasons for adopting such an approach. How the learning model was developed and subsequently implemented in the test environment is described in detail in the next chapter.

Chapter 4: Development & Implementation

Having agreed the webquest as an appropriate model and identified Leaving Certificate Applied learners as the appropriate pilot group, it was necessary to seek input and guidance of those directly involved in delivering the LCA programme so as to ensure the approach, level and content of the tool was acceptable. A boys-only second level school in north County Dublin provided such input and it is because of the assistance of those involved in that school that the artefact was appropriately developed and subsequently tested.

Background to the Development

An initial meeting with teaching staff provided an insight into the programme, its ethos and culture and also provided a clear picture of the learner profile. It was important to understand what makes LCA learners ‘tick’ bearing in mind that the traditional methods of teaching/learning had not always served them well in the past. Knowing, for example, that LCA learners relate more to short, direct messages, as opposed to long pieces of text-based material, prompted the use of bullet-points and boxed-in short sentences; on hearing that sport and cars were a major interest lead to the inclusion of these topics as resource material to support Task 3; the fact that writing itself was difficult for some pointed to the need for supports and these were provided by means of the template, the examples (to scaffold Task 1), the checklist and links to useful sites included in the resources section. The inclusion of Flash animations, modern images and vibrant colours made the webquest visually appealing for those used to engaging with modern websites and computer games. Encouraging and motivating the learners was a key consideration and a tailor-made product, aimed specifically to the target group, was more likely to encourage participation.

To complete the learning environment a further two ‘support’ sections were added to the website now comprising three distinct parts

1. **The WebQuest Model** : this section provided information about the webquest as a learning tool. It was included because, in this instance, neither teachers nor learners were familiar with it and had no prior experience of the model.
2. **Learning to Reflect** : the central part of the website - a specifically designed webquest to help develop LCA learners’ reflection skills and techniques.

3. **Facilitator Notes** : information about the webquest to guide and direct the teacher/facilitator particularly in relation to the test phase.

Welcome to the Learning to Reflect WebSite

This website presents a learning environment for Leaving Certificate Applied learners.

The website is in three sections.

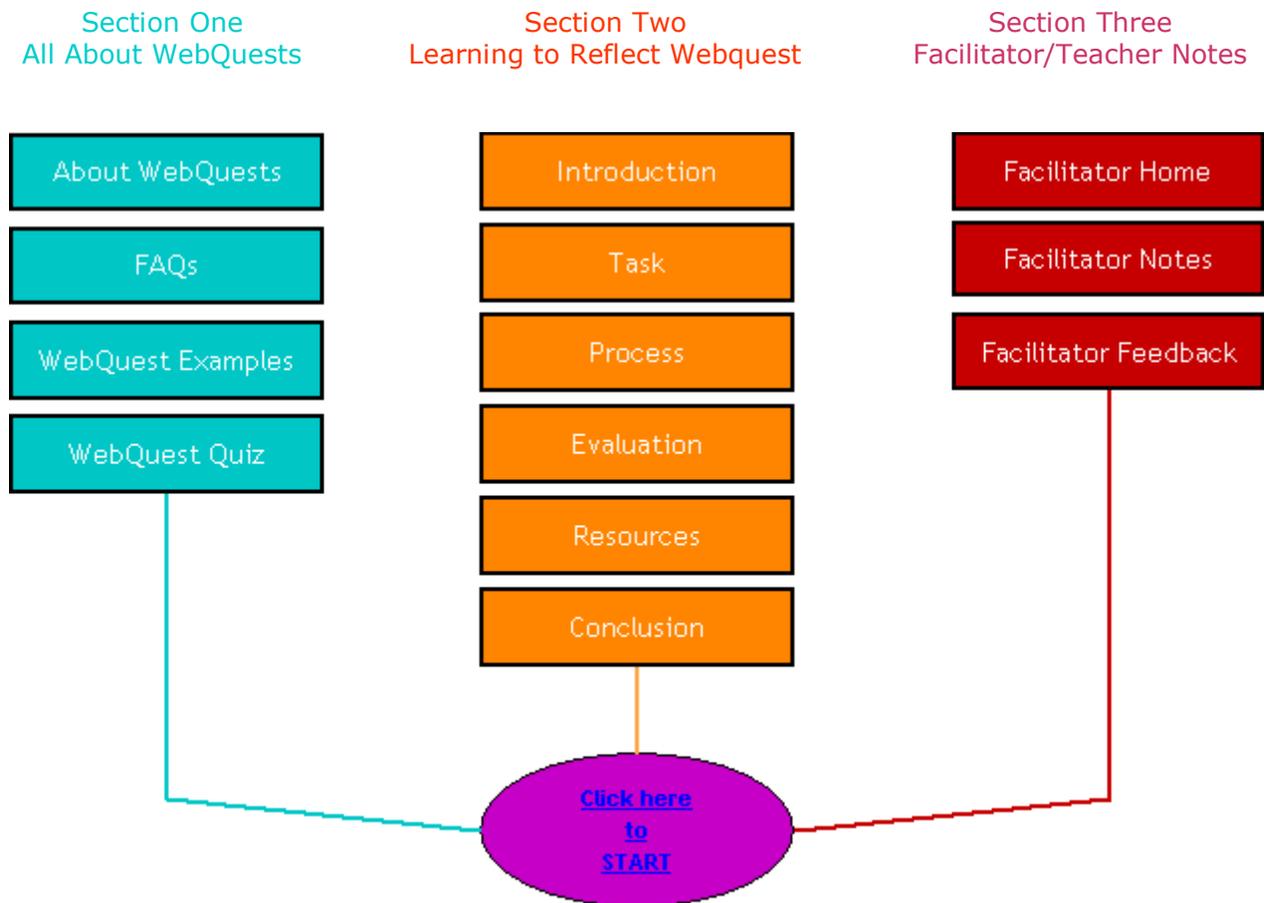


Figure 4.1 Illustration of Site Map

Each section was colour-coded to help with page/section identification and a site map icon was included on each to page to facilitate navigation. A second, follow-up meeting with teachers to assess the level and pitch of the tool confirmed the suitability of the development approach.

