An Approach to Supporting and Enhancing Self-Assessment through Asynchronous Online Peer-Feedback

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Declaration

I declare that the work described in this document 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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Acknowledgements

Abstract

Teacher-student hand-holding in further/higher education is no longer viable. For far too long the teacher's role was to enlighten students on where they are, where they should go and how they should get there. However, today's competitive knowledge economy demands graduates who are capable of setting their own standards of performance and monitoring their own progress via meaningful and relevant self-assessment. Hence, this thesis seeks to add to the body of research concentrated on developing self-regulated learners using new methodologies and technologies.

The main difficulty with self-assessment is the inability of students to assess their work comparable to the way a teacher would assess it, especially when self-grading is involved. Numerous studies confirm students tend to over/under estimate their performance. Such lack of correspondence gives rise to questions such as: can external feedback reduce grade distortion? Can peer feedback come to the rescue as teacher feedback is in decline? Can technology augment the self-assessment activity? This study explored if Asynchronous Online Discussion technology could support a peer-feedback self-assessment process and further investigates if such online peer-feedback could support and enhance self-assessments. To answer these questions, quantitative and qualitative data was collected through questionnaires, documentation and participant observations.

The study conclusively showed that if an asynchronous online peer-feedback self-assessment is to be pedagogically sound, proven constructs must be utilised in its design, construction and implementation. Once such strategies are effectively implemented along with comprehensive teacher support, the technological platform not only supports self-assessment but offers capabilities that supersede classroom alternatives. Likewise, the online peer-feedback supported self-assessment to the extent of producing self-grades aligned to teacher-grades and certifying assignment grade increases. In particular, it was evident that online peer-feedback enhances self-assessment by delivering immediate improvements to current self-assessment tasks and generating rational and relational 'learning-to-learn' skills transferable to further education and future work self-assessment tasks.

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List of Abbreviations

AOD   Asynchronous Online Discussion
FE   Further Education
VLE   Virtual Learning Environment
FETAC   Further Education Awards Council

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"In order to become independent and autonomous,

learners must first develop the capacity for self-assessment"

(Stefani, 1998, p.345)

Introduction

1.1 Context

One of the main goals of further/higher education is to enable students develop their personal capabilities and to open-up their rational and relational skills so they are better prepared for further academic engagement and future workplace demands. As such, students must become more amenable to setting and pursuing their own learning goals and evaluating their progress towards reaching such goals i.e. they must develop the capacity to self-assess (Nicol, 2010; Boud, 2000).

1.2 Problem Area

The value of self-assessment, especially the formative kind, has long been recognised by both educators and researchers (Moskal, 2010; Andrade & Valtcheva, 2009; Stefani, 1998). Yet its adoption can be hampered by the lack of confidence in a student's ability to assess comparatively to how a teacher assesses and because students often over or under estimate their work (Kruger & Dunning, 2009; Motycka et al., 2010). A strategy of integrating external feedback to inform self-assessment could reduce the teacher-student assessment alignment distortion (Sitzmann et al., 2010). Yet, while teachers would 'ideally' be the source of such feedback (Taras, 2003), teacher-feedback is in decline (Hounsell, 2007). Therefore, a strategy of drawing peers in as producers and consumers of feedback may prove equally plausible and practical.

To this end, a teacher has the responsibility to create an appropriate learning environment where students can pro-actively collaborate, engage in discussion, share work, knowledge and feedback and participate in meaningful self-assessments. If the classroom setting does not offer relevant capacities, the teacher must look to technology to provide a suitable supplementary online environment.

1.3 Approach

This study provides a novel approach to extending student self-assessment practices beyond the predominantly lecture-style class to a VLE-based, asynchronous online discussion environment. The research approach taken was to substitute 'feedback-challenged' teachers with 'peers' as the providers of external feedback to inform self-assessment. By applying literature inspired strategies and constructs to the design and structure of the platform and process, the impact of asynchronous online discussion peer-feedback on self-assessment is explored in terms of 'support' and 'enhancement'.

1.4 Research Questions

The study was grounded on three research questions:

1.   Can an AOD platform support a peer-feedback self-assessment process?

2.   To what extent can AOD peer-feedback validate self-assessment?

3.   How can AOD peer-feedback enhance self-assessment?

1.5 Thesis Overview

The paper begins with a Literature Review which sets-out the theoretical domain areas (assessment, feedback and technology) and the sub-domain areas of the study (self-assessment, peer-feedback and asynchronous online discussions). It contextualises the problem that motivated the research and echoes the need for implementing self-assessment practices to cultivate self-regulated learners. The various findings from empirical studies/experiments in related fields provided foundational strategies for carrying out the study. Leading on, the Design chapter shows how Salmon's five stage model (2000) and the constructs revealed in the literature guided the artefact design and process structure of the technology-mediated experience. The Methodology section presents the research questions and justifies the case-study approach and use of documentation, questionnaires and observations to collect quantitative and qualitative data. On analysis of collected data, the Research Findings chapter summarises the key results in relation to the research questions. The paper concludes with a Discussion and Conclusion chapter which interprets the significance of the findings in terms of answering the research questions while noting the study's limitations and directing future research.

Literature Review

2.1 Assessment in Learning: A Student-Centred Approach

Assessment has long been used as one of the most important drivers of learning (Kumar, 2013; Boud & Falchikov, 2006). To earn a qualification, students must undertake assessments and although evaluating learning has traditionally been the teacher's responsibility, current literature shows the nature of assessment, like teaching/learning, must become more student-centred (Nicol & Macfarlane-Dick, 2006; Brown, 2004; Boud, 2000). Involving students in assessment can increase subject knowledge since students learn more when they must share in assessing what they have learned (Ross, 2006; McDonald & Boud, 2003). Stefani (1998), like O'Donovan et al., (2008) asserts that in order to know or understand assessment expectations, students must share the learning contract and become like 'partners' in the assessment process. One way of attaining this is to employ the pedagogical practice of 'self-assessment' (Daniels & Magarey, 2000).

2.2 Self-Assessment

"Self-assessment is a process of formative assessment during which students reflect on and evaluate the quality of their work and their learning, judge the degree to which they reflect explicitly stated goals or criteria, identify strengths and weaknesses in their work, and revise accordingly" (Andrade & Du, 2007, p.160). The author favours this definition because it emphasises the formative element of directing students towards revising/improving performance. Formative assessment, according to Brown and Knight (1994), aids learning progression by affording an 'estimate of achievement'. Although it could be argued that self-assessment in learning happens naturally and frequently, O'Donovan et al., (2008) accurately point out that it usually happens in an unstructured, hap-hazard fashion unaligned with formal assessment procedures, thereby diminishing any real impact on student performance. The reference in this this paper therefore refers to the formal, structured, task-specific self-assessment approach, the like of which McDonald and Boud (2003) articulate could include students self-grading their own work.

Numerous reasons exist in literature to promote self-assessment in the classroom. One significant motivation is the fact that it can nurture self-regulated/autonomous learners (Stefani, 1998), a core developmental goal of further/higher education. Other motives include its' skill transferability to further study, adult life and professional practice (Luca & McLoughlin, 2002; Stefani, 1998).

Incorporating self-grading in the self-assessment experience can help demystify testing, aid the development of indispensable self-evaluative skills (Boud, 1989) and yield benefits beyond learning specific subject-matter (Sadler & Good, 2006). Boud et al, (2010) go so far to say that unless students can effectively judge the quality of their own work outside their course, the assessment they were subjected to during their course is simply not justifiable.

2.2.1 Self-Assessment in an Academic Context

A cursory of literature affirms that self-assessment can have positive effects on learning performance (McDonald & Boud, 2003). It can increase self-efficacy (Ross, 2006) and motivation (McMillan & Hearn's (2009). Self-assessment enables students become cognisant of knowledge gaps (Sadler, 2006) and place performance in context against desired goals (Andrade, 2010). Various studies prove self-assessment encourages a more productive use of work energy/time (Moskal, 2010); improves student writing performance (Birjandi & Siyyari, 2010); assignment quality (Andrade & Valtcheva, 2009) and exams results (McDonald & Boud, 2003). Furthermore, McCutcheon and Sherley (2006) assert that it helps students 'learn how-to-learn' which according to Rawson (2000), learning-to-learn includes a set of highly desirable skills that involve planning, time management, critical analysis and goal setting. It is therefore imperative that teachers strive to strengthen student self-assessment skills (Rourke, 2012; Nicol & Macfarlane-Dick, 2006).

2.2.2 Self-Assessment in a Professional Context

Rawson (2000) further states that 'improving own learning' is high on the employability skills agenda. In a changing business environment, the competence to self-appraise, evaluate one's work against industry standards and upgrade skills is expected of company executives and managers (Dunning et al., 2004; Luca & McLoughlin, 2002). Motycka et al.,

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(2010) found self-assessment establishes confidence and professional development goals and this was reaffirmed in a study by Ross and Bruce (2007) where formal self-assessment was successful in augmenting a teacher's teaching performance. Boud (1995) believes graduates skilled in self-assessingt are more inclined to examine their own performance without continually referring to colleagues but they must first develop this skill in the classroom. According to McCutcheon and Sherley, (2006) the proficiency to self-assess is a characteristic common in highly successful professionals and Yu (2010) further makes the case that teachers should learn from assessments practiced in industry and prepare students for such experiences.

2.2.3 Concerns with Self-Assessment

Despite numerous reasons for its implementation, the integrity of self-assessment is contested in literature, especially when self-grading is involved. Falchikov and Goldfinch (2000) uphold the foremost concern of most teachers is the degree of agreement between their grades and student self-grades. This signifies a lack of confidence in 'validity' (Ross, 2006). This lack of validity is fuelled by the fact that students often do not rate themselves in the way they would be rated by teachers (Boud & Falchikov, 1989). Thornton (1980) affirms that self-markers are inclined to be more lenient than external assessors. Fox and Dinur (1988), like Mabe and West (1982), maintain learners are naturally driven to 'self-enhance' i.e. downplay weaknesses or accentuate strengths. A further analysis of literature reveals weak students tend to overestimate their ability while more able learners underestimate theirs (Kruger & Dunning, 2009; Moskal, 2010; Motycka et al., 2010).).

Overconfident self-assessments can mean individuals experience less pleasure with their outcomes (McGraw et al., 2004) and feel psychological distress (Kim & Chiu, 2011). If a student does not accurately identify faults then he/she will not be aware change is necessary (Atwater et al., 1995). This can prove worrisome, especially in professional settings. While McMillan and Hearn (2009) believe self-assessment improves motivation in future work, Kim (2010) reasons, if inaccurate, 'self-handicapping' can lead to poorer future performance. A negative self-assessment effect was highlighted by Ross et al., (2002) with a grade 11 mathematics class. The poorer results obtained by the control group who used self-assessments reduced their self-efficacy thereby leading many to a

self-perception that they were not good enough for higher-level mathematics. Sadler and Good (2006) also argue that if self-grading is poorly implemented, students may not learn anything at all from the process.

Another concern with self-assessment, according to Brown and Knight (1994), is the fact that students may resist or be sceptical because they simply lack confidence in being able to judge their work. Notwithstanding such concerns, Birjandi and Siyyari (2010) point out that the uncertainty with self-assessments is largely due to the way they are implemented and the employment of various strategies can influence outcome effectiveness.

2.2.4 Strategies to Increase Self-Assessment Success

To this end, various strategies were extrapolated from literature indicating that self-assessment could be more confidently employed if teachers:

2.2.4.1   Discuss student perceptions and convey the goal of knowledge achievement prior to commencement (McMillan & Hearn, 2009; Boud, 1995).

2.2.4.2   Motivate students by emphasising value; assigning marks, allocating class time and integrating the assessment activity as a course requirement (Boud, 1995).

2.2.4.3   Provide self-assessment training and practice (Birjandi & Siyyari, 2010; Sargeant et al., 2008; Boud, 2000). Sung et al., (2005) concluded teacher and student grade agreement is higher when students are taught how to self-assess. Similarly, a study by McDonald and Boud (2003), comparing a control group who received self-assessment training with a group which did not, demonstrated the trained group performed better in exams.

2.2.4.4   Ensure clear targets and assessment criteria (McMillan & Hearn, 2009; Sargeant et al., 2008).

2.2.4.5   Ensure the material being self-assessed is relevant (Sargeant et al., 2008).

2.2.4.6   Use criteria-referenced self-assessments (Andrade & Valtcheva, 2009) and quality questions (Sitzmann et al., 2010).

2.2.4.7   Provide opportunity for reflection (Nicol & Macfarlane-Dick, 2006).

2.2.4.8   Use a rubric to guide the activity (Panadero et al., 2012; McCutcheon & Sherley, 2006).

2.2.4.9   Allow self-grading, train students to rate accurately and improve marker reliability with scales for strong/weak performance (Boud, 1995 & 1989). Sadler and Good (2006) maintain that self-grading in self-assessment offers four advantages:

- Logistical - using teachers less, allowing them plan assessment instead of just marking.
- Pedagogical - deepening a student's understanding of a topic through critically judging answers.
- Metacognitive - increasing awareness of how work is corrected by correcting.
- Affective - developing positive student attitudes towards assessments by experiencing the marking process.

2.2.4.10   Allow revisions. Andrade & Valtcheva, (2009) reveal students may not self-assess properly or be motivated unless they can make improvements.

2.2.4.11   Make students aware their self-ratings will be compared to teacher-ratings (Fox & Dinur, 1988). In a meta-analysis, Mabe and West (1982) found self-assessment validity is greater if participants expect their self-assessments to be compared against external assessor assessments.

2.2.4.12   Give students feedback on their self-assessments to resolve grade discrepancies (Ross, 2006).

2.2.4.13   Use technology when possible to ensure assessment efficiency (Brown & Knight 1994).

2.2.4.14   Integrate external feedback to support self-assessment. Sitzmann et al., (2010), like Boud (1995) attests good self-assessment practice requires information from other parties to inform judgements.

2.3 Feedback as a Way to Support Self-Assessment

Since 'self'-assessment typically infers a 'lone' process, the last strategy of integrating external feedback in the self-assessment process (2.2.4.14) demands deliberation of the 'feedback' domain and likely 'sources' of such feedback.

2.3.1 The Benefits of Feedback

There is overwhelming literary evidence proclaiming feedback as one of the most powerful influences on learning (Sadler 2010; Hattie & Timperley, 2007). Defined as "a commentary about a learner's performance with the aim of improving performance" (Cleary & Walter, 2010, p.153), feedback allows closing of the gap between 'actual' and 'desired' performance (Hattie & Timberley, 2007; Juwah et al., 2004). Its significance is further emphasised by the inclusion of feedback as a central element of learning theories; e.g. it is one of Gagné's (1985) Nine Events of Instruction. The student's perception of the value of feedback is also well documented (Regan, 2010; Poulos & Mahony, 2008; Weaver, 2006; O'Donovan et al., 2004) with a study by Higgins et al., (2002) confirming they desire feedback to help them engage with their subject in a deep way.