Development of the learning environment necessitated the use and application of several different tools and technologies as illustrated below

Activity	Technology Employed
WebSite Development	Macromedia ® DreamWeaver Version 4
Image Manipulation	JASC Paint-Shop Pro™ Version 6
Animation/Images	Macromedia ® Flash Version 5
Feedback Form	DreamWeaver form for mailing directly to researcher e-mail address
Questionnaire	On-line data collection via web interface using PHP and SQL server script
WebQuest Quiz	Hot Potatoes™ Version 6 http://www.halfbakedsoftware.com/
Project Documentation	Ms Word 2000
Collating Feedback	Ms Excel 2000

Table 4.1 Tools and Technologies used in the Development Process

Having planned and mastered the technology the final stage of development focused on the material and content of the website.

Developing the WebQuest Content

Central to any webquest is completion of the Task(s). In the Learning to Reflect webquest there are three tasks designed as exercises to help learners develop reflection techniques that can be practised again and again. Differing subject matter maintains learner interest however the underlying principles affecting learning remains the same. In line with Moon's suggestion (1999) that 'tasks should be introduced gradually' each task builds on learning from previous ones so it recommended that learners start with number one, move on to two, three when they feel confident to do so.

In the first task the learner is asked to reflect on a recent learning experience by completing a template. They are then asked to change the template, explain why they made the changes and produce a second reflective piece using the changed version. The purpose of the first task is

- To practise supported and structured reflection and develop appropriate vocabulary.
- To develop eventual independence from such supports
- To associate learning with self.
- To recognise the value of critical evaluation.
- To promote cross-curricular activity.
- To encourage and develop literacy skills
- To support the development of a reflective culture.

This task provides a basic structure to 'jump-start' (Costa & Kallick, 2002) initial reflective attempts and is a confidence building exercise with an expected outcome of eventual learner independence.

While the literature points to the fact that templates are often 'too prescriptive' and do not encourage true reflective practice it was important at the outset to adopt a softly, softly approach providing a supportive structure for learners and a basis from which they can progress. According to the literature 'more support in the beginning can give way to less structure later' (Moon, 1999) and this

was the approach taken here. While Task one provides opportunities for practice and also helps the learner become familiar with reflective terms and vocabulary, thinking skills are also developed in that learners are required to make decisions about the template headings and also make comparisons between the different outputs. To help learners with heading substitutions, four examples were provided to scaffold the process. This task addresses issues, identified in the literature, such as, learners' poor communications skills, difficulties with self-expression, inability to think, lack of practice opportunities and development of writing skills.

In the second Task the learner is asked to write a letter to himself describing a recent learning activity that he is then required to read out loud (to himself). The learner evaluates the 'letter' against a checklist to check if the work includes key reflective elements. Amendments may be made before giving the letter to two other co-learners to read. Readers are asked to give their opinion on the letter as a reflective piece and the points made are then discussed in groups of three using examples from the letter to illustrate their points. The objective is

- To build on prior learning
- To become more familiar with vocabulary commonly used in reflective pieces.
- To practise writing in the first person singular.
- To develop skills of self-expression.
- To develop skills of peer and self-review.
- To practice arranging thoughts in a clear and structured way.
- To develop an ability to see things from a variety of points of view.
- To promote cross-curricular activity.
- To develop and promote self-confidence.
- To improve communication skills.

Research has shown that letter writing has proven quite successful in helping learners produce reflective work (Eks & Willmann, 2000; Gustafson & Bennett, 1999). Gustafson & Bennett (1999) reported "the richest source of evidence of reflection was casting diary items in the form of personal correspondence". The idea for this second task originated in this research. Letter writing combined with opportunities for learners to develop and practise other reflective skills, such as self and peer evaluation, writing in the first person singular, and learning to personalise learning, provides the

framework for task two. Moon (1999) promotes the idea of sharing ideas with fellow learners stating that it is 'less threatening' than a peer group and that 'working with others can facilitate learning to reflect and can deepen and broaden the quality of reflection'. In addition, learners practise evaluation by measuring reflective pieces against a given checklist. Learners are also given an opportunity to work in groups presenting an opportunity for development of teamwork, communication and questioning skills.

The main focus of task three is on the development and practise of higher order thinking skills, the skills, as already identified, required for reflection (Boud et al., 1988). Task three aims primarily to enhance the skills of evaluation and synthesis. Learners are asked to select, from a number of options provided (links to the pieces are provided), an article of their choice, read and summarise it for their class group identifying three key points central to the piece. This is followed by group discussion as to whether the points identified were, in fact, *the* most important. Learners are asked to write down two new things they've learned from completing the task describing two situations where they think that learning might be used/useful in the future. The second part of Task 3 requires the learner to create a story based on the three key points identified in part 1.

The aims of the third task are

- To build on prior learning.
- To enable learners make connections between different situations and be able to relate experiences one to another.
- To further develop and practise analytical skills.
- To learn to identify what's important and what is not and why.
- To understand how one action/activity might impact on others
- To promote cross-curricular activity.
- To promote personal development.
- To involve the participants in locating and using relevant information.
- To further develop communication skills.

This task directly addresses the requirements of Cooper's third dimension of reflection that 'learners must be able to think about the wider implications of an experience, identify overarching or

underlying issues, relate them to possible future experiences and fit them in an overall context for the future' (Cooper, 2000) and the requirements of the Personal Reflection Task, the purpose of which is 'to provide the student with an opportunity to reflect on his/her personal experiences of the programme' and 'apply this understanding to future learning and career planning' (Department of Education & Science, 2000).

Other sections of the webquest provide pre-selected information resources and support materials so that learners can focus on the subject area rather than having to spend time locating sources of their own. The resources/links provided focused mainly on help with reflective writing with the majority of websites sourced in the US.

Evaluation criteria are also available whereby learners can assess their own progress and development as they move from task to task. A simple grading system ranging from 1 (not at all) to 5 (a lot) in response to 12 individual questions, for example "I've been able to identify the things I'm good at" or "I know I can do better with the next task" allows learners to reflect on their own progress and provide feedback on progress to others.

The conclusion is in itself a reflective activity, as it provides closure to the webquest, encourages reflection about the process and presents an opportunity for learners to summarise the experience. According to Dodge a conclusion 'reminds the learner what they've learned and perhaps encourages them to extend the experience into other domains' a sentiment that mirrors almost exactly Cooper's third dimension of reflection outlined above, demonstrating, again, the parallels between reflective practice, the webquest model (Dodge, 2002; Cooper, 2000), and the principles underpinning the LCA programme (Department of Education & Science, 2000).

Implementing the Test Model

The learning environment was made available (via URL) to the test/pilot group in early February 2004 for a period of 8 weeks. The test group comprised two groups of Leaving Certificate Applied learners: one a 5th year class and the second a class of 6th years, both studying the Information & Communications Technology module. Twenty class sessions was available to these groups and

approximately 25 hours of time was given to practising and completing the webquest tasks.

Learners were informed that they were participating in a research study and that the purpose of the webquest was to help them with the Personal Reflection Task due for assessment in late May/June.

The following chapter addresses the evaluation of the model, how it performed in practice, and reports on the activities of the test group.

Chapter 5: Evaluation and Findings

The design of the artefact and its implementation is described in the previous chapters. This chapter explains its performance in practice, how it was evaluated by the test group and discusses the findings and outcomes of the test phase.

The artefact or model developed for the purpose of this study is entitled 'Learning to Reflect'. It is a webquest comprising three progressively more difficult tasks and is aimed specifically at Leaving Certificate Applied Learners whose efforts in completing the Personal Reflection Task, as part of their overall course requirements, have, to date, met with limited success (Department of Education & Science, 2002). As Leaving Certificate Applied learners were selected as the target for developing the artefact it was fitting that this group would also be involved in the model's implementation and evaluation, thereby, involving themselves as key participants in the research study.

The model was made available to two LCA Information & Communications Technology class groups for a period of 8 weeks. The test group comprises just over 20 students made up of 5th year and 6th year learners. In order to make the model, and its testing, relevant and meaningful to the group the learners were informed that the purpose of the webquest was to help them complete their Reflective Statements (ie Personal Reflection Task) due for submission and assessment in late May/June.

The test group was given access to the webquest and asked to complete as much of it as they could in the time allowed. Learners were asked to submit the material produced as a result of completing the tasks so that it could be referred to or used to illustrate points in the study documentation.

Each test participant was asked to provide feedback to the researcher by means of e-mail form on completion of each of the three tasks, and also, on completion of the webquest by means of a questionnaire. Teachers were also asked to submit their views by means of (a different) questionnaire with further comments and information around the test phase made through informal discussion.

Research Method

Because this research involved the examination and exploration of a unique activity in a real life situation that necessitated the presentation of ideas and observations, rather than abstract theories or numerical analysis (Cohen et al., 2000) a case study method was chosen. Case study can be defined in terms of the process (Yin, 1994) or in terms of end product (Merriam, 1998). In carrying out an ‘empirical enquiry within its real life context’ (Yin, 1994) the aim was to generate an ‘holistic description and analysis’ (Merriam, 1998) of the extent to which LCA learners’ reflection skills and techniques had developed as a result of engaging with the webquest model.

Although the literature informs us of weaknesses (Nisbett and Watt, 1984) with the case study method, for example its susceptibility to subjective bias and limitations in its representativeness because of its narrow focus, the appropriateness of the case study method used for the purposes of this research is evidenced in that the study’s emphasis was understanding a phenomenon from a participant viewpoint in its social and institutional context, a situation well suited to the case study approach.

The study involved examination of a series of events in a systematic way; looking at what is happening, collecting data, analysing information and reporting the results. The project included all the ‘hallmarks’ (Cohen et al., 2000) of a case study in that it

- Focused on a single group and seeks to understand their perceptions of events
- Described events/activities/actions relevant to the case
- Presented a systematic and chronological narrative of events
- Combined descriptions of events with the analysis of them
- Highlighted specific relevant events
- Involved the researcher
- Employed mixed-methods (qualitative and quantitative)
- Utilised a number of data sources (observation and participation, interviews and questionnaires, documents, and the researcher’s impressions and reactions).

Evaluation Methodology

Referencing the aims of this study, ie ‘to explore the effectiveness of ICTs in providing enabling learner reflection supports, specifically by means of an interactive web-based learning model’ evaluation focused around three central themes

1. has the use of ICTs proved **effective** ?
2. have the learner reflection supports **enabled** learners ?
3. is the webquest model an **appropriate** learning tool ?

The model was evaluated in four phases allowing for feedback from more than one source and the utilisation of several data collection methods. The various phases, the actions and purposes of each phase, the instruments used and the evaluation questions (either 1, 2, or 3 above) posed are shown in detail in Table 5.1 below.

Phase	Evaluated by....	How....	Why....	Addresses Evaluation Question(s)1, 2 or 3 above
1	LCA Teachers	Informal Interview and Preview of Artefact	<ul style="list-style-type: none"> ▪ To determine the learner profile. ▪ To guide and inform development of the artefact. ▪ To confirm the level of IT skills and resources. ▪ To assess the suitability of the model. ▪ To confirm that the standard, level and content was appropriate to the target group. 	<p>Questions 2 and 3 by</p> <ul style="list-style-type: none"> ▪ Ascertaining the learner profile, confirming the correct pitch and tone of the artefact and establishing appropriateness of content. ▪ Matching the webquest model with the principles, ethos/culture of LCA programme. ▪ Confirming the artefact has the capacity to enable learners. ▪ Confirming the webquest was manageable and do-able.

Phase	Evaluated By ...	How...	Why ...	Addresses Evaluation Question(s) ...1, 2, or 3 above
2	LCA Learners	Task evaluation form including examples of completed work	<ul style="list-style-type: none"> ▪ To determine learner progress. ▪ To view the product (as an outcome of the tasks) ▪ To provide feedback on the suitability of the model. ▪ To inform the research study. 	<p>Questions 1, 2 and 3 by</p> <ul style="list-style-type: none"> ▪ Tracking progress - discovering change/improvement in the items of work. ▪ Providing a facility to compare the different pieces of work for reflective content/reflective capability. ▪ Receiving learners thoughts on the model on an on-going basis by asking about effectiveness and appropriateness including references to utilization of IT.
3	LCA Learners and LCA Teachers	Individual questionnaires on completion of the test phase	<ul style="list-style-type: none"> ▪ To seek views from two differing perspectives ▪ To ascertain the effectiveness of the model ▪ To assess outcomes of the study to inform the research ▪ To produce quantitative and qualitative data. ▪ To provide opportunity for feedback/comment from users. ▪ To seek data for comparative/cross-reference purposes (ie views of both learners and teachers) 	<p>Questions 1, 2 and 3 by</p> <ul style="list-style-type: none"> ▪ Framing (questionnaire) questions appropriate to the three themes. ▪ Learner questionnaire is grouped under three headings a) reflection b) reflection skills c) the webquest ▪ Allowing space for further additional comment from teachers broadens the nature/scope of the feedback ▪ Facilitates two diverse views.