2.3.2 The Concerns with Feedback and how it can be More Effective

Yet it cannot be argued that feedback 'always' enhances learning. An overly critical appraisal can produce a negative impact (Boud & Molloy, 2013) and may be perceived as threatening (Hattie & Timberley, 2007). The question if feedback has a positive or negative bearing however is determined by the feedback message. Hence Hattie and Timberley (2007) suggest the feedback message answer three questions for students: 'where am I going?' (feed-up), 'how am I going?' (feedback) and 'where to next?' (feed-forward). Literature further posits that to be most effective, feedback should be visual/aural or computer-assisted (Hattie & Timberley, 2007). Conclusively, feedback is

redundant unless it is used (Gibbs & Simpson, 2004) and utilisation can be greater with guidance in the form of explanation (Nicol & Macfarlane-Dick, 2006).

2.3.3 The Feedback and Self-Assessment Relationship

Nicol and Macfarlane-Dick (2006) acknowledge the link between feedback and self-assessment by itemising as number one in the 'Seven Principals of Good Feedback', that feedback and self-assessment go hand-in-hand. Motycka et al., (2010, p.6) encapsulate the relationship by saying ''Knowing what you don't know will always require the assistance of an external reviewer''.

2.3.4 Teacher-Feedback in Self-Assessment

The use of a teacher as the source of feedback in student self-assessments has been proved viable, with Sargeant et al., (2008) and Patri (2002) claiming teacher-feedback enhances self-process accuracy. In questioning whether it is preferable for students to carry out self-assessment without prior teacher-feedback, Taras (2003) trained students for self-assessment 'without' teacher-feedback and others 'with' teacher-feedback. Findings showed the majority believed self-assessment 'with' teacher-feedback proved more valid as it helped them realise their true strengths/weaknesses. Taras (2003) concluded that self-assessment without teacher-feedback cannot help students to be aware of all their errors.

2.3.5 Problems in Application of Teacher-Feedback in Further Education

Yet teacher-feedback is in decline (Hounsell, 2007). Brown (2004) appropriately states that while feedback needs to be personal and detailed, this task is increasingly challenging for busy teachers. Numerous reports reveal students are dissatisfied with the quantity and quality of teacher-feedback (Boud & Molloy, 2013; Nicol, 2010; Higgins et al., 2002). Bailey and Garner (2010) try to reason why, making the case that institutional developments have caused this feedback reduction.

Further Education[1] (FE), like higher education, has seen many such institutional developments. Increased enrolments mean larger classes (Department of Education & Skills, 2011; PLC-Ireland, 2012 & 2010). This brings more correcting loads so teachers have less time to write quality feedback comments (Nicol, 2010; O'Moore & Baldock, 2007; Yorke, 2003). The moratorium on special duties (Department of Education & Science, 2009) has seen extra administrative tasks loaded on teachers. Inevitably a teacher's main protest is that the workload is too high, especially when it comes to communicating feedback (Dennen, 2003). FE has had to contend with condensed class hours (Cannon, 2012) meaning less teacher-student personal attention time (Boud & Molloy, 2013; Andrade, 2010). As a result, teachers are constantly challenged to identify new or more innovative ways to provide feedback (O'Moore & Baldock, 2007).

2.4 Peer-Feedback as a Strategy to Support Self-Assessment

In recognition of the decline of teacher-feedback, Hounsell (2003) proposes two solutions: (i) involve students in feedback production; (ii) promote assignment sharing. This study explores substituting teacher-feedback with student-feedback and determining if 'peers' can effectively act as the external source to enhance self-assessment. Before exploring this proposition, a review of literature is warranted on the 'peer-feedback' pedagogy.

2.4.1 Peer-Feedback

Wu & Kao (2008 p.45) accredits peer-feedback with "enabling students assess their understanding through explaining, simplifying, clarifying, summarising, reorganising and cognitive restructuring". Allowing students act as both 'assessor' and 'assessee' has practical implications both academically and professionally.

2.4.2 Peer-Feedback in an Academic Context

By leveraging students as 'partners' (Fluckiger et al., 2010) and sharing the feedback responsibility, peers can:

- Afford more feedback than a teacher could give alone (Van der Pol et al., 2008),

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[1] Further Education covers education and training which occurs after second level schooling but which is not part of the third level system (Department of Education & Skills, n.d).

- Offer quicker/more accessible feedback than teachers (Dippold, 2009),
- Reduce the teacher's workload (Ertmer et al., 2007).

Positive student perceptions of peer-feedback in learning is confirmed (Thoirs, 2010; Liu et al., 2001). In a study by O'Moore & Baldock (2007) students acknowledged that peer-feedback assisted their level of comprehension so much they requested such sessions be extended. On analysis of multiple peer studies, Van den Berg et al., (2006) concluded that almost all students used peer-feedback comments in revising work. Research assures it is not just receivers that gain, but also feedback providers. Students become more self-critical and self-reliant, characteristics evident in teachers (Juwah et al., 2004). Constructing feedback engages higher cognitive processes (Nicol, 2010) and higher order thinking (Liu et al., 2001). Providers learn how to evaluate (Li et al., 2010; Dennen 2003) and deepen their understandings as they explain complex concepts (King, 2002).

2.4.3 Peer-Feedback in a Professional Context

The provision and reception of constructive feedback to/from colleagues is common to workplace tasks (Eraut, 2004; Daniels & Magarey, 2000) and workplace learning (Boud & Molloy, 2013). Peer-feedback draws on the 'cognitive apprenticeship model' observing that peers have a fundamental role in how workplace learning is assessed (Kvale, 2006). In a study with 387 managers, Ashford and Tsui (1991) found that active 'feedback seeking' from peers is a central to the self-regulation process of managerial effectiveness. The exposure to peer-feedback improves team behaviour as found by Dominick et al., (1997) and since teamwork skills are valued by employers (Cassidy, 2006), it is essential that vocational education programs ensure students develop peer-feedback skills (Daniels & Magarey, 2000).

2.4.4 Concerns with Peer-Feedback

Opposing views on peer-feedback also emerge from literature. Some question the credibility of learners attempting to help each other when they are not adequately knowledgeable begging the question - is it 'the blind leading the blind?' (Liu & Carless, 2006; Dennen, 2003). Students not knowing how to be helpful may provide 'bland' feedback (Svinicki, 2001). Furthermore Dancer and Dancer (1992) argue peer-evaluations lack reliability and validity.

On the other hand, Falchikov and Goldfinch's (2000) analysis of 48 peer studies concluded that students can make judgements close to that of teachers. Similarly, Topping (1998) ascertained from 31 studies that peer-feedback can be both valid and reliable and later argued that a teacher faced with a large quantity to assess in a short period compared to a student with less skill but more time, can produce comparably valid feedback (Topping, 2003). However, according to Dennen (2003), various techniques/strategies need to be utilised in order to make a peer-feedback process effective and affective.

2.4.5 Strategies to Increase Peer-Feedback Success

Students can feel anxiety about giving feedback (Ertmer, 2007; Liu & Carless, 2006) and want to avoid being too critical (Svinicki, 2001). To alleviate this Svinicki (2001) recommends peers work in small groups. Liu and Carless (2006) suggest disallowing peer-grading. Similarly, Basheti et al., (2010) found it as a flaw in their study to allow peer-grading since peers receiving critical feedback could retort with low 'revenge' grades.

Another way to reduce peer anxiety is to incorporate anonymity. Several studies advocate using anonymity to generate more critical feedback and to allow students freedom of expression without the concern of interpersonal dynamics (Thoirs, 2010; Lu & Bol, 2007; Paulus, 1999). In a study of anonymous peer-assessment, Basheti's et al., (2010) found 95% of participants strongly endorsed the anonymity component.

In summarising Dennen's (2003, p.1) 'Best Practice Peer-Feedback Guidelines', students should:

(i)   Know expectations,

(ii)   Have dedicated partners,

(iii)   Be provided with exemplars,

(iv)   Enter comments directly onto papers as well as through discussion posts.

Yet, the ability to give meaningful feedback does not come naturally to students (Palloff & Pratt, 2007) so they must be trained as assessors (Rourke, 2012; Dippold, 2009). Sadler and Andrade (2004) endorse using instructional rubrics/templates which aligns with Fluckiger's et al., (2010) logic that feedback templates diminish futile statements such as "Good job!"

Finally, for motivational reasons, students should be made aware they can utilise peer-feedback in making assignment revisions with the goal of pursuing a higher grade (Nicol & Macfarlane-Dick, 2006).

2.4.6 The Peer-Feedback and Self-Assessment Relationship

The relationship between peer-feedback and self-assessment is highlighted by Boud (1995) in the 'Features of Good and Poor Practice in Self-Assessment' list where he states qualitative peer-feedback should be factored into self-assessment. Peer-feedback may even be perceived to be more significant than 'self'-feedback. Trautmann (2009) compared students who partook in peer-review with those who partook in self-review and confirmed the peer-review students made more revisions compared with those confined to self-review only. Yet many researchers agree that assessing a peer's work catapults students into assessing their own work (Liu & Carless, 2006; Patri, 2002).

2.4.7 Problems with Implementation of Peer-Feedback Practices in FE Classes

While many FE teachers would typically welcome peer-feedback exercises in class, the lecture style of teaching is most dominant in post-secondary education due to its efficiency of transferring masses of information to large audiences in short periods (O'Donnell & Dansereau, 1993). Such instructional type classes are not conducive to peer-activities (Andresen, 2009). Consequently, practice of peer-feedback within FE classes can be minimal or non-existent.

Therefore a look to technology as an alternative way of enabling peer-feedback practices is worthwhile.

2.5 Technology Approaches to Providing Feedback

According to Rae and Cochrane (2008) the electronic medium may be best suited to student needs when conveying feedback. Race (2001) concurs by saying the use of computer-delivered feedback speeds up the delivery; aids reception effectiveness and assists with feedback quality evidence.

There are a variety of technological ways to provide feedback and according to Lunt and Curran (2010) the delivery method influences the learning. While sending it via email is

simplistic, Boud et al., (2001) maintains it can lead to Inbox overload and difficulty in tracking discussions. Lunt and Curran (2010) researched student perception of teacher-feedback in audio format (Audacity). Kerr and McLaughlin (2008) explored video feedback (Camtasia). In these cases, students liked how technology offered more comprehensive teacher-feedback. However this research focuses on 'students' providing the feedback and such aforementioned software is not readily available to students of this study.

Whatever the form, Lunt & Curran (2010) note the most efficient vehicle for feedback transmission is via Virtual Learning Environments (VLEs).

2.6 Virtual Learning Environments

Almost all higher education institutions in Ireland use VLEs such as Blackboard or Moodle to support face-to-face classes (Cosgrave at al., 2011). Rice IV (2006) maintains VLEs embody the social-constructionist learning philosophy by offering interpersonal tools including: Blogs, Forums, Wikis and Chat. Moodle is the VLE accessible to all students of this study and one of its reputable activities featuring regularly in educational settings is the Asynchronous Online Discussion (AOD).

2.7 Asynchronous Online Discussion

Hew et al., (2010, p.572) define AOD as "a text-based computer-mediated communication environment that allows individuals to interact with one another without the constraint of time and place". Wang and Chen (2008) say such text-based discussions are even superior to synchronous or face-to-face discussions when higher order learning is an objective. Easily accessible with any internet-capable device, an AOD can be a stand-alone environment (e.g. Boards.ie) or a component of a VLE system (as in this study).

2.7.1 Affordances of Asynchronous Online Discussions

Valuable qualities of AODs include the fact that data is structured by topic and archived; messages can be reflected on, written and revisited at the writer/reader's own pace (Hew et al., 2010). Access can be publicly open or restricted to groups/courses or colleges. Notwithstanding the intellectual engagement required to articulate ideas in writing, research affirms AODs facilitate cognitive presence (Wang & Cheng, 2008) and knowledge construction (Zhu, 2012).

Other attributes include it's:
- Flexibility in time and place for involvement (Ellis, 2001),
- 'Asynchronous' characteristic to endorse reflection (Young, 2008).
- Ability to foster 'learning-communities' (Zhu, 2012) and collaboration (Garrison, 2003).

These attributes are ideal for extending peer-feedback activities beyond the classroom (Palloff & Pratt, 2002). By exploring the link between higher order learning and asynchronous online learning, Garrison (2003) concluded that for higher learning to be realised, educators must design 'effective environments'. To be effective environments, the literature suggests AODs require the integration of various constructs.

2.7.2 Constructs to Make Asynchronous Online Discussions are More Effective

Like any technology, AODs should ensure quick, easy accessibility (Salmon, 2011) and have a 'supportive interface' (Thomas, 2002) with access to technical support (Salmon, 2011). Palloff and Pratt (2007) endorse using one screen of text and graphics.

To contribute in an online space, students need to feel safe (Salmon, 2011) so posting protocols and netiquette should be conveyed to avoid disruptive behaviour (Mintu-Wimsatt et al., 2010; Palloff & Pratt, 2007). Furthermore, Palloff and Pratt (2007) recommend creation of introductory posts to initiate social connections.

Much is written on the importance of motivating participants to engage in AODs (Salmon, 2011). Teachers should 'sell' its benefits (Salmon, 2011); ensure its purpose is understood (Armstrong, 2010) and clearly state deadlines (Palloff & Pratt, 2007). To ensure motivation, a strategy could encompass Keller's (1987) ARCS model promoting attention, relevance, confidence and satisfaction.

Literature shows conflicting schools of thought as to the role of teachers in AODs, be it intensive (Andresen, 2009) or minimalistic (Rovai, 2007; Rourke & Anderson, 2002). As a 'peer' experience underpins the research, the author harmonises with Baran and Correia's (2009) suggestion that the teacher participates primarily to train students or if misunderstandings occur.

Activities related to the syllabus need to be at the centre of AODs (Young, 2008) and Lam (2004) endorses using role plays. While related topics and role plays can inspire dialogue, students need training in 'discourse-building' (Gilbert & Dabbah, 2005; McLuckie & Topping, 2004).

2.8 Rubrics for Self-Assessment & Peer-Feedback

Panadero et al., (2012) recommend using rubrics for creating the right conditions for both self and peer assessment. Sadler (1989) maintains rubrics help a student achieve assessment qualities similar to teachers while Andrade (1997) claims they make students better judges of work quality. In a field experiment, Petkov and Petkova (2006) examined the project grades between a group who used a rubric and a group who did not and reported that the mean grade attained by students who used the rubric was significantly higher.

According to Mertler (2001) there are two types of rubric: holistic (judging work as a whole) and analytic (judging component parts). Regardless of type, Sadler and Andrade (2004) endorse training students to use them.

To improve validity, Ross (2006) suggests using a 'marking' rubric to scaffold the self-grading task. He advocates it should incorporate understandable language, familiar competencies and performance features.

To structure the peer-feedback component, an 'instructional' type rubric could be exploited. A notable example is 'The Ladder of Feedback' (Perkins, 2003) which encourages feedback formulation within four rungs - Value, Clarify, Concern and Suggest. This could facilitate inclusion of feedback, feed-up and feed-forward comments as suggested by Hattie and Timberley (2007).

For efficiency and time-effectiveness, Brown (2004) posits educators make best use of available technologies when designing rubrics.

2.9 Annotation in Feedback

One of Dennen's (2003) best practice guidelines (see 2.4.5) requires that students place comments directly onto papers. Known as 'annotation', this is a common feature in most text-editing software and is seen as a valuable mechanism to develop learning in essays (Ball, 2010). A study by Van der Pol and Van den Berg (2008) comparing discussion posts with an annotation tool, attested that annotation produced more specific comments whereas forum posts demonstrated holistic/evaluative ones. To elicit both types of feedback, this study will employ both methods.

2.10 Videos for Instruction

Video is widely accepted as a resource that promotes learning (Mitra et al, 2010; O'Hagan, 2002). Task-specific video tutorials can increase attainment of required technical skills outside class while simultaneously inform students of expectations. How to use the AOD forum post feature and Microsoft Word's annotation feature can be instructed visually therefore embedding short videos within the AOD page could prove supportive.

2.11 Learning Theories

2.11.1 Constructivism

Self-assessment, peer-feedback and the AOD technology assimilate with the Vygotsky's (1978) theory of social constructivism where knowledge is jointly-constructed by students through discourse. The social aspect of the theory relates to the fact that learning happens with the assistance of other people.

- Constructivism in Self-Assessment
  Students construct meaning by self-assessing before and during learning as they internalise learning and relate new knowledge with what they already know (McMillan & Hearn, 2009).

- Constructivism in Peer-Feedback

  Peer-feedback relates to Piaget's (1964) active learning model of sharing ideas, perspectives and experiences. Similarly, in Vygotsky's (1978) theory, individuals cognitively develop when they collaborate with peers.

- Constructivism in AODs

  AOD is considered a technology that facilitates constructivist learning (Zhu, 2012; Palloff & Pratt, 2007). Accordingly, it is logical that a constructivist e-learning framework be employed to manage the environment. One such framework dominant in literature is Gilly Salmon's (2000) Five-Stage Model, originally designed to enable remote groups learn collaboratively using AODs.

2.11.2 Metacognition & Reflection

Metacognition involves awareness about cognition in general as well as awareness of ones' own cognition and if this awareness is acted on, learning is enhanced (Pintrich, 2002). Learning about one's own learning encourages deep rather than surface learning (Brown, 2004) and includes knowledge about when and how to use certain learning strategies. Clearly, metacognitive skills are utilised and developed in both peer and self-assessment processes. Therefore it is vital teachers endeavour to enhance student metacognitive skills (McMillan & Hearn, 2009).

Reflection can stimulate metacognition and it goes hand-in-hand in assessing a peer's and/or ones' own work against assessment criteria. Reflective practices are required to craft feedback comments and it is also required during feedback reception as students assess whether they understand/agree with it (Phielix et al., 2010). In light of its substantial role, students must be able to reflect well and to do this, Aronson et al., (2012) encourage that reflection be taught.

2.12 Conclusion

A cursory of literature confirms assessment needs to be learner-centred. Engaging students in structured, formative self-assessment practices can cultivate autonomous/self-regulated learners, enhance subject knowledge and develop learning skills that are instrumental to future academic and workplace contexts.

The literature provides sufficient evidence that self-assessments could potentially be executed with a higher degree of confidence and more valid results, provided peer-feedback and the other strategies presented in 2.2.4 are integrated. Respectively, as outlined in 2.4.5, various peer-feedback strategies must also be utilised. Subsequently, in principle, a peer-feedback informed self-assessment practice could extend beyond predominantly lecture-style classes to a VLE-based Asynchronous Online Discussion platform provided the technology build is also guided by various constructs (2.7.2).

While the literature review establishes that numerous strategies have been individually tried/tested in separate empirical studies, this thesis seeks to explore the practicality of an AOD peer-feedback self-assessment (in terms of support and enhancement) by exploiting 'all' such propositions in one study (see Literature Review Summary of Strategies, Appendix A).

Design

3.1 Introduction

The purpose of this study was to explore if AOD technology could support a peer-feedback self-assessment process and if such AOD peer-feedback could support and enhance self-assessments (if so; how? and to what extent?). The study involved 21 students in a Further Education (FE) Institute, studying a Business Computing subject on a FETAC[2] certified Computer Maintenance course.

Grounded in a Moodle environment, the design objectives were to create an effective autonomous online learning space for students to engage in two processes:

1. Share assignments and exchange peer-feedback.

2. Self-assess before and after the AOD peer-feedback process.

As Wang and Chen (2008) advocate, a well-thought-out design and structure is essential to foster knowledge construction in an AOD environment. This chapter sets how the key strategies and constructs revealed in literature (see summary, Appendix A) were incorporated in the design and structure of the AOD artefact and the assessment and feedback processes.

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[2] Further Education Training Awards Council

3.2 Objective 1: Share Assignments & Exchange Peer-Feedback
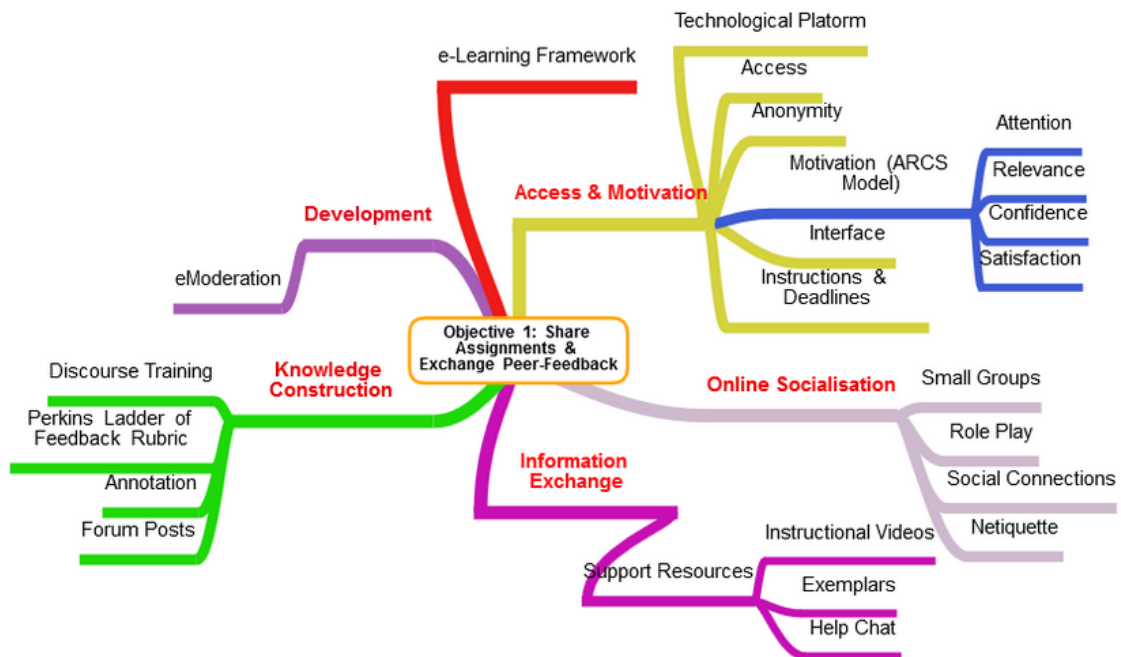
Fig 3.1 AOD Peer-Feedback design decisions

The above mind-map diagram shows all strategic and tactical considerations, inspired by the literature, that were required to scaffold the AOD peer-feedback component of the study. Each requirement is discussed below.

3.2.1 Requirement: A Technological Platform

Lunt and Curran (2010) endorse using VLEs for feedback dissemination. Therefore Moodle was chosen as the host technology because it:

- Is the VLE of the host FE institute and familiarity was assured.
- Affords the technological resource underpinning the study - AOD.
- Allows incorporation of multimedia resources to support peer-engagement.
- Facilitates online quizzes.
- Enables ubiquitous access.

3.2.2 Requirement: An E-Learning Framework

Gilly Salmon's (2000) Five-Stage Model was employed to gain a "synergy between design and delivery of the learning and between the software platform and the human intervention" (Salmon, 2011, p.33). The peer-feedback process strategies and AOD artefact design constructs will be framed within each of these five stages.
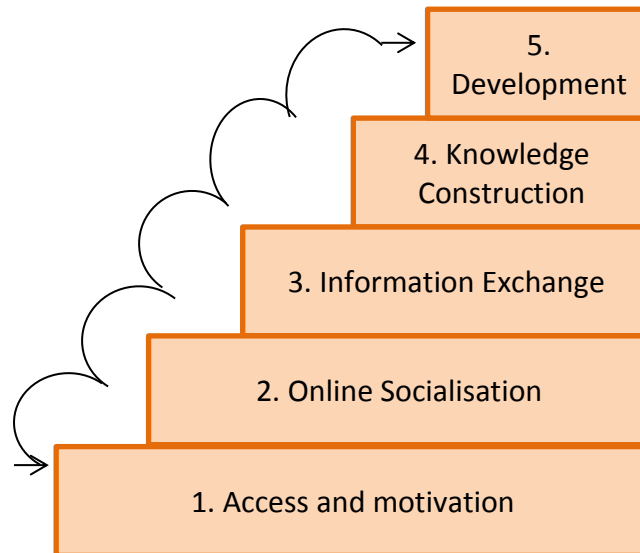
Table 3.1 Salmon's 5-Stage Model (2000)

3.2.3 Requirement: Access & Motivation

3.2.3.1 Access

Salmon (2007) maintains access must be quick and easy and students must be comfortable using the technology. Having used Moodle's AOD activity during their course before, participants had familiarity so access and forum navigation was easy. After initial enrolment, the AOD course page resided on the student's home page, instantly accessible on subsequent logins.
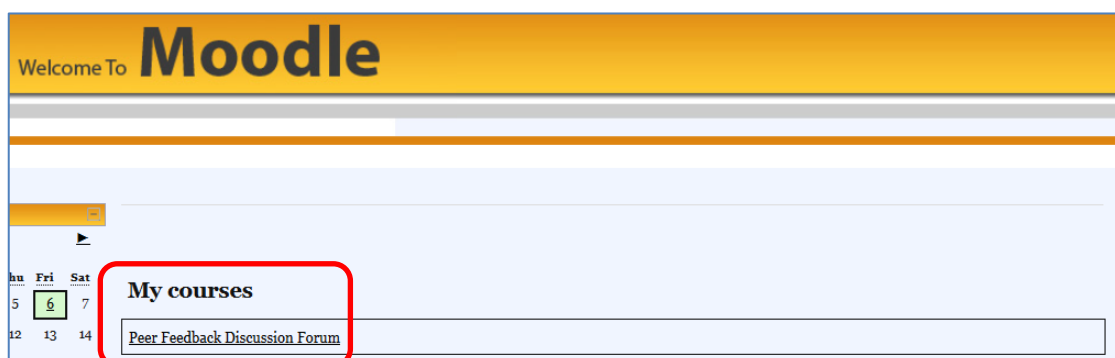
Fig. 3.2: AOD access on login

3.2.3.2 Anonymity

Anonymity was introduced (Basheti et al., 2010) and new Moodle usernames/aliases comprising of a business partner number (partner01 to partner21) were discreetly distributed.
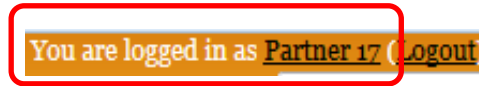
Fig. 3.3: Alias Moodle username

Instead of names, participants had to add their assigned partner number to assignments before uploading. Anonymity was further established by replacing Microsoft Word (2010) usernames with partner numbers before writing annotative comments on peer documents.
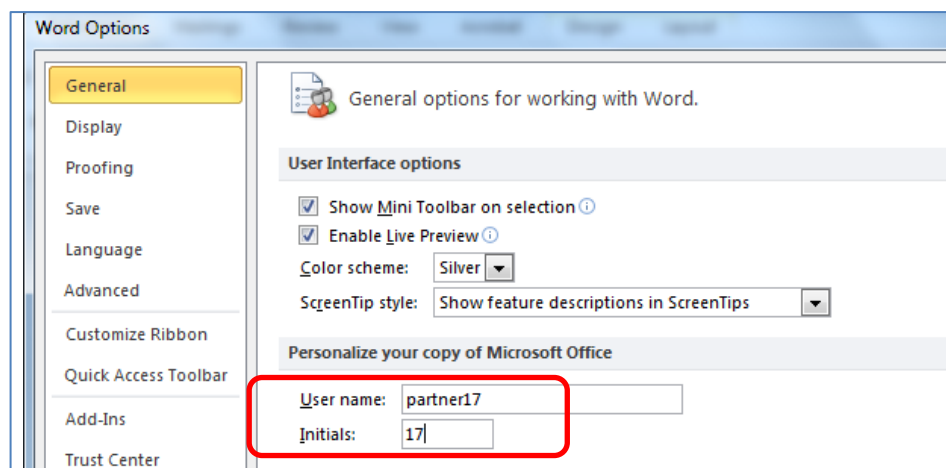
Fig. 3.4: Anonymous Word username

3.2.3.3 Motivation via ARCS Model

As depicted in table 3.2 and described below, Keller's (1987) ARCS model was employed to structure and maintain motivation throughout the peer-feedback process.

<div align="center">Table 3.2 ARCS Model of Motivation (Keller, 1987)</div>

- **Attention**

Participant attention was gained by initiating a class discussion on the value of peer-feedback (Salmon, 2011) as a required professional competency and the role of the AOD technology (Armstrong, 2010).

- **Relevance**

Relevance was established by clarifying instructions, how they relate to the Business Computing subject expectations (Young, 2008) and how each task factors into the FETAC syllabus marking scheme (Palloff & Pratt, 2007).

- **Confidence**

Confidence was instilled by affording training and practice during preparation classes. As promoted by Aronson et al., (2012); Rourke, (2012) and Dennen, (2003), participants were taught:

- How to reflect.
- How to peer review.
- How to articulate feedback using exemplars.

- **Satisfaction**

Satisfaction was fostered by informing participants after exchanging peer-feedback they could make assignment revisions and aim for a higher grade (Nicol & Macfarlane-Dick, 2006). Also, participants were made aware the teacher would ultimately be responsible for final assignment grades and they did not have to grade a peer's work (Liu and Carless, 2006).

3.2.3.4 The Interface

Palloff and Pratt (2007) recommend one screen of text and graphics; Thomas (2002) advocated a supportive interface and Salmon (2011) proposed making technical help available. According to Gagné (1985), support material is central to promoting learning retention and transfer to the work setting. With this in mind, a one-stop-shop page containing: an image; expectations; AOD forums; a Help Chat facility and support documents was constructed (See fig. 3.5).

'Students should be supported to critique their own work: Students should not be overly reliant on feedback from tutors. One of the key skills developed in higher education is the ability to critique, and students should be supported to be able to review their own work and that of fellow students. Developing students' abilities to peer review and self reflect is an important skill for future employment, as well as deepening their own learning.'