Phase	Evaluated By	How....	Why....	Addresses Evaluation Question ...1, 2 or 3 above
4	LCA Teachers	Informal Interview	<ul style="list-style-type: none"> ▪ To seek views in an informal way through open discussion (as opposed to guided questioning of the questionnaire). ▪ To seek overview and overall opinion of the model. ▪ To allow for clarification and confirmation of points made previously. 	<p>Questions 1, 2 and 3 by</p> <ul style="list-style-type: none"> ▪ Facilitating open discussion about the implementation and test phase ▪ Allowing further opportunity for comment to ensure all three themes have been adequately covered.

Table 5.1 Four Evaluation Phases

These four evaluation points facilitated the capture of appropriate and relevant data to provide meaningful feedback in answer to the three questions posed: is it **effective**, is it **enabling**, is it **appropriate**?

Evaluation & Findings

Phase 1, at the pre-implementation stage, involved meeting LCA teachers, explaining the purpose and method of the study, and receiving guidance and advice around development of the artefact. Some background information and examples of questions (see appendix 1) was provided for teachers prior to the meeting in order to focus the discussion. As the LCA programme is relatively new, and research material around the programme (and its implementation) relatively scarce, it was an ideal opportunity to get first-hand information, to learn of the background and nature of the programme, and most importantly, to establish the learner profile. As outlined in chapter 3 encouraging and motivating the learners was a key consideration and a tailor-made product, aimed specifically to the target group, was more likely to encourage participation. It was also important to establish suitability of level and content. In the study the model would be assessed as an enabling one, it was, therefore, vital to ensure that its content allowed for this and made it possible for learners to progress and achieve.

Issues around technology skills and resources were also clarified. The IT skill level of learners and their ability to complete the webquest was confirmed and the availability of technology resources, such as internet access, e-mail, was established. As the model was to be implemented within the Information & Communications Technology module and during its allocated class-time, it was also important to make sure the model's content was in keeping with LCA syllabus requirements and did not significantly detract from or diminish formal curriculum aims and objectives. Moon suggested that 'reflection will be more effective if supported through a curriculum' (Moon, 1999) and this clearly is the case here in that learners completing the webquest will draw on their internet skills, writing skills, reading skills, word processing skills, reflection skills, all course requirements of the LCA curriculum.

To ensure all suggestions and advice had been interpreted and understood correctly a further meeting with teachers took place on completion of the development work in order to review the working model in preparation for its implementation.

Evaluation Stage 2 focused on the product and how learners effectively improved their reflection skills and techniques by completing the webquest tasks. In addition to evidence received in the form of completed work learners were also asked to evaluate their own progress. At the end of each task, and before moving onto the next one, learners were asked to fill out an evaluation form assessing their progress and attitude to the webquest model using a straightforward 1 (not at all) – 5 (a lot) grading or marking scheme. Learners clicked on the score that matched their current understanding of their abilities around reflection and reflective writing.

Not all students completed the form and in some cases the number of respondents was poor. A total of 17 completed evaluation forms was received following Task 1, 2 after Task 2, and 3 on completion of the third and final Task. The poor response in relation to Task 2 can be explained in that 10 pieces of work was received together with the completed checklists but

only two of these had also included the evaluation form. This is clearly a case of misunderstanding rather than lack of interest or willingness to participate.

A summary of grading scores can be seen below with more detailed information available at Appendix 2.

Scoring range		1	2	3	4	5
1	Overall % scores for Task 1 evaluation	2	10.7	27.4	44.1	15.1
2	Overall % scores for Task 2 evaluation	0	0	12.5	54.1	33.3
3	Overall % scores for Task 3 evaluation	0	11.1	38	44.4	5.5

Table 5.2 Summary of Grading Scores

It is clear from this table that the most scores fell into the 4 (a good bit) category with 3 (half & half) coming a close second, thirdly were the 5s (a lot), second-last the 2s (very little) and finally 1 (not at all). With the exception of the very low scoring for 5 (a lot) following Task 3 the majority of scores fall into the categories that represent improvement for example ‘my writing skills have improved...a good bit (4)a lot (5)’ rather than those with negative associations ‘my writing skills have improved ...not at all (1) ...very little (2)’. The small percentage opting for ‘not at all’ and ‘very little’ gives an indication that learners did think their understanding and abilities around reflection had somewhat improved. The clustering of scores around the 3 (half & half) and 4 (a good bit) categories suggests that while learners believe they’d made some progress they were not sufficiently confident in their abilities to give the top evaluation score of 5 (a lot).

While the quantitative data received by means of the evaluation forms was useful in gauging progress from the learner point of view, perusal of the completed pieces of work, in conjunction with the data, provided significantly more insight. The work produced for Task 1 was generally very good but, in line with the research, many pieces consisted of factual reporting rather than efforts to reflect or think deeply about the learning experience. In two cases learners had written the piece using the headings as a guide and then deleted the headings before submitting the work. While the template provided initial support the added

value, from this exercise, comes from having to change the headings and explain the reasons for the changes, as this makes the learner think and reflect. Not every learner attempted this part of the Task, some did but substituted only the given examples; others completed it exceptionally well. Such headings as ‘did you need much help’, ‘would you do it again’ and ‘what didn’t you like about the activity’ were all offered as alternatives and in each case reasonable and logical reasons for the changes were given. Task 2, the least favoured task, produced some better reflective work. The letter writing, although somewhat like Task 1 from the reporting aspect, did make the writing more personal and the use of the 1st person singular, completely lacking in Task 1, was very evident in students’ letters. Phrases like ‘although I enjoyed it I realised that I wouldn’t be suited to this type of work’ in a letter about work experience and ‘it’s like having an army and being the general sending out my soldiers’ in a letter about playing chess. The checklists were honestly completed in that learners producing the weaker reflective pieces had as few as four boxes ticked (out of a possible 15) whereas with letters of a more reflective nature a much higher number of ticks had been given. This confirms learners’ understanding of reflection had improved and they had the ability to think (and evaluate) the reflective content of their own work, something which they had not had to experience previously. The final task, with only three completed pieces, produced excellent work. Learners demonstrated their abilities to abstract key points and very inventive and imaginative stories were created as a result. In discussion with teachers, at the post-implementation stage, it was confirmed that time constraints meant that not all students were able to complete this Task neither were learners able to carry out elements of Task 2 and 3 involving group sessions and teamwork. A pity, as further improvement might have been demonstrated.