(NUS Charter on Assessment and Feedback, 2010)
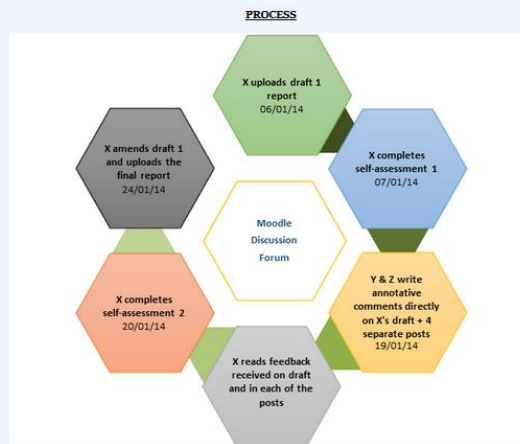
PROCESS

Graphical Illustration of Process

(1) Make Draft Report available for Peer-Feedback Deadline: 06th Jan 2014

Make your draft report available to your two business partners in your forum. Remove your name from the report and replace it with your assigned 'Partner No #.'. Enter the appropriate forum in section 1 below. Add a new discussion topic and write a message inviting feedback. Upload your draft as an attachment.

(2) Self-Assessment 1 (5%) Deadline: 7th Jan

Reflect on your draft and answer the Self-Assessment 1 questions in section 3 below.

(3) Provide Peer-Feedback on 2 Reports (10%) Deadline: 19th Jan

3.a As a partner of the IT firm, you are required to help a partner with the common goal of winning the tender business for your firm. Critically review the draft report written by your partner by opening his discussion thread and downloading his attached Draft 1. Using the 'Add Comment' feature in Word, write annotative feedback comments in the margin and save the document as "PartnerNo#_FeedbackTo_PartnerNo#".

3.b Additionally, write 4 separate posts to your partner - a post for each of the following headings: (i) **Value**; (ii) **Clarify**; (iii) **Concern** and (iv) **Suggest**. To do this, click 'Reply' in a partner's initial post, put 'Value' as the title and tell your partner what you liked /what was strong and innovative. Repeat this process to write feedback within the other 3 headings.

3.c Create a 5th post to your partner to upload and send back the draft that contains your annotation comments (i.e. "PartnerNo#_FeedbackTo_PartnerNo#)

3. d Repeat step (3.a),(3.b) and (3.c) for the second partner in your forum.

Expectations

(4) Reflect on Feedback Received

When you have 10 posts (5 from each of two partners), read both their comments on your work and their posts.

(5) Self-Assessment 2 (5%) Deadline: 20th Jan

When you have read all feedback, re-self-assess your draft report by answering the questions in Self-Assessment 2 in section 4 below.

(6) Amend & Upload Final Report Deadline: 24th Jan

In view of feedback provided and received, should you want to make changes to your draft, use Word's 'Track Changes'. Save this as 'Final Report_By_PartnerNo #'. In your own discussion thread, create a new post to upload the final report (Title the post: 'Final Report').

News forum

DISCUSSION FORUMS

Partners 1,2 & 3
Partners 4, 5 & 6
Partners 7, 8 & 9
Partners 10, 11 & 12
Partners 13, 14 & 15
Partners 16, 17 & 18
Partners 19, 20 & 21

AOD Forums

'A key purpose of Assessment for Learning is to foster student development in taking responsibility for evaluating, judging and improving their own performance...These capabilities are at the heart of autonomous learning and of the graduate qualities valued by employers and in professional practice.'

(Centre for Excellence in Teaching and Learning, nd)

SELF-ASSESSMENT 1

After finishing your draft report, complete the Self-Assessment 1 questions below.

To retrieve the feedback you wrote to yourself and the assessment criteria scores you gave yourself, click on Self-Assessment 1 below and then click on your grade on the right.

Self-Assessment 1

Pre & Post Self-Assessments

SELF-ASSESSMENT 2

After the peer feedback exchange exercise and **before** making changes to your draft report, complete the Self-Assessment 2 questions below.

To retrieve the feedback you wrote to yourself and the assessment criteria scores you gave yourself, click on Self-Assessment 2 below and then click on your grade on the right.

Self-Assessment 2

Support Documents

Assignment Brief
Self-Assessment & Peer Feedback Step-by-Step Guide
How to Reflect
What to look for guide when assessing a peers work
Good and Bad Feedback Comments
Exemplar of Good Feedback
Ladder of Feedback Rubric: Value, Clarify, Concern, Suggest
Exemplar: Poor Standard Report
Practice Feedback on this report
Netiquette

Support Documents

Support Chat Room

Techical Support Help Chat

Help Chat

Fig. 3.5 AOD Course page

3.2.3.5 Instructions & Deadlines

Palloff and Pratt (2007) endorse emphasising instructions, expectations and deadlines so these were explained in instructional classes, specified in the assignment brief (see Appendix B) and detailed on the AOD course page.

(1) Make Draft Report available for Peer-Feedback Deadline: 13th Dec 2013

Make your draft report available to your two business partners in your forum. Remove your name from the report and replace it with your assigned 'Partner No #.'. Enter the appropriate forum in section 1 below. Add a new discussion topic and write a message inviting feedback. Upload your draft as an attachment.

(2) Self-Assessment 1 (5%) Deadline: 6th Jan

Reflect on your draft and answer the Self-Assessment 1 questions in section 3 below.

(3) Provide Peer-Feedback on 2 Reports (10%) Deadline: 17th Jan

3.a As a partner of the IT firm, you are required to help a partner with the common goal of winning the tender business for your firm. Critically review the draft report written by your partner by opening his discussion thread and downloading his attached Draft 1. Using the 'Add Comment' feature in Word, write annotative feedback comments in the margin and save the document as "PartnerNo#_FeedbackTo_PartnerNo#".

3.b Additionally, write 4 separate posts to your partner - a post for each of the following headings: (i) **Value**; (ii) **Clarify**; (iii) **Concern** and (iv) **Suggest**. To do this, click 'Reply' in a partner's initial post, put 'Value' as the title and tell your partner what you liked /what was strong and innovative. Repeat this process to write feedback within the other 3 headings.

3.c Create a 5th post to your partner to upload and send back the draft that contains your annotation comments (i.e. "PartnerNo#_FeedbackTo_PartnerNo#)

3. d Repeat step (3.a),(3.b) and (3.c) for the second partner in your forum.

(4) Reflect on Feedback Received

When you have 10 posts (5 from each of two partners), read both their comments on your work and their posts.

(5) Self-Assessment 2 (5%) Deadline: 21st Jan

When you have read all feedback, re-self-assess your draft report by answering the questions in Self-Assessment 2 in section 4 below.

(6) Amend & Upload Final Report Deadline: 24th Jan

In view of feedback provided and received, should you want to make changes to your draft, use Word's 'Track Changes'. Save this as 'Final Report_By_PartnerNo #'. In your own discussion thread, create a new post to upload the final report (Title the post: 'Final Report').

Expectations in black

Deadlines in red

Fig. 3.6 Instructions and deadlines on AOD course page

3.2.4 Requirement: Online Socialisation

3.2.4.1 Small Groups

Svinicki (2001) recommends peers work in small groups and Sung (2010) argues feedback reliability may not be sufficient if using only one peer-marker. Therefore, 21 students were divided into 7 groups of 3 enabling each participant receive peer-feedback from 2 others. Grouping was based on participants 'not' being in close proximity seating-wise to remove the bias of friendships and decrease the chance identity discovery.

Partners 1,2 & 3
Partners 4, 5 & 6
Partners 7, 8 & 9
Partners 10, 11 & 12
Partners 13, 14 & 15
Partners 16, 17 & 18
Partners 19, 20 & 21

Fig. 3.7 AOD groups

3.2.4.2 Role Play

A role-play scenario was used (Lam, 2004). The assignment brief specified an IT consultancy firm consisting of three partners was commissioned to submit to tender an ICT recommendation report with the aim of securing new business with a start-up company. Each partner was required to write a draft report and seek feedback from his two business partners with the common goal of improving it and winning the business for the firm (note: role-playing as partners sought to encourage 'suggestive' rather than purely 'critical' feedback).

You and your two partners run an IT consultancy firm and have been invited, by new start-up Web Design business (Websites R Us Ltd.), to tender for a contract to set up their new networked office and be their outsourced IT support. You are required to complete the following 4 tasks:

1.0 REPORT (40%) (Deadline 24th Jan 2014)

You have been asked to produce a report that investigates, evaluates and makes recommendations on the ICT requirements necessary for initial set-up. You are to explain research choices, evaluate and draw conclusions on the most suitable:
(i) Hardware devices (Input & Output),
(i) Data Storage / Management,
(iii) Software, (System & Application),
(iv) Local Area Network Requirements
(v) What expertise and services your firm can offer by way of an outsourced IT assistance.

Before sending the report document to Websites R Us Ltd., you ask your two partners to review it, comment on it and provide feedback on where/ how the report can be improved. Write a forum post inviting feedback and upload your draft to your assigned Moodle discussion forum so it is available to your partners.

2.0 SELF-ASSESSMENT 1 (5%) (Deadline 6th Jan 2014)

2.1 On completion, reflect on your report and self-assess the project standard. This self-assessment must be carried out with a self-assessment rubric using 'Self-Assessment 1' on the Moodle course page.

3.0 PEER FEEDBACK (10%) (Deadline 17th Jan 2014)

As a partner in the IT consultancy firm, you must review the first draft reports submitted by your two business partners, in an effort to enhance the report and jointly help win the tender contract for your firm.

3.1 Download a partner's draft report. Feedback should be given by annotating directly on their work (using the 'New Comment' feature in Word). Save the version containing your comments as *'Your Partner Number_feedbackto_Their Partner number. On completion of the annotative feedback,* upload their reports to your Moodle discussion forum for review by the original authors.

3.2 Additionally, write 4 separate forum discussion posts to each partner using the headings 'Value, Clarify, Concern, Suggest' with more descriptive/ constructive feedback comments.

4.0 SELF-ASSESSMENT 2 (5%) (Deadline 21st Jan 2014)

4.1 Having seen other reports and on receipt of feedback on your own draft, re-self-assess your draft report using 'Self-Assessment 2' on the Moodle course page.

4.2 On completion of the 2nd self-assessment and in light of the feedback you received and gave yourself in the self-assessments, switch on 'Track Changes' in MS. Word's Review Ribbon and make changes to your report as you see fit. Upload this final version to the Moodle discussion forum for teacher grading.

Fig. 3.8 Screenshot of assignment brief using role play

3.2.4.3 Social Connections

Palloff and Pratt (2007) promote using introductions to begin social connections so in initial posts (within role-play), participants invited feedback from their business partners.
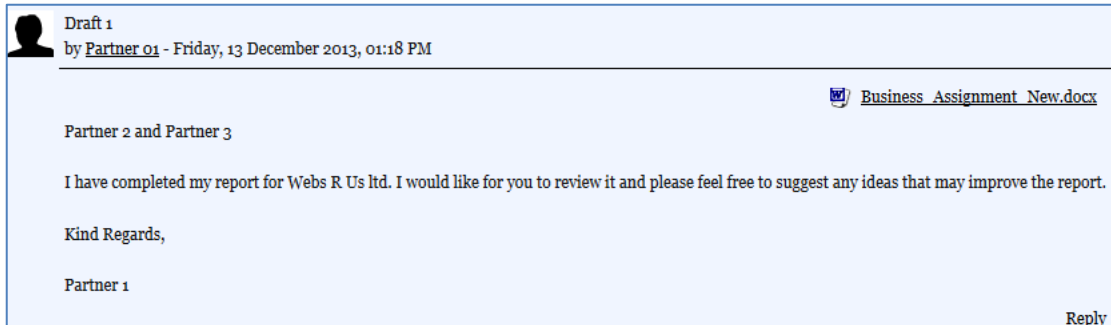
Fig. 3.9 Sample introductory post

3.2.4.4 Netiquette

For authentic socialisation, Salmon (2011) endorses a safe/respectful online climate. Accordingly, netiquette 'Do's and Don'ts' (adapted from Mintu-Wimsatt's guidelines, 2010) were explained in class and made available on the AOD page.

3.2.5 Requirement: Information Exchange

3.2.5.1 Support Resources

To assist information exchange, a support step-by-step guide (Salmon, 2011); exemplars of weak/good feedback and assignments (Dennen, 2003) and an instructional feedback rubric (Gilbert & Dabbah, 2005) were walked through and embedded online.
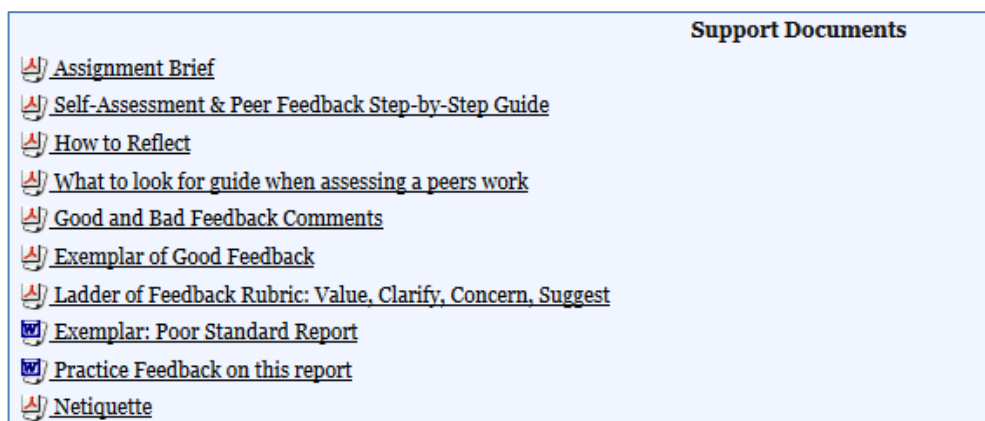
Fig. 3.10 Support documentation

3.2.5.2 Illustrative Graphic

According to Clark & Mayer (2003, p.52) graphics help learning by allowing "a mental connection between pictorial and verbal representations". Therefore, an illustrative diagram of the exercise process was positioned at the top of the AOD course page.
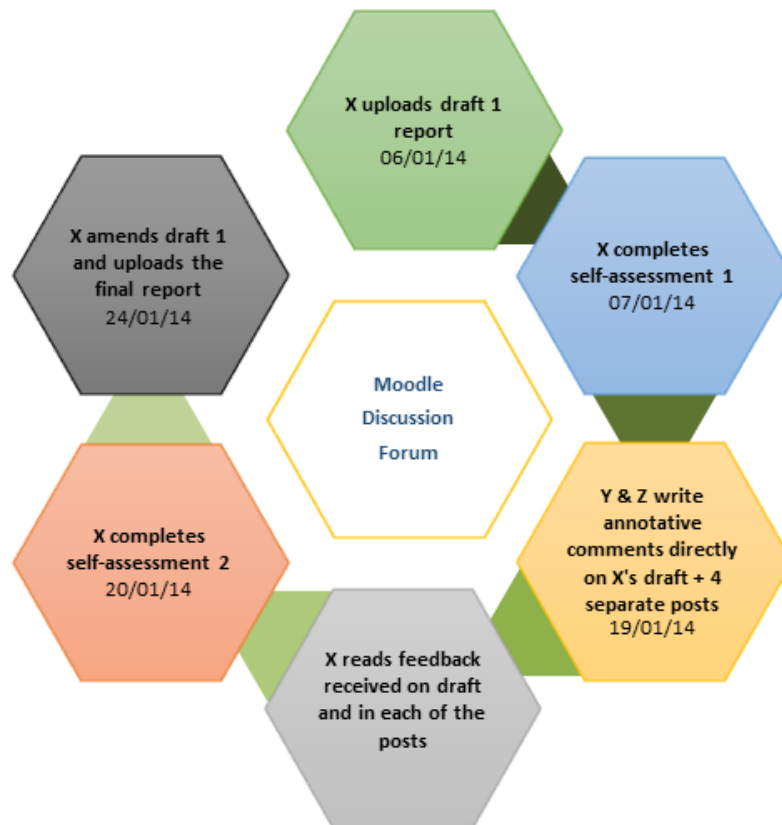
Fig.3.11 Pictorial representation of process

3.2.5.3 Instructional Videos

Mitra et al. (2010) encourage the use of videos in asynchronous environments, therefore two instructional videos were created and embedded - one on 'How to Share Work and Write Feedback Posts', another on 'How to Use Microsoft Word's Annotation Feature'.

Fig.3.12 Supporting Video Tutorials

3.2.6 Requirement: Knowledge Construction

3.2.6.1 Feedback Rubric

An instructional-type feedback rubric was used to scaffold AOD feedback posts. Adapted from the 'Ladder of Feedback' (Perkins, 2003), this rubric encouraged peer-feedback writing under four headings: Value, Clarify, Concern and Suggest.

3.2.6.2 Discourse Training

McLuckie & Topping (2004) recommend 'discourse-building' training so instructional classes were held to practice formulating feedback using sample assignments and the instructional feedback-rubric.

3.2.6.3 Annotation

Dennen (2003) advises feedback comments be also entered directly onto papers so participants practiced constructing feedback using Microsoft Word's (2010) 'Add Comment' feature.

Fig. 3.13 Sample of peer-feedback annotation

3.2.7 Requirement: Development

3.2.7.1 e-Moderation

On completion of preparation classes, the peer-feedback process commenced outside class as participants moved from inter-dependence to independence (Salmon, 2011). The teacher played a minimalistic role in monitoring posts, participation and by being available for technical support (Rovai, 2007).

3.3 Objective 2: Self-Assess Before & After AOD Peer-Feedback
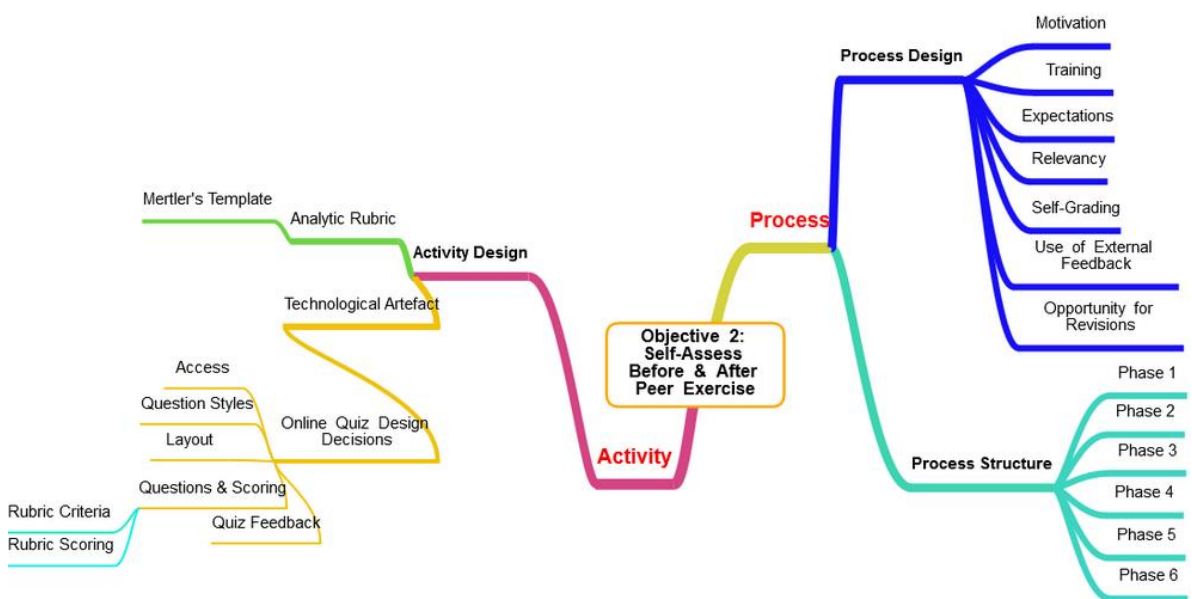
Fig 3.14 Self-Assessment design decisions

The above mind-map illustrates the primary, secondary and tertiary considerations required to scaffold the self-assessment component of the study. Each requirement is discussed below.

Boud (1995) remarks "It does not matter how intrinsically well-designed a self-assessment activity might be, it is the specifics of how it is implemented which significantly influence how well it is received" (p.182). Here Boud emphasises the importance of the self-assessment as a process as well as an activity. Therefore this second design objective required considerations on two fronts: (i) as a process and (ii) as an activity.

3.3.1 Requirement: Self-Assessment as a Process

3.3.1.1 Process Structure

The study was grounded on A 'Six-Phase' process consisting of two teacher phases (1 and 6) and four participant phases (2, 3, 4 and 5).

Phase 1	*The teacher graded first draft assignments, blind to student names (removing potential bias), using a criteria-referenced marking-rubric[3]. To avoid influencing judgements, teacher-awarded grades were not made known to participants. According to Boud and Falchikov (1989) "it is necessary to use teacher grades as a standard against which to compare self-awarded marks" (p.417); therefore these teacher-grades were considered the benchmark for true/proper student performance.*
Phase 2	*Participants self-assessed their first draft assignments with the same marking rubric the teacher used (this way students learned to evaluate their work the same way their teacher does). This initial self-assessment sought to capture participant perception of own performance and produce 'un-supported' grades. Such self-grades did not count towards formal assessment but formatively served to determine if assessment criteria were met/not met.*
Phase 3	*Participants reviewed the assignments of two peers and provided feedback by annotating on work as well as through AOD forum posts. They simultaneously received feedback from two peers on their own assignment and reflected on same.*
Phase 4	*Participants self-assessed their first draft assignment again using the same marking rubric. This time 'online peer-feedback supported' grades were produced. These self-awarded grades did not count towards formal assessment, but further served to fine-tune self-judgements of meeting/not meeting criteria in light of peer-feedback exchanged.*
Phase 5	*Participants were afforded the opportunity to make revisions to first draft assignments and submit a revised/final assignment for teacher-grading.*
Phase 6	*The teacher graded revised assignments for formal (FETAC) assessment purposes. On completion, teacher-awarded final and first draft grades were made known to participants.*

(Phases 2–5 marked as **Participant Phases***)*

Table 3.3 Six-Phase process

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[3] The teacher marking-rubric and participant self-assessment rubric was the same. One rubric was designed and duplicated as separate activities to allow equality in assessing, diverse access and separate grade records.

3.3.1.2 Process Design

3.3.1.2.1 Motivation

Boud (1995) suggests four ways to motivate students to self-assess.

- Emphasise value

  A class discussion on the educational and professional merits of self-assessment took place prior to commencement and the overall goal of knowledge attainment was emphasised (McMillan & Hearn, 2009).

- Assign marks

  A small percentage of the overall subject grade was apportioned to the self-assessment activities making participation compulsory.

- Factor it as a course requirement

  As suggested by Sargeant et al., (2008), the self-assessment activity was incorporated as part of a FETAC Business Computing subject assignment (see Assignment Brief, Appendix B).

- Allocate class time

  As advocated by Nicol & Macfarlane-Dick (2006), specific dates and class times were designated to perform self-assessments with adequate opportunity for reflection (see Procedure, Appendix C).

3.3.1.2.2 Training

Training and practice on 'how to reflect' (Aronson et al., 2012); 'how to self-assess'; (Birjandi & Siyyari, 2010) and 'how to self-grade' (Boud, 1995) was provided prior to commencing the first self-assessment.

3.3.1.2.3 Expectations
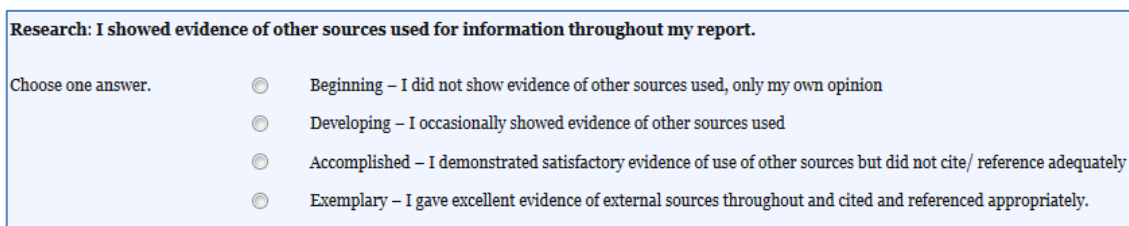
Expectations were explained in class, documented within the assignment brief and clearly stated on the Moodle AOD page (McMillan & Hearn, 2009). Furthermore, students were made aware their self-ratings will be compared to the teacher's ratings (Fox & Dinur, 1988).

3.3.1.2.4 Relevancy

The relevancy of the self-assessed material was ensured by the self-assessment requiring evaluation of original thought as well as subject knowledge and by incorporating quality questions related to subject-specific learning outcomes (Sitzmann et al., 2010; Sargeant et al., 2008).

3.3.1.2.5 Self-Grading

Self-marking (Boud, 1989) was enabled by incorporating the self-assessment rubric as a Moodle quiz consisting of 40 marks (as required by FETAC). For each question, participants did not have to select a mark but instead had to choose one of four criteria-referenced benchmarks (Andrade & Valtcheva, 2009). Such benchmarks: 'Beginning' to 'Exemplary' had corresponding weak to strong performance scales (Boud, 1989) and a selection of one criteria enabled relative marks to be automatically assigned/calculated.

Research: I showed evidence of other sources used for information throughout my report.

Choose one answer.

○ Beginning – I did not show evidence of other sources used, only my own opinion

○ Developing – I occasionally showed evidence of other sources used

○ Accomplished – I demonstrated satisfactory evidence of use of other sources but did not cite/ reference adequately

○ Exemplary – I gave excellent evidence of external sources throughout and cited and referenced appropriately.

Fig 3.15 Self-Grading Criteria

3.3.1.2.6 Use of External Feedback

Students were encouraged to reflect on peer-feedback before commencing the second self-assessment (Sitzmann et al., 2010). Students were also reminded that while they would not have teacher-feedback before final assignment submissions, at the end they would receive feedback on discrpancies between their self-ratings and teacher-ratings (Ross, 2006).

3.3.1.2.7 Opportunity for Revisions

On completion of the second self-assessment, time was allotted in class to start assignment revisions (Andrade & Valtcheva, 2009) which were subsequently completed at home. These revised assignments were graded by the teacher and counted towards formal subject grading.

3.3.2 Requirement: Self-Assessment as an Activity

3.3.2.1 Self-Assessment Activity as an Analytic Rubric

The self-assessment activity was constructed as a marking rubric (Panadero et al., 2012) and modelled on Mertler (2001)'s analytic template where for each criterion, 1 of 4 possible levels could be selected: Beginning/Developing/Accomplished or Exemplary. The analytic type rubric was chosen because of its advantages over the holistic rubric in providing specific feedback on individual scoring criteria and identifying strengths/weaknesses more distinctly (Mertler, 2001).

	Beginning	Developing	Accomplished	Exemplary
Criteria #1	Description reflecting beginning level of performance	Description reflecting movement toward mastery level of performance	Description reflecting achievement of mastery level of performance	Description reflecting highest level of performance

Table 3.4 Template for Analytic Rubrics (Mertler, 2001)

	Beginning	Developing	Accomplished	Exemplary
Conclusions: Throughout the report, I showed evidence of original thought.	My report lacks evidence of original thought.	I show occasional evidence of original thought.	I show good evidence throughout but there is room for improvement/ some minor errors.	I show excellent evidence throughout, no errors.

Table 3.5: Sample criteria based on Mertler's Rubric (2001)

3.3.2.2 Self-Assessment Rubric as an Online Quiz

As Brown (2004) posits, teachers should use of available technologies when designing rubrics. Using Moodle as the host technological environment enabled the self-assessment marking rubric to be constructed as a technological artefact i.e. a Moodle quiz (see Appendix D and see Appendix E for hard copy version of quiz). This not only enabled the

peer and self-assessment activities be carried out in the same learning space, but further allowed:

- Auto-correction for immediate knowledge of results.
- Duplication of the self-assessment rubric for separate phases.
- Quicker processing time and the removal of human error in grading.
- A record of grades.

3.3.2.2.1 Online Quiz Design Decisions

- **Access**

To ensure completion during appropriate phases, self-assessment quizzes were made visible and accessible on specific dates only.

- **Question Styles**

Multiple choice style questions were used for 25 content-specific questions but rather than requiring alpha/numeric selections, participants had, as mentioned, to choose between Mertler's (2001) 4 rubric levels - Beginning to Exemplary.

An additional open-text style question was incorporated to allow participants freedom to write 'self'-feedback comments within Perkins (2003) Ladder of Feedback framework (see fig 3.16).

- **Rubric Layout**

While all pre and post AOD feedback self-assessment rubric questions were identical, the positioning order of the open-text question was altered. In the pre/first self-assessment, it featured 'last' (as Q.26) to capture impressions of revisions required, having become familiar with assessment criteria. It was re-positioned 'first' (as Q.1) in the post/second self-assessment to promptly capture perceptions of what needs improving after exchanging online peer-feedback (see fig 3.16, 3.17).

On completion of my draft 1 report, the feedback I would give myself can be summarised under the following headings:

1. **Value** i.e. what about my report is particularly impressive /innovative /strong?
2. **Clarify** i.e. what areas should I further explain, justify / clarify?
3. **Concern** i.e. What areas need particular attention/ could be improved?
4. **Suggest** i.e. How can I improve / address these concerns?

Answer:

Fig.3.16 Self-feedback question as Q.26 of pre self-assessment

Having received feedback and seen the reports of my peers, the feedback that I would give myself on my own draft 1 report can be summarised under the following 4 headings:

1. **Value** (what is good about my report).
2. **Clarify** (areas in my report that need further explanation /more clarity).
3. **Concern** (specific areas that need attention / improving).
4. **Suggest** (suggestions of how exactly I can address the above concerns).

Answer:

Fig.3.17 Self-feedback question as Q.1 of post self-assessment

- **Questions & Scoring**

Rubric Criteria

Self-assessment rubric questions were derived from the subject syllabus (Andrade & Valtcheva, 2009). The FETAC Business Computing subject required 5 assessment categories to be assessed (see table 3.6 and Appendix F for FETAC Syllabus Marking sheet). Within each of these 5 categories, 5 criteria questions were derived generating a total of 25 content-specific questions. An open-text question was further added to encourage participants to furnish themselves with feedback and document revisions required.

FETAC Assessment Categories	FETAC Marks
1. Methodology & Findings	5
2. Research	5
3. Understanding of content & development of theme	10
4. Conclusions	10
5. Structure and presentation of report	10
	40

Table 3.6: FETAC Assessment Categories & Marks

Rubric Scoring

While the open-text 'self' feedback question did not incorporate a score, the 25 content-specific questions were apportioned sores out of 40 (as dictated by FETAC) and the sum of the scores was displayed on quiz completion.