Receiving views and comments about the model, its effectiveness and appropriateness, was the focus of Evaluation Stage 3. Teachers and learners were asked to complete questionnaires seeking their opinion as to the model’s suitability, performance and its value. Different questionnaires were provided for each but some cross-referencing was possible in that some of the questions, although worded differently, sought similar responses, for example learners were asked simply to choose Task 1, 2 or 3 when asked ‘which task helped your reflective writing skills the most?’ whereas teachers were asked to comment on ‘which of the three Tasks provided the most support for

learners’? The overall response rate from both teachers and learners was good, especially from learners with 11 questionnaires completed, although not every question was answered in each case.

The learner questionnaire comprised 22 questions; 15 requiring yes/no type answers and 7 requiring longer text-based responses. These questions were included as they would elicit more qualitative data from learners than if confined to the short answer type of question. The questionnaire comprised three sections 1) About Reflection, 2) About Reflection Skills and 3) About the Webquest. See Appendix 3 for a summary of responses.

Responses in section 1 were encouraging with the majority answering ‘yes’ or ‘a little’ suggesting that learners had a positive attitude to reflection and an understanding of its meaning. See table below for summary of Section 1 responses.

		Yes	No	A Little	No Resp
1. About Reflection					
Having completed this webquest do you ...					
1a	know & understand what reflecting on your learning means	5	0	4	2
1b	understand how reflection can help with your learning	8	0	2	1
1c	think more about what, why and how you are learning	8	0	2	1
1d	think reflecting on learning is completely useless	1	7	2	1
1e	think reflecting on learning will help with other LCA subjects	7	1	2	1
1f	<i>Tell me 2 things you've learned about reflecting on learning and why*</i>				

Table 5.3 Learner Questionnaire summary of Section 1 Responses

However when asked to give more detailed information about what they’d learned (question 1f) learner responses did not confirm this same viewpoint. Responses consisted mainly of reporting on aspect of the Tasks, for example ‘finding information is important if you need the right details of when a certain match was on’. Of the eight that responded only four learners provided more meaningful responses such as ‘get a better understanding of the work you’ve done’ and ‘has helped to understand more about myself throughout the LCA course’.

Section 2 sought responses around Reflection Skills and the positive/negative effects of the webquest on learners' reflection techniques.

2. About Reflection Skills		A			
		Yes	No	little	No Resp
Having completed the Tasks have you...					
2a	improved your reflective writing skills	8	2	0	2
2b	which Task helped you most	Tsk1 (4) Tsk2 (2) Tsk3 (4)			
2c	<i>what particular skills did you learn from doing each of the Tasks*</i>				
2d	Which Task did you like best	Tsk1 (3) Tsk2 (1) Tsk3 (5)			
2e	<i>What is it you liked about that task*</i>				
2f	Which did you find least helpful	Tsk1 (5) Tsk2 (4) Tsk3 (0)			
2g	<i>Why do you think this Task is unhelpful*</i>				
2h	Did using the checklist help your reflective skills	4	0	7	0
2i	Do you think the checklist is a good way of checking your work	9	0	2	0
2j	How many times did you use the checklist	less five(8) less ten (3)			
2k	Did scoring the evaluation form help you think about your learning	3	2	6	0
2l	<i>Did you find the links on the resources page useful. Which 2 were the best*</i>				
2m	How much better do you think this year's Personal Reflection Task will be	Much better (4)			
		A little better (4)			
		No change (3)			

Table 5.4 Learner Questionnaire summary of Section 2 Responses

The positive answering in this section suggests that learners did think their skills had improved. Particularly interesting is the fact that learners felt completion of the webquest would impact positively on this years Personal Reflection Tasks (question 2m), a very positive outcome. Task 3, although considered to be the most difficult, appears to have been the most successful/popular with the group. Questions requiring longer answers (marked *) confirmed this in that the most responses indicated a constructive and optimistic point of view, for example things I learned from doing Task 1.....'I got to speak about my chess skills again which was good because I forgot about the people I'd played so reflecting on it helped my to remember when I couldn't play chess and showed me how good I've become' and things I learned from doing Task 2 'I didn't know about writing a letter and doing this task was great because I got to think about how to write and now if I need to write I'll know how and I can also practise writing them' and finally things I learned from doing Task 3'that you had to learn about something and then write a story that had something got to do with it'. A bit disappointing was the response to the question around use of resources/links where all learners, with the exception of one, replied that they had not used them.

The last section About the WebQuest produced interesting results. In every case learners replied that they couldn't say what they liked best or least (questions 3b and 3c) because they never did the webquest. This is slightly in conflict with responses to the first (question 3a) question 'do you think the webquest is a good way to learn about reflection?' where a total of six learners responded 'yes' and four stated 'no'.

3. About the WebQuest		yes	no	litle	No resp
3a	Do you think the webquest is a good way to learn about reflection	6	4	0	1
3b	<i>What did you like most*</i>				
3c	<i>What did you like least*</i>				

Table 5.5 Learner Questionnaire summary of Section 3 Responses

This might suggest that learners were not aware that the Tasks they were doing were actually part of the webquest or that the webquest constituted a different approach to teaching/learning and/or that they didn't fully make the connection between what they were doing and the model. This fact, later discussed with teachers, was confirmed as a possibility, in that LCA learners are likely to take things at face value rather than feel the need to put them in context. Learners most likely will have thought of the webquest Tasks as exercises to help produce improved Personal Reflection Tasks rather than viewed them as part of a new or different way of doing things. LCA learners are more likely to focus on the immediate task at hand rather than take a broader view. While it is clear from feedback that skills and techniques did somewhat improve and that some learning around reflection did take place it is disappointing that the full extent and nature of the webquest model failed to make an impression on learners. It is possible, however, that the time available limited the extent to which learners could explore the model and perhaps this might be a factor to consider in any further study.

In contrast, responses from teachers with regard to the webquest was very encouraging with positive feedback about almost all aspects of the model including comments about learner improvement, teacher input, site navigation, time allocation. This extract (from the responses) sums up the teacher perspective 'The webquest was very good at involving learners in part of the programme which is frequently difficult to tackle in the ordinary classroom environment. It allowed students to work on their own initiative and pace. Some of the students showed unexpected skills at creative writing that

had not been seen previously. Overall this was a very good way to tackle this part of the course'. Teachers also commented that the level and vocabulary was good, the model involved a more learner-centred approach and the fact the 'the webquest was better than the classroom method used in the past'.

Phase 4, post-implementation and the final evaluation stage, took the form of an informal interview with teachers involved with the study, a sort of post-mortem. This was a useful exercise as it provided an opportunity to get a sense of the exercise as a whole and to get overall impressions of the artefact, its implementation and learners' performance looking back. The experience and actual application of the model was discussed and some constructive points, contributing to the overall assessment of the operation and functioning of the model, were put forward for consideration.