Started on	Monday, 6 January 2014, 03:39 PM
Completed on	Monday, 6 January 2014, 04:07 PM
Time taken	28 mins 18 secs
Grade	**22.25** out of a maximum of 40 (56%)

Fig. 3.18: Sample self-assessment grade

Furthermore, students were able to revisit their completed self-assessment review page by clicking the displayed grade. This enabled them scrutinise gaps, if any, between how they rated their work and what would have earned higher marks.

Fig.3.19: Partial screenshot of 'Review' page

The Moodle quiz resource enabled amalgamation of grades, easily retrievable and itemised per user and per group.

Fig. 3.20: User report

Fig.3.21: Group Report

3.4 Conclusion

As proclaimed by Salmon (2011), technology it-self does not produce learning. Various activity and process design decisions, all guided by research, were needed to ensure optimal effectiveness. The build of both self-assessment and peer-feedback learning experiences demanded tried and tested design constructs in order to successfully fuse the online environment, content and human elements.

Methodology

4.1 Introduction

This chapter outlines the research questions; the research methodology; the data collection instruments employed and the implementation and procedure of the study.

4.2 Research Questions

This study was driven by the following three questions:

1. Can an AOD platform support a peer-feedback self-assessment process?
2. To what extent can AOD peer-feedback support self-assessment?
3. How can AOD peer-feedback enhance self-assessment?

4.3 Research Approach

A case study was the preferred strategy to address the research questions. Feagin et al., (1991, p.2) define a case study as an "in-depth multifaceted investigation, using qualitative research methods of a single social phenomenon". The choice to use a case study was influenced by Yin's (2004) conditions for utilisation.

a) "To answer questions like 'how?' or 'why?'" (Yin, 1994, p.1) as with the second and third research questions.

b) "When the investigator has little control over behavioural events" (Yin, 1994, p.1). While the teacher had the role of scaffolding the self-assessment and peer-feedback experiences (the 'preparation' part), control was then handed over to participants (the 'doing' part) allowing them work autonomously in an online environment.

c) "When the focus is on a contemporary phenomenon within some real-life context" (Yin, 1994, p.1). The research required analysis of a practical, true-to-life learning experience (self-assessing and giving/receiving feedback) carried out using a modern technological resource (Asynchronous Online Discussion forum).

d) "Used methods can be qualitative, quantitative, or both" (Yin, 1994, p.1). Answers to the research questions required analysis of both figures and words (i.e. quantitative and qualitative data).

e) "Case studies might be: explanatory; exploratory; descriptive" (Yin, 1994, p.1). 'Exploratory' was deemed the most appropriate type because:
   - The objective was to explore use of a technological resource and explore effect of technology-based learning and assessment processes.
   - It afforded flexibility in research design and data collection.

4.4 Data Collection Methods

Since quantitative and qualitative data collection methods each have limitations, e.g. qualitative data can provide awareness not available in quantitative studies (Creswell et. al, 2003), this study made use of both/mixed data collection methods to strengthen the answers to the research questions. The justification for using both quantitative and qualitative methods in this study, are outlined in table 4.2 overleaf.

4.5 Data Collection Instruments

According to Baxter and Jack (2008) the use of mixed data instruments enhances data credibility. Similarly, Yin (2004, p.4) claims "Triangulation = searching converging findings from different sources -> increases construct validity". Therefore a triangulated research approach was used.
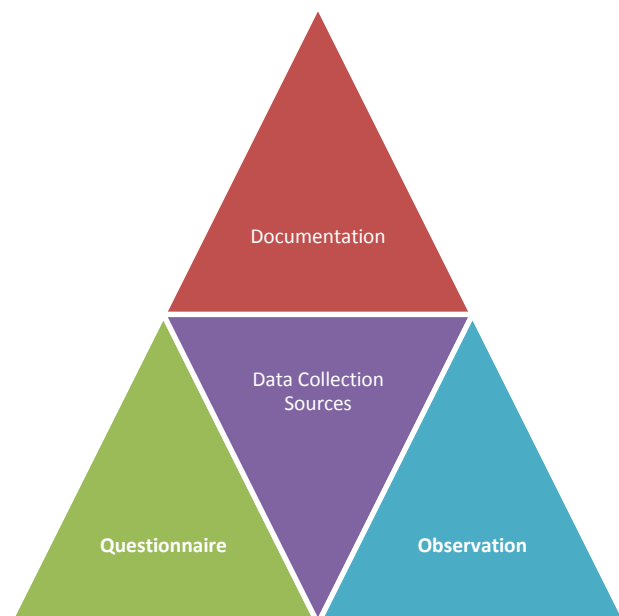
Table 4.1 Triangulated Research Approach

Choice of Data Collection Instrument

As outlined in table 4.2, the choice of instruments employed was dictated by how the research questions could be answered.

RESEARCH QUESTION	HOW QUESTION COULD BE ANSWERED	INSTRUMENT TO COLLECT SUCH DATA	METHOD
1. **Can an AOD platform support a peer-feedback self-assessment process?**	Student perception of technology capability.	**Questionnaire** *(Closed & open questions)*	Qualitative
	Student behaviour interacting with the technology. • Access & functionality • Online participation • Interactivity in-class and online.	**Observations**	Qualitative
2. **To what extent can AOD peer-feedback support self-assessment?**	• Analysis of agreement/grade validity between teacher and self-assessment grades pre and post AOD peer-feedback. • Comparison of pre and post AOD peer-feedback teacher-awarded assignment grades.	**Documentation**	Quantitative
3. **How can AOD peer-feedback enhance self-assessment?**	Student perception of the role/value of AOD peer-feedback in self-assessment • Statistics & comments	**Questionnaire** *(Closed & open questions)*	Qualitative
	• Student behaviour and perceptions towards the AOD peer-feedback and self-assessment concepts during in-class discussions -before & after. • Student behaviour in utilising AOD peer-feedback for revisions.	**Observations**	Qualitative
	Difference in quality of 'self'-feedback pre and post AOD peer-feedback.	**Documentation**	Qualitative

Table 4.2 Research instrument rationale

4.5.1 Documentation

4.5.1.1 To Determine Self-Grade &Teacher-Grade Relationships

To establish the extent to which the AOD peer-feedback supported self-assessment, for the teacher was quantitatively confirmed via statistical procedures applied to documented data i.e. participant self-grades and teacher-grades sourced from Moodle's Grade Report (see Appendix G).

First name / Surname ↑	Teacher Assessment Draft ... ⇅	Self-Assessment 2 ⇅	Self-Assessment 1 ⇅	Teacher Assessment Final ... ⇅
Partner 01	55 % (Pass)	53 % (Pass)	66 % (Merit)	83 % (33)
Partner 02	82 % (Distinction)	74 % (Merit)	74 % (Merit)	85 % (34)
Partner 03	76 % (Merit)	80 % (Distinction)	82 % (Distinction)	85 % (34)
Partner 04	73 % (Merit)	71 % (Merit)	66 % (Merit)	81 % (32)
Partner 05	73 % (Merit)	78 % (Merit)	56 % (Pass)	83 % (33)
Partner 06	80 % (Distinction)	79 % (Merit)	84 % (Distinction)	92 % (37)
Partner 07	61 % (Pass)	71 % (Merit)	66 % (Merit)	69 % (28)
Partner 08	65 % (Merit)	78 % (Merit)	56 % (Pass)	68 % (27)
Partner 09	46 % (Fail)	46 % (Fail)	48 % (Fail)	57 % (23)
Partner 10	63 % (Pass)	53 % (Pass)	78 % (Merit)	76 % (30)
Partner 11	92 % (Distinction)	94 % (Distinction)	64 % (Pass)	97 % (39)
Partner 12	50 % (Pass)	44 % (Fail)	55 % (Pass)	56 % (22)
Partner 13	56 % (Pass)	53 % (Pass)	76 % (Merit)	66 % (27)
Partner 14	66 % (Merit)	73 % (Merit)	62 % (Pass)	69 % (28)
Partner 15	66 % (Merit)	73 % (Merit)	59 % (Pass)	88 % (35)
Partner 16	71 % (Merit)	55 % (Pass)	74 % (Merit)	86 % (34)
Partner 17	73 % (Merit)	83 % (Distinction)	83 % (Distinction)	80 % (32)
Partner 18	86 % (Distinction)	84 % (Distinction)	78 % (Merit)	89 % (36)
Partner 19	53 % (Pass)	46 % (Fail)	56 % (Pass)	63 % (25)
Partner 20	73 % (Merit)	73 % (Merit)	56 % (Pass)	81 % (32)
Partner 21	69 % (Merit)	66 % (Merit)	56 % (Pass)	69 % (28)

Fig. 4.1 Documentation of grades

4.5.1.2 To Determine Effects on Assignment Grades

Likewise, for the student, the extent to which the AOD peer-feedback had an effect on final assignment grade was quantitatively confirmed from documented grade datasets (comparing teacher-awarded first and final assignment grades).

Statistical Procedures to Measure Grade Relationships

In comparing grades datasets, the literature advocates various statistical procedures be used: (i) correlation; (ii) means; (iii) percentages (Boud & Falchikov, 1989) and (iv) range (Davis & Rand, 1980).

> [*Note: while the aforementioned authors often endorse calculating the standard deviation, this was not applicable since a standard deviation works with the mean. The class mean grade was not needed when comparing how one student rated his work compared to how the teacher rated his work].*

i. **Correlation:** Scatter plots were formed to provide pattern correlation evidence. Subsequently Pearson's Product-Moment correlation calculation was used to describe the relationship strength between the teacher's grades and pre and post AOD peer-feedback self-assessment grades.

ii. **Percentages:** Percentages were calculated to ascertain which self-assessment data (pre/post) saw most participant grades in closer to teacher grades. Also, as suggested by Boud and Falchikov (1989), differing agreement grade parameters were applied to allow different perspectives of 'grade correspondence' in comparing self and teacher grades. Furthermore, percentages were used to gauge grade changes in teacher-assigned, grades from first draft assignments to final assignments.

iii. **Range:** As it was expected that some participants would over/under estimate their performance, the range calculation allowed a conclusion on whether such over/under estimations were more or less dispersed, pre or post AOD peer-feedback.

iv. **Mean:** The mean calculation enabled average grades of each dataset be contrasted to determine which set (pre/post) yielded an overall average grade closer to the teacher's average.

4.5.1.3 To Contrast Pre and Post 'Self'-Feedback

Documentation allowed collection of evidence to assist answering 'How can AOD peer-feedback enhance self-assessment?' Since participants wrote 'self'-feedback in Q.26 of the pre self-assessment and in Q.1 of the post self-assessment, the quantity and quality of such feedback was contrasted before and after the AOD peer-feedback process.

4.5.2 Questionnaire

4.5.2.1 To Identify How AOD Peer-Feedback Enhanced Self-Assessments

Self-completing questionnaires were used as the principal qualitative data collection instrument allowing efficient collection of evidence on ways in which AOD peer-feedback can enhance self-assessments. Questionnaire anonymity enabled honest/reliable responses without influence or researcher bias.

The questionnaire was web-based and embedded into the Moodle AOD page to keep the all stages of the study in the same virtual space. The online characteristic sanctioned completion in class or from dispersed locations as well as assisting the accurate and swift summarisation of responses (see a hardcopy version of the online questionnaire, Appendix I).
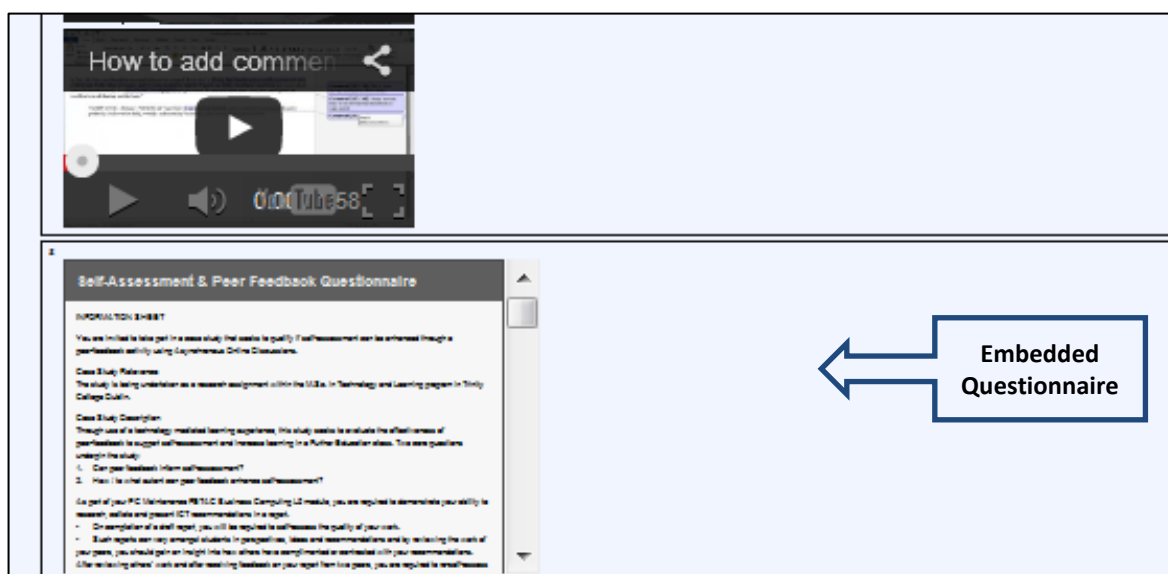
Fig.4.2 Online questionnaire on AOD course page

Questionnaire question styles included:

- Likert scale ("Strongly Agree" to "Strongly Disagree").

- Checkboxes ("Agree" or "Disagree" and "True" or "False").

- Open-Text: Open-text questions negated the need for interviews by allowing participants to elaborate on closed questions and express opinions anonymously. Responses to open-text questions were coded and categorised into identified themes to illicit supportive qualitative data (see Appendix H). Additionally, open-text responses enabled use of quotes[4] in the Findings and Discussion chapters.

4.5.2.2 To Ascertain Perception of AOD Support Capability

The questionnaires enabled the capture of participant thoughts on the competency of the AOD technology to facilitate the sharing of assignments and the exchange of feedback.

4.5.3 Observations

4.5.3.1 To Determine Attitudes towards AOD Peer-Feedback Self-Assessments

Informal observations were recorded on participant interactions, questions and comments during classes before, during after the task completion (see in-class observations notes, Appendix J).

4.5.3.2 To Determine Attitudes towards AOD Capability

To further substantiate if an AOD platform can support a peer-feedback self-assessment process, observations were made capturing factual data such as participant technological competency, online participation and timing (see online observations notes, Appendix K).

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[4] Participant quotes were selected on the basis of being most representative of specific findings and identified themes.

4.6 Implementation

4.6.1 Procedure

The case study procedure, research methods used and a breakdown of study activities are detailed in table 4.3 in Appendix C.

4.6.2 Participants

21 participants took part in the study. Participants were students completing a full-time FETAC level 5 'Computer Maintenance' course in Further Education institute.   All were male, aged between 18 and 49 and were varied in experience and ability.

Participants had previous experience in using Moodle and its AOD resource during their course. Selection of participants was 'whole class inclusive' as the study was directly tied-in with the formal Business Computing subject assessment. An overall 'pass' grade in Business Computing (along with 7 other subjects) is a prerequisite to achieve the FETAC major award in Computer Maintenance.

Participants were divided into groups of 3 and assigned to one of 7 Moodle AOD forums. To ensure an un-biased and anonymous playing field, participants were randomly assigned to groups based on sitting away from each other. This was to reduce the likelihood of having friends in their forum. It also sought to assist in maintaining anonymity by reducing the likelihood of participants discovering the identity of the others in their forum.

4.6.2.1 Study Participation

It is to be noted that while 19 of the 21 participants completed all participant process-phases i.e. phases 2 to 5 (see table 3.3), 2 participants completed phases 2, 4, and 5 only (2 failed to provide feedback and this included 1 who did not submit his revised assignment on-time). As such, 4 participants received feedback from 1 peer only.

4.6.3 Researcher Bias

The researcher was also the Business Computing subject teacher but to mitigate any potential conflict of interest, participants were informed that their un-biased opinions were required and their responses in the questionnaires would be anonymous. Likewise, it was made known that participation/non-participation in questionnaires would not affect the teacher-participant relationship or the subject grade.

4.6.4 Ethics

Ethical approval for the study was granted by the Research Ethics Board, Trinity College Dublin on the 12/12/2013 (see Appendix L). All participants were informed of the research being carried out in alignment with their course work and were provided with participant information sheets and consent forms (see Appendices M & N).

4.7 Conclusion

The fusion of qualitative and quantitative methods from a triangulation of sources ensured the research questions of this study were answered effectively and comprehensively. Together they provided for a detailed analysis and a stronger substantiation of hypothesis.

5.1 Introduction

Grounded on a Moodle environment, the purpose of this study was to explore if an AOD could support a peer-feedback self-assessment process and if such AOD peer-feedback could support and enhance self-assessments and if so, 'how?' and 'to what extent?'

The study involved 21 male participants in a FE Computer Maintenance course. While all 21 participants partook in the post-study questionnaire, 19 completed all required participant process phases 2 to 5 (see 3.3.1), however 2 participants participated in phase 2, 4 and 5 only. The data was analysed and the findings are presented within context of the three research questions.

5.2 Can an AOD platform support a peer-feedback self-assessment process?

In terms of exploring the technology's capacity to support a peer-process, this study took cognisance of the researcher's meta-project study (Fogarty, 2013). In this study a Moodle AOD platform was explored and participants positively regarded it's competency in relation to:

- Content Value (file/knowledge sharing)   95% agreement
- Source Value (interaction with peers)   100% agreement
- Usefulness Value (accessibility/functionality) 95% agreement

[Subset of findings per meta-project (Fogarty, 2013), see Appendix O]

However, respondents had negatively commented on two areas that were consequently addressed in the current study. One such modification was in relation to the discussion post layout where replies in nested form made comments difficult to follow. This was rectified to 'threaded' form for the current study. A further modification was made to the email notification of forums posts which was frustratingly perceived in the previous study. On commencement of the current study, participants were given the choice to have forum posts emailed/not emailed. The researcher observed everyone disabled email notifications.

5.2.1 Responsiveness to AOD Support Competency

This first research question was answerable by way of 100% agreement that the AOD platform competently supported the peer-feedback self-assessment process.

Online Discussion Forum technology effectively enabled the peer feedback and self-assessment exercises

Strongly Agree	13	65%
Agree	7	35%
Not Sure	0	0%
Disagree	0	0%
Strongly Disagree	0	0%
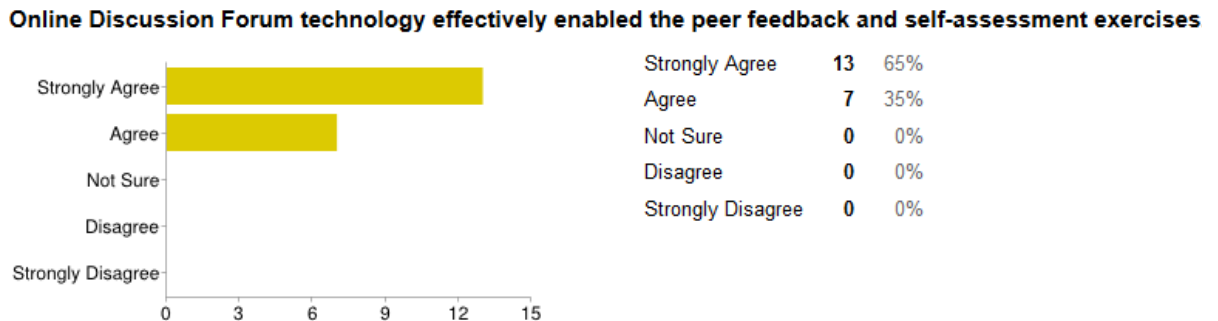
Fig. 5.1 Affirmation that an AOD platform can support peer-feedback self-assessments

5.2.2 Receptiveness of AOD Support Features

The first indicator of the technology's competency to support a peer-feedback self-assessment process was the researcher's observation that the practice completed without functional/technical difficulties. It was observed that there were no requests for AOD help, in-class or online. Notably, the Help chat resource was not used and according to Google Analytics, the embedded instructional videos were viewed only once during the study period. While one questionnaire respondent strongly disagreed with the ease of sharing files, the vast majority endorsed its overall user-friendliness with 90% attesting to its ease of post creation and 95% endorsing its simplicity in assignment sharing.

> *P02[5]: "Very happy with the whole platform and ease of us".*

Likewise, the 'anytime', 'anywhere' engagement value was also upheld by 95%:

> *P17: "More courses should be asynchronous as it gives students more flexibility in doing their coursework".*

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[5] 'P' followed by a number refers to the participant's alias i.e. AOD partner number.

The AOD's ability to add value in social-constructivist way was substantiated by 90% positively acknowledging its ability to afford an additional space for peer interactivity (a key design objective).

> *P06:"The ability to bounce ideas around, communicate and share information with like-minded individuals can only be a good thing".*

The technology enabled time for reflection, a condition required in all phases of the learning exercise with 100% acknowledging the AOD's support in this regard.

The technology also enabled the anonymity element be administered using alias AOD usernames. While the majority (85%) felt anonymity was important, a couple of comments raised the question as to what extent the anonymity was actually upheld by participants.

> *P05:"I think so long as the anonymity is strongly enforced it could be good for most subjects".*

Everyone favourably remarked on the facility of the AOD to incorporate support multimedia resources (instructions, exemplars, images, videos etc.). This was further substantiated by a participant who was able to access such resources and follow assignment tasks remotely while absent from instructional classes.

> *P07: "It was very easy to access the forums and do work from home"*

I liked how the discussion forum was supported by instructions, deadlines, exemplars, user-guides, video and chat.

Strongly Agree	11	52%
Agree	10	48%
Not Sure	0	0%
Disagree	0	0%
Strongly Disagree	0	0%
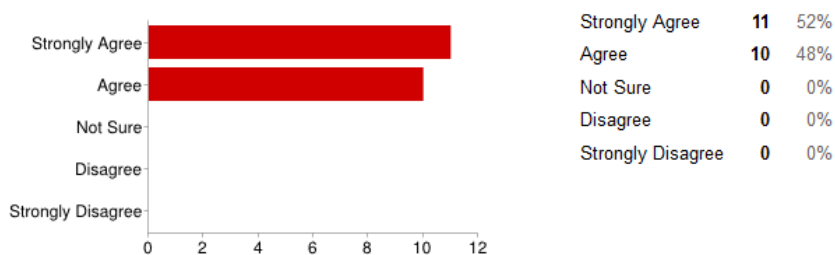
Fig. 5.2 AOD ability to add value with support resources

5.2.3 Acknowledgement of AOD Supplementary Technology

The value of the VLE environment was positively acknowledged by 95%. Its ability to incorporate the self-assessment marking-rubric as an auto-correcting online quiz was equally acknowledged. The practicality of Microsoft Word's 'New Comment' feature to enable feedback annotations was also approved by 95%.

5.3 To what extent can AOD peer-feedback support self-assessment?

The second research question called for an assessment of qualitative evidence to establish to what degree the teacher and students agree with this hypothesis and believe in its utility.

5.3.1 Teacher Perspective

Findings enabled the teacher's perspective of an AOD peer-feedback's ability to support self-assessment to be answered in terms of 'validity'; something Falchikov and Goldfinch (2000) pointed out as an educator's foremost concern. The picture to emerge was compellingly positive.

5.3.1.1 Correlation Paradigm

Evaluating validity correlation via graphical illustration first required mapping pre and post relationships in scatterplot formation (self- grades as dependent variable on the Y axis, teacher grades as independent variable on the X).

Figure 5.3 presents 'pre' AOD peer-feedback self-assessment grades. This shows data points widely scattered around a straight line in an upward direction. While indicative of a positive correlation, the degree of validity between teacher and pre peer- feedback self-assessment grades can be described as weak.
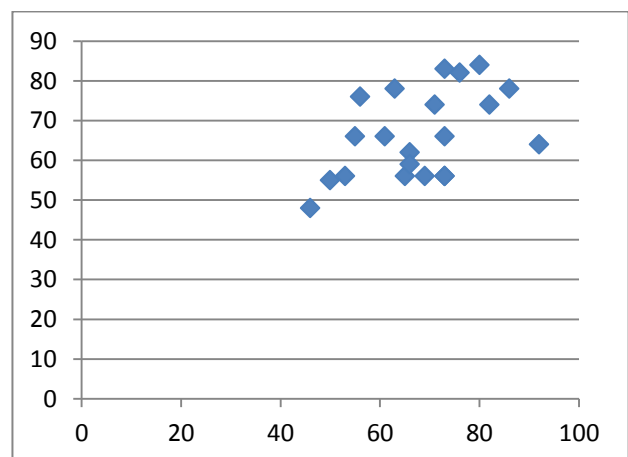
Fig. 5.3 Weak correlation in pre AOD peer-feedback self-assessment grades

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Figure 5.4 plots 'post' AOD peer-feedback self-assessment grades. Here the data points lie relatively close to, but not exactly on, a straight line (upwards). While not a perfect line, it signifies a strong (positive) linear relationship exists. Thus, teacher grades and post AOD peer-feedback self-assessment grades are related and more valid.
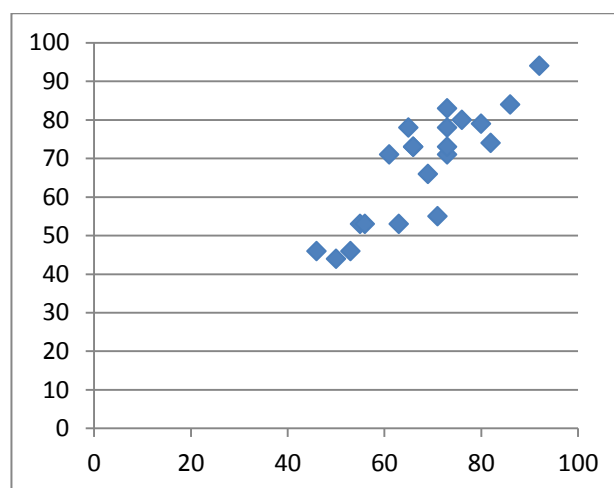
Fig. 5.4 Strong correlation in post AOD peer-feedback self-assessment grades

Pre Peer Feedback	Teacher-Assessment	Self-Assessment 1
Mean	68.04761905	66.43
Correlation Coefficient (r)	0.47398038	
Coefficient of Determination (r^2)	22%	
Range	-20 - +28	

Table 5.1 Pre AOD Peer-Feedback Dataset statistics

Post Peer Feedback	Teacher-Assessment	Self-Assessment 2
Mean	68.04761905	67.95
Correlation Coefficient (r)	0.865071318	
Coefficient of Determination (r^2)	75%	
Range	-13 - +16	

Table 5.2 Post AOD Peer-Feedback Dataset statistics

The Pearson correlation coefficient was used to examine the relationship between participant and teacher assessment with the understanding that the closer a correlation coefficient to 1, the stronger the relationship whereas the closer to 0, the weaker the relationship. The results demonstrated, when compared to teacher grades, the 'pre' peer-feedback self-assessments grades exhibited a weak correlation (r = 0.48); a low coefficient of determination of 22% (Table 5.1). In contrast, the 'post' AOD peer-feedback self-assessment results yielded a strong correlation (r = 0.87); a high coefficient of determination of 75% (Table 5.2). As these findings confirm a strong positive relationship between teacher and post AOD peer-feedback self-assessment grades, the validity benchmark was met.

5.3.1.2 Grade Analysis

In probing into which of the two self-awarded grade datasets was closer to the teacher-awarded grade, findings showed only 6 of participants had grades nearer the teachers in the pre AOD peer-feedback self-assessment. While 3 had grades similar to or the same distance from the teacher's in both, the majority, i.e. 12, produced marks closer to the teacher in the 'post' AOD peer-feedback self-assessment.
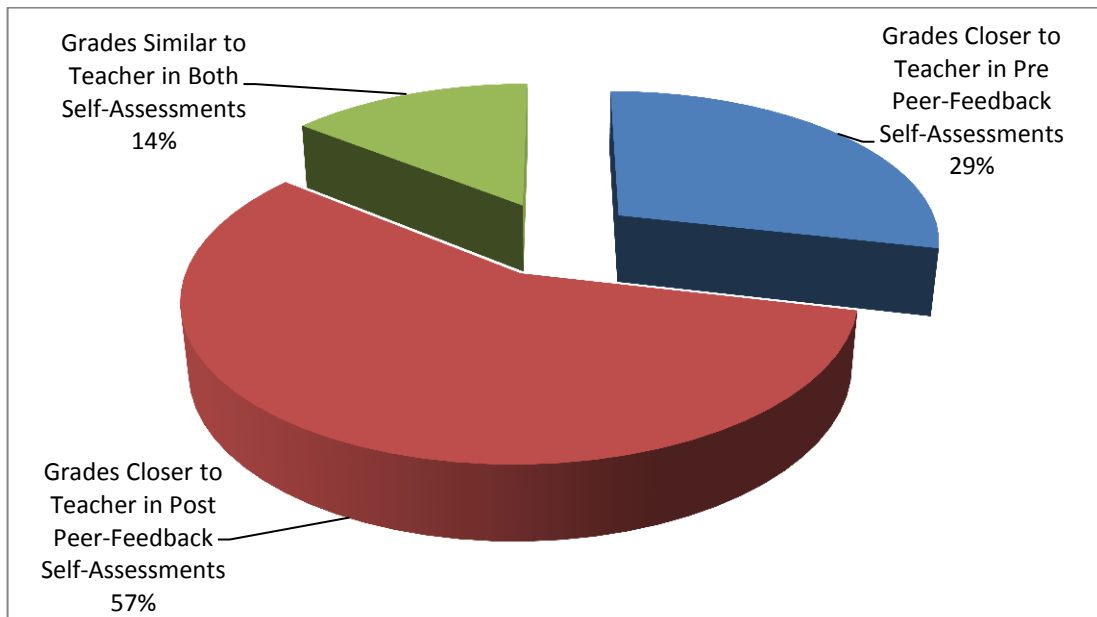
Fig. 5.5 Greater degree of validity post AOD peer-feedback

5.3.1.3 Level of Grade Agreement

The prototype standard in this study assumes the teacher's grade is the 'true' grade for assignments (Boud & Falchikov, 1989). In terms of participants self-awarding the exact same grade as awarded by the teacher, findings showed that no participants achieved this pre AOD peer-feedback but 10% did post AOD peer-feedback.