Summary of Findings

In summary, feedback indicates that, in general, learners' understanding, capabilities and skills had improved as a result of completing the webquest tasks. Teachers confirm this view and, albeit with some reservations, are positively disposed towards the webquest as a model of teaching/learning, in particular for the LCA student cohort. Time (and time-tabling) constraints meant that learners were not able to fully experience what the webquest model had to offer and, as a consequence, may not have benefited to the extent they might.

An overview of the study follows in the next chapter along with the author's comments and observations with regard to the findings.

Chapter 6: Conclusion

The development and evaluation of a proto-type web-based learning artefact forms the basis of this study. The study came about as a result of research carried out by the author on the subject of learner reflection and specifically in light of the discovery that learners experience significant difficulty producing quality reflective work. From subsequent readings, it became clear that efforts to address the issues had not always been successful and that traditional learner supports, such as templates, questionnaires, diaries, had met with limited success.

The artefact, or learning tool, developed in this case for Leaving Certificate Applied learners, offers an alternative approach to the provision of support, in that it provides opportunities not only for the development of appropriate reflective techniques but includes opportunities for generic skills development and specifically those higher order skills necessary for reflective practice, and so, creates an appropriately reflective learning environment.

The learning tool chosen is the webquest model. This is a web-based learning model structured in six sections that incorporates both practical and theoretical elements and is learner-centred. It was chosen because the methodologies employed, such as problem-solving, decision-making, analyzing, questioning, mirror those required to engage productively in reflective practice. In essence, this means that learners have an opportunity to acquire and develop reflective skills by engaging with the webquest because of the webquest model's pedagogical make up. The model also reflects the culture and ethos of the target group (LCA learners) in that it supports and facilitates cross-curricular approaches, integration, social and personal development and active teaching/learning methodologies. The approach taken is, therefore, three-dimensional with reflection and reflective practice, the common denominator, binding all three elements together.

The aim of the case study is to explore the effectiveness of ICTs in providing enabling learner reflection supports, specifically by means of an interactive web-based learning model. Two groups of Leaving Certificate Applied learners, and teachers, tested and evaluated the artefact over an eight-

week period. In line with the aims of the study, and in order to affect relevant and meaningful feedback, three key questions underpinned the evaluation process

- 1 has the use of ICTs proved **effective** ?
- 2 have the learner reflection supports provided by the model **enabled** learners ?
3. is the webquest model an **appropriate** learning tool ?

The artefact's effectiveness was measured by learner self-evaluation and examination, by the author, of completed reflective pieces. Feedback relating to the appropriateness of the webquest was collected by means of a questionnaire from both learners and teachers. The artefact's capacity to enable was measured in terms of learner progress and improvement. Teachers and learners were asked to provide qualitative data with regard to the webquest model, its content and methodology, and to comment on its suitability as a learning tool. Observations and points made during informal discussions with Leaving Certificate Applied teachers, also provided a valuable source of information.

As a result of completing this study, and based on consequent findings, I come to the following conclusions

- The use of ICTs is effective particularly in the case of LCA learners. It must be remembered that the student profile suggests these learners are doers rather than thinkers and learning that can be achieved in a practical, hands-on way provides the ideal learning situation for them. LCA learners tend to achieve at ICT because of its practical nature and because it provides a learning environment where the teacher is less central and the focus is more on the learner. LCA students are more likely to flourish in this more practical type of environment, where they can learn to take responsibility and learn at their own pace, very different to their experiences in the past where the more usual teacher/learner/classroom situation had proved difficult and unproductive.
- There is little doubt that the supports provided did enable students, to a more or lesser degree. The fact that the majority of learners felt that their Personal Reflection Tasks would be better this year means they feel they have developed skills and acquired techniques that gives them that confidence. Reading examples of learner's reflective work, with Task 1 work

as the benchmark, there is evidence to suggest that elements of reflection are more evident in the later pieces, and therefore learners capacity to think and reflect are more developed. Speaking with teachers, it seems the element of self-assessment also impacted on learners. Learners had always seen the role of assessor/marker as solely in the teacher's domain but with the webquest they were enabled to assess themselves, and so for the first time they had the opportunity to make judgements about their own learning and progress. Something they had never considered doing previously. It is unfortunate that time did not allow learners to fully experience all aspects of the webquest and, in particular, the group and teamwork elements as I think these too might have had a positive and enabling impact.

- There is no doubt that the webquest model is an appropriate way to teach/learn about reflection and particularly as it applies to the LCA group. The merits of selecting the model (webquest) and marrying it with the target group (LCA) were discussed in chapter 3 largely from a theoretical point of view. However, it is true to say that the theory also worked in practice. Appropriateness to the LCA culture and ethos, the learner profile, subject matter are all illustrated as a result of this study. There is, as always, some room for improvement, and suggestions include
 - Introducing the artefact at the start of the year to allow appropriate time-tabling giving learners the chance to experience the model fully.
 - Introduce it at the start at of the year to facilitate teachers working together around cross-curricular and integrated approaches.
 - Providing proper induction (to the webquest) for learners so that they understand the model and see it in its wider context.
 - It is accepted that reflection is difficult particularly for the LCA group. Introducing the webquest using more concrete subject matter and gradually moving to the more abstract subject of reflection might prove to be a better approach.
 - Introduce wider consultation when designing the artefact and facilitate greater involvement by LCA teachers and learners in its development.

In conclusion, the value of the reflective process to learning and the issue of learners' difficulty with reflection have been examined. An approach to address the difficulties has been suggested and the merits of that approach evaluated. Resultant feedback, although not totally positive, does imply

potential, justifying further development and study of the topic. Particularly successful was the introduction and suitability of the webquest model to the Leaving Certificate Applied programme. Learners, and teachers in particular, are enthusiastic about the model, its benefits and uses, and are optimistic about pursuing its application further, not just with developing learner reflective skills and techniques, but its wider application throughout the entire programme syllabus.

“Reflection is about treating successful and unsuccessful events as learning opportunities”

Giselle O. Martin-Kniep in *Capturing the Wisdom of Practice*

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~Appendices~

Appendix 1

Leaving Certificate Applied pre-meeting Information.

The project involves the development and evaluation of a web-based learning tool (webquest) targeted to and evaluated by a specific learner group. It will be targeted to LCA students with the purpose of supporting the development of learner reflection skills and techniques (essentially to help them with the Personal Reflection Task but also to help develop higher thinking skills and so on to support personal development generally).

The webquest comprises three separate tasks with increasing degree of difficulty (1 = simplest, 3 = most difficult) that can be completed and practised as many times as learners/facilitators want. The **final work** to be evaluated by teacher/learner (on-line form) and submitted to database for my collection (I will organise this via Trinity). Other resources will be included as part of the webquest but the main focus is on practise/completion of the tasks. The test webquest will be available to the group in February. It is hoped to have the project fully completed by March 2004 (possible 8 weeks).

The research comprises a CASE STUDY (ie the class group) and how ICTs helped (or did not help) to develop their reflection skills. Three research instruments

1. questionnaire (on completion of the project – completed by learners and facilitator)
2. product (on-line collection of data comprising learner/teacher evaluation of work)
3. informal interview (with LCA teachers).

Some Questions – in advance

1. What IT skills will the group have (January 2004). Will they be taking the (vocational) I&CT module or will they be at the (mandatory) Introduction to I&CT stage? Familiar with WP (for tasks), internet and e-mail?
2. What IT access do they have – internet, e-mail. Only during class time or at other times?
3. How much Class-time per week? How much time would be available to the project (webquest) as part of this time? Could doing the webquest tasks help (or hinder) with the IT module learners are following?
4. How is Reflection ‘taught’ currently. More than one teacher/cross-curricular? What works/doesn’t work. Any practice sessions/mock tasks throughout the school year? What is the school’s approach?
5. What information does the student receive about Reflection (and/or the Task), do they know what it is about/purpose/expected outcomes/what’s involvedor is it just another chore?
6. What limitations – writing, reading, technology, language ? good standard/level of literacy? Access?
7. LCA learners – What motivates them? Any particular role models/effects (think in terms of technology – animation, on-line quizzes, Q and Answers, audio, for example). Would images of Bart Simpson, for example, be ‘cool’ for them? ‘busy’ screens etc.?

Appendix 2a

Questions	1	2	3	4	5	Totals
	number	number	number	number	number	
1 I know more about reflection than I did when I started	1	1	8	7	0	17
2 I've learnt new skills	0	0	1	9	7	17
3 writing reflective statements is easier now	0	10	5	2	0	17
4 reflective statements are better	1	3	9	4	0	17
5 writing skills have improved	1	2	2	7	5	17
6 I know that I can use the things I've learnt.....	0	0	1	9	7	17
7 I've been able to identify things I'm good at	0	0	5	11	1	17
8 I've been able to identify bits I'm not so good at	0	2	4	10	1	17
9 I think a lot more about what I'm doing/learning	0	0	6	9	2	17
10 I've got used to writing in the 1st person singular	2	2	7	4	2	17
11 I understand why reflecting on learning is a good thing	0	1	6	8	2	17
12 I know how I can do better with the next Task	0	1	2	10	4	17
	5	22	56	90	31	

Questions	Not at All number	Very little number	Half/Half number	A good bit number	A lot number	Totals
1 I know more about reflection than I did when I started				1	1	2
2 I've learnt new skills					2	2
3 writing reflective statements is easier now			1	1		2
4 reflective statements are better				1	1	2
5 writing skills have improved				2		2
6 I know that I can use the things I've learnt.....				1	1	2
7 I've been able to identify things I'm good at				1	1	2
8 I've been able to identify bits I'm not so good at				2		2
9 I think a lot more about what I'm doing/learning			1		1	2
10 I've got used to writing in the 1st person singular				1		2
11 I understand why reflecting on learning is a good thing				2		2
12 I know how I can do better with the next Task				1	1	2
			2	13	8	

Questions	Not at All number	Very little number	Half/Half number	A good bit number	A lot number	Totals
1 I know more about reflection than I did when I started			1	2		3
2 I've learnt new skills			2	1		3
3 writing reflective statements is easier now			2	1		3
4 reflective statements are better		1	1	1		3
5 writing skills have improved		1	1	1		3
6 I know that I can use the things I've learnt.....		1		2		3
7 I've been able to identify things I'm good at			1	1	1	3
8 I've been able to identify bits I'm not so good at				2	1	3
9 I think a lot more about what I'm doing/learning				3		3
10 I've got used to writing in the 1st person singular		1	1	1		3
11 I understand why reflecting on learning is a good thing			2	1		3
12 I know how I can do better with the next Task			3			3
		4	14	16	2	

Appendix 2b

Task 1	Responses 17	not at all		v. little		half/half		a good bit		a lot	
		1	%	2	%	3	%	4	%	5	%
		1	5.9	1	5.9	8	47.1	7	41.2	0	0
0	0%	0	0%	1	5.9	9	52.9	7	41.2		
0	0%	10	58.8	5	29.4	2	11.8	0	0%		
1	5.9	3	17.6	9	52.9	4	23.5	0	0%		
1	5.9	2	11.8	2	11.8	7	41.2	5	29.4		
0	0.0	0	0%	1	5.9	9	52.9	7	41.2		
0	0.0	0	0%	5	29.4	11	64.7	1	5.9		
0	0.0	2	11.8	4	23.5	10	58.8	1	5.9		
0	0.0	0	0%	6	35.3	9	52.9	2	11.8		
2	11.8	2	11.8	7	41.2	4	23.5	2	11.8		
0	0.0	1	5.9	6	35.3	8	47.1	2	11.8		
0	0.0	1	5.9	2	11.8	10	58.8	4	23.5		
		5	2%	22	10.7	56	27.4	90	44.1	31	15.1

Task 2	Responses 2	not at all		v. little		half/half		a good bit		a lot	
		1	%	2	%	3	%	4	%	5	%
		0	0.0	0	0.0	0	0.0	1	50.0	1	50
0	0%	0	0%	0	0.0	0	0.0	2	100.0		
0	0%	0	0	1	50	1	50.0	0	0%		
0	0.0	0	0	0	0.0	1	50.0	1	50%		
0	0.0	0	0	0	0.0	2	100	0	0.0		
0	0.0	0	0%	0	0.0	1	50.0	1	50.0		
0	0.0	0	0%	0	0.0	1	50.0	1	50		
0	0.0	0	0	0	0.0	2	100.0	0	0		
0	0.0	0	0%	1	50.0	0	0	1	50		
0	0.0	0	0	1	50.0	1	50	0	0		
0	0.0	0	0	0	0.0	2	100	0	0		
0	0.0	0	0	0	0.0	1	50.0	1	50.0		
		0	0.0	0	0.0	3	12.5	13	54.1	8	33.3

Task 3	Responses	not at all		v. little		half/half		a good bit		a lot	
		1	%	2	%	3	%	4	%	5	%
	3	0	0.0	0.0	0.0	1	33.3	2	66.7	0.0	0.0
		0	0%	0.0	0.0	2	66.7	1	33.3	0.0	0.0
		0	0%	0.0	0.0	2	66.7	1	33.3	0.0	0%
		0	0.0	1	33.3	1	33.3	1	33.3	0.0	0%
		0	0.0	1	33.3	1	33.3	1	33.3	0.0	0.0
		0	0.0	1	33%	0	0.0	2	66.7	0.0	0.0
		0	0.0	0	0%	1	33.3	1	33.3	1	33.3
		0	0.0	0.0	0.0	0	0.0	2	66.7	1	33.3
		0	0.0	0	0%	0	0.0	3	100	0.0	0.0
		0	0.0	1	33.3	1	33.3	1	33.3	0.0	0.0
		0	0.0	0.0	0.0	2	66.7	1	33.3	0.0	0.0
		0	0.0	0.0	0.0	3	100.0	0	0	0.0	0.0
		0	0.0	4	11.1	14	38.8	16	44.4	2	5.5

Appendix 2c

		Resp	1	2	3	4	5
			%	%	%	%	%
1	I know more about reflection than I did when I started						
	Task 1	17	5.9	5.9	47.1	41.2	0
	Task 2	2	0	0	0	50	50
	Task 3	3	0	0	33.3	66.7	0
2	I've learnt new skills						
	Task 1	17	0.0	0.0	5.9	52.9	41.2
	Task 2	2	0.0	0.0	0.0	0.0	100
	Task 3	3	0.0	0.0	66.7	33.3	0.0
3	writing reflective statements is easier now						
	Task 1	17	0.0	58.8	29.4	11.8	0.0
	Task 2	2	0.0	0	50	50	0.0
	Task 3	3	0.0	0	66.6	33.3	0.0
4	reflective statements are better						
	Task 1	17	5.9	17.6	52.9	23.5	0
	Task 2	2	0.0	0.0	0.0	50	50
	Task 3	3	0	33.3	33.3	33.3	0
5	writing skills have improved						
	Task 1	17	5.9	11.8	11.8	41.2	29.4
	Task2	2	0.0	0.0	0.0	100	0.0
	Task3	3	0.0	33.3	33.3	33.3	0.0
6	I know that I can use the things I've learnt.....						
	Task 1	17	0.0	0	5.9	52.9	41.2
	Task 2	2	0.0	0.0	0.0	50	50
	Task 3	3	0.0	33.3	0	66.7	0
7	I've been able to identify things I'm good at						
	Task 1	17	0.0	0.0	29.4	64.7	5.9
	Task 2	2	0.0	0.0	0	50	50
	Task 3	3	0.0	0.0	33.3	33.3	33.3
8	I've been able to identify bits I'm not so good at						
	Task 1	17	0.0	11.8	23.5	58.8	5.9
	Task 2	2	0.0	0.0	0.0	100	0
	Task 3	3	0.0	0.0	0.0	66.7	33.3
9	I think a lot more about what I'm doing/learning						
	Task 1	17	0.0	0.0	35.3	52.9	11.8
	Task 2	2	0.0	0.0	50	0	50
	Task 3	3	0.0	0.0	0	100	0
10	I've got used to writing in the 1st person singular						
	Task 1	17	11.8	11.8	41.2	23.5	11.8
	Task 2	2	0.0	0.0	50	50	0.0
	Task 3	3	0	33.3	33.3	33.3	0.0
11	I understand why reflecting on learning is a good thing						
	Task 1	17	0	5.9	35.3	47.1	11.8
	Task 2	2	0.0	0.0	0	100	0.0
	Task 3	3	0.0	0.0	66.7	33.3	0.0

12	I know how I can do better with the next Task						
	Task 1	17	0.0	5.9	11.8	58.8	23.5
	Task 2	2	0.0	0.0	0.0	50	50
	Task 3	3	0.0	0	100	0.0	0.0

1	Overall % scores for Task 1 evaluation	2	10.7	27.4	44.1	15.1
2	Overall % scores for Task 2 evaluation	0	0	12.5	54.1	33.3
3	Overall % scores for Task 3 evaluation	0	11.1	38	44.4	5.5

Appendix 3

		Yes	No	A Little	No Resp
1. About Reflection					
Having completed this webquest do you ...					
1a	know & understand what reflecting on your learning means	5	0	4	2
1b	understand how reflection can help with your learning	8	0	2	1
1c	think more about what, why and how you are learning	8	0	2	1
1d	think reflecting on learning is completely useless	1	7	2	1
1e	think reflecting on learning will help with other LCA subjects	7	1	2	1
1f	<i>Tell me 2 things you've learned about reflecting on learning and why*</i>				
2. About Reflection Skills					
Having completed the Tasks have you...					
2a	improved your reflective writing skills	8	2	0	2
2b	which Task helped you most	Tsk1 (4) Tsk2 (2) Tsk3 (4)			
2c	<i>what particular skills did you learn from doing each of the Tasks*</i>				
2d	Which Task did you like best	Tsk1 (3) Tsk2 (1) Tsk3 (5)			
2e	<i>What is it you liked about that task*</i>				
2f	Which did you find least helpful	Tsk1 (5) Tsk2 (4) Tsk3 (0)			
2g	<i>Why do you think this Task is unhelpful*</i>				
2h	Did using the checklist help your reflective skills	4	0	7	0
2i	Do you think the checklist is a good way of checking your work	9	0	2	0
2j	How many times did you use the checklist	less five(8) less ten (3)			
2k	Did scoring the evaluation form help you think about your learning	3	2	6	0
2l	<i>Did you find the links on the resources page useful. Which 2 were the best</i>				
2m	How much better do you think this year's Personal Reflection Task will be	muchbetter (4)			
		a little better (4)			
		no change (3)			
3. About the WebQuest					
3a	Do you think the webquest is a good way to learn about reflection	6	4	0	1
3b	<i>What did you like most*</i>				
3c	<i>What did you like least*</i>				
<i>*questions requiring longer answers are noted in italics</i>					

The artefact 'Learning to Learn' can also be viewed at

<http://www.cs.tcd.ie/~macanalm/webquest/finalwebquest/Opening-page.html>