However, when comparing grades from two different evaluators, rather than using percentages of exact matches, Burke (1969) advocates using a measure of 'agreement' (measure the exactness of a discreet match between teacher and student grading). Yet, Boud and Falchikov (1989) state the consensus on what constitutes 'agreement' is varied and ill-defined in literature. Therefore in this study, three agreement parameters were used to paint a more rounded picture.

Commencing with a difference of 4%, participants who awarded themselves a grade within +/- 4% of the teacher's grade were deemed 'in agreement' with the teacher. Grades that lay outside this parameter were judged as 'overestimates' or 'underestimates'. The findings demonstrated that pre online peer-feedback, 24% of participants achieved a grade comparable to the teacher. Yet, this figure doubled to 48% agreement post AOD peer-feedback.
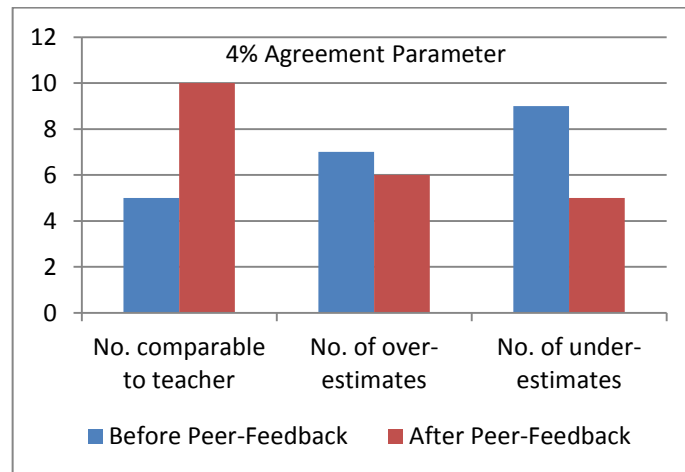
Fig. 5.6 Agreement doubled post AOD peer-feedback

To further corroborate this 'agreement test', it was deemed reasonable to also apply a lower and higher agreement parameter in teacher-student grade alignment. As can be seen in fig 5.7 and 5.8, the outcomes were equally definitive. Irrespective of parameter adopted, more participants produced grades in agreement with teacher grades 'post' AOD peer-feedback.

Lower Agreement Parameter
By allowing a grade difference of +/- 3%, the findings established that pre peer-feedback, 14% achieved a self-assessment grade in agreement with the teacher grade. Greater grade validity was obvious when this tripled to 43% with self-assessment results post AOD peer-feedback.
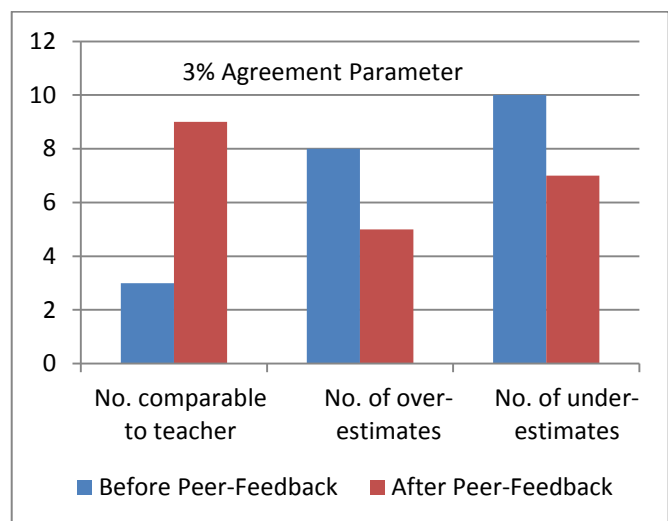
Fig. 5.7 Agreement tripled post AOD peer-feedback

Larger Agreement Parameter
By allowing a difference of +/- 5%, 33% achieved a grade corresponding to the teacher pre peer-feedback. This agreement figure rose to 48% post AOD peer-feedback.
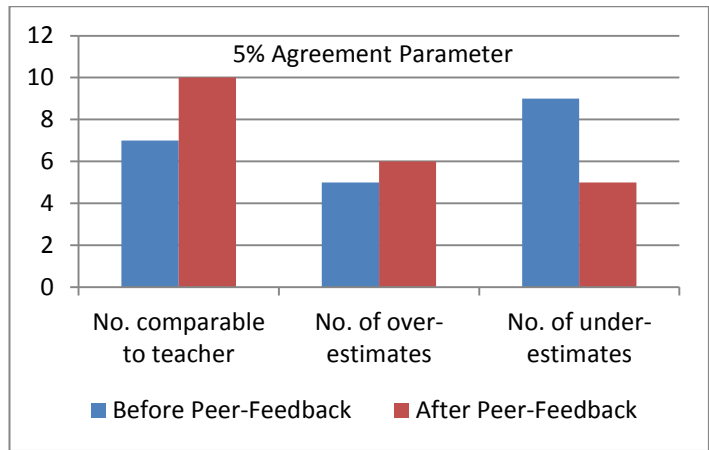
Fig. 5.8 Agreement increased 1½ times post AOD peer-feedback

5.3.1.4 Grade Dispersion

The range calculation was used to measure dispersion between lowest (lowest under-estimated) and highest (highest over-estimated) grades in pre and post datasets. As indicated in Fig.5.9, the range shows a wider variation of 48 in pre peer-feedback results, as compared to a smaller spread of 29 in post peer-feedback results. This indicates a higher degree of validity as self-assessment grades strayed less from the teacher's grade 'post' the AOD peer-feedback experience.
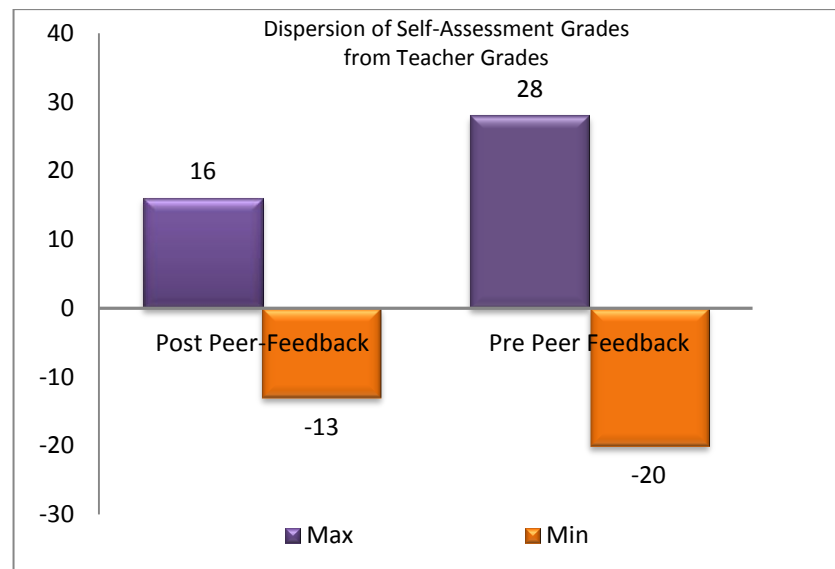
Fig. 5.9 Self-assessment grades strayed less post peer-feedback

5.3.1.5 Mean Grade Comparison

As presented in table 5.1, the difference between mean teacher grade (68.05) and mean 'pre'-feedback self-assessment grade (66.43) was: 1.62. While this is small, table 5.2 shows a mean difference of only 0.1 with the 'post' AOD feedback self-assessment grade (67.95). 0.1 is so marginal it can be considered almost insignificant.

5.3.2 Student Perspective

Following AOD peer-feedback supported self-assessments, participants were afforded the opportunity to use feedback in revisions and submit a final assignment for teacher-grading. In-class observations noted (as in Van den Berg et al.'s 2006, study) all present participants spent time re-visiting online feedback with many printing it. Corroborating this, the questionnaire revealed, although 4 participants had to contend with feedback from 1 peer only (see 4.6.2); everyone consulted their peer-feedback in the AOD posts. 86% also referred to their self-assessment review page on Moodle before making corrective adjustments. In-class observations noted it was the review page of second self-assessment (post AOD feedback) that was consulted.
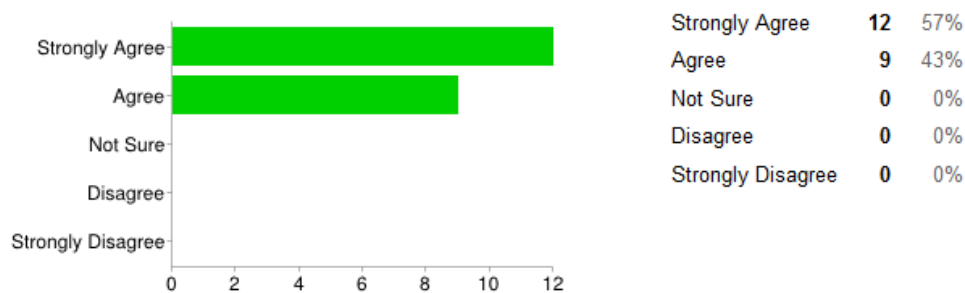
Fig. 5.10 AOD Peer-feedback motivated assignment revisions

In terms of 'to what end?' a significant 90% of participants accredited their final grade increase to the support of the AOD peer-feedback. As depicted in fig.5.11, resultant grade improvements were remarkable – while one participant's grade remained static[6], all those who submitted a revised assignment saw their teacher-awarded grade increase from the first draft. The lowest grade increase was 3%, the highest was 28% with the class

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[6] One participant failed to submit his revised assignment on-time so his first-draft submission was also regarded as his final assignment; therefore the grade remained unchanged.

average increase being 10%. Comparative to the FETAC award structure this meant, out of all revised assignments submitted on time (n = 20), nearly two thirds moved up an award:

5%	upped from		'Fail' to 'Pass'
15%	‖	‖	'Pass' to 'Merit'
35%	‖	‖	'Merit' to 'Distinction'
5%	‖	‖	'Pass' to 'Distinction'
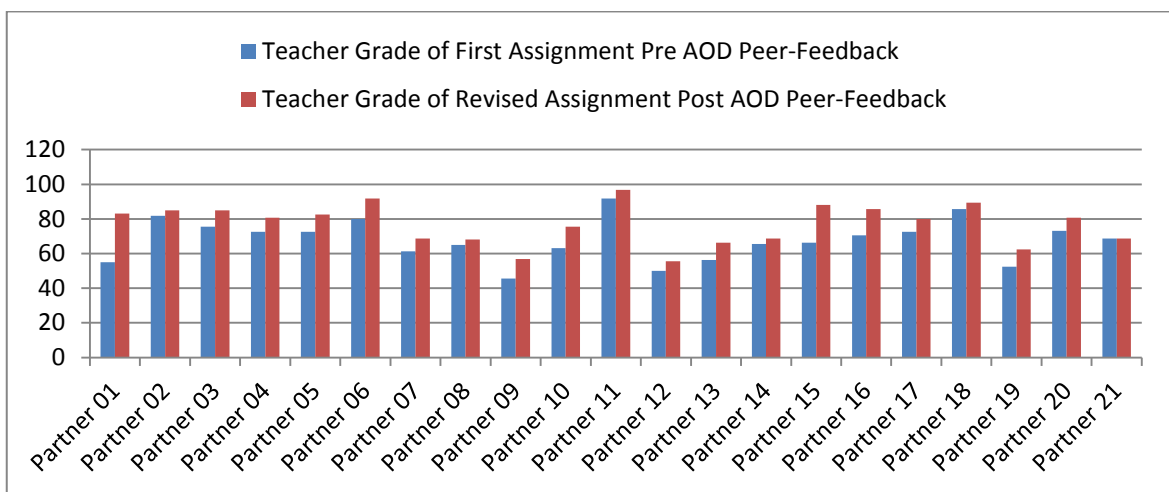
Fig. 5.11 AOD peer-feedback supports assignment grade increases

5.4 How can AOD peer feedback enhance self-assessment?

The third research question called for an evaluation of qualitative evidence to establish 'how?' students and teacher believed AOD peer-feedback enhanced self-assessments.

5.4.1 Student Perspective

The contribution of AOD peer-feedback to enhancing self-assessments was powerfully positive. While in-class observations at the onset revealed a few participants were sceptical initially, almost every questionnaire respondent (n = 21) acknowledged genuine value in integrating AOD peer-feedback with self-assessments.

> P06: *"Peer feedback is going to be less biased than one's own feedback. As honest a person might be, feedback from a neutral perspective is likely to be more accurate".*

5.4.1.1 More Realistic Evaluations

Notwithstanding disagreement from one and uncertainty with another, 90% affirmed AOD peer-feedback offered a more realistic assessment of own performance.

> P01: *"Only for my peer feedback I would have thought my report was better than it actually was".*
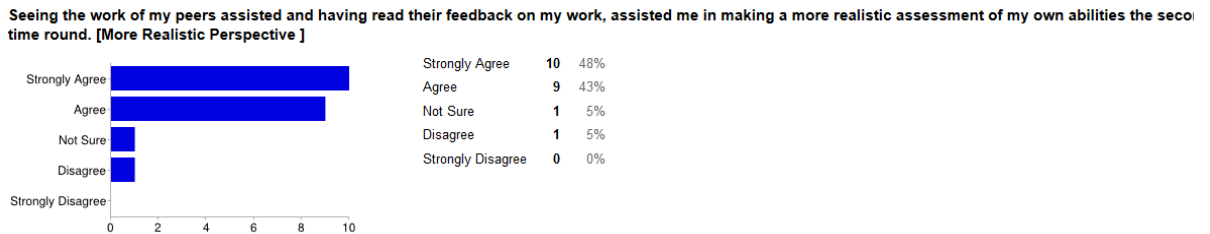
Fig. 5.12 AOD Peer-feedback enabled more accurate self-assessments

5.4.1.2 Encouragement to Revisit & Critically Read Own Work

In-class observations noted that participants were quiet eager to address their draft assignment immediately after completion of the AOD peer-feedback exchange. While 86% felt the peer-feedback process made them more vigilant in proof-reading their work, 100% concluded the AOD peer-feedback motivated them to re-visit and re-read their own work more critically.

> P21: *"I found it useful to look at someone's work as if I was a teacher and then look at my own work as if I was a teacher correcting it".*

5.4.1.3 Increased Self-Reflection

While it wasn't possible to gauge participant reflective-practices outside class, everyone[7] agreed the AOD peer-feedback process encouraged a deeper reflection on assessment criteria.

> P06: *"I had to try and be very honest with myself. I liked being able to reflect on my work in a different way than I normally would".*

---

[7] 'Everyone' represents all 21 questionnaire respondents who collectively agreed and strongly agreed.

By having to provide feedback to peers, I reflected more on the assessment criteria which I then used to provide feedback to myself.

Strongly Agree	10	50%
Agree	10	50%
Not Sure	0	0%
Disagree	0	0%
Strongly Disagree	0	0%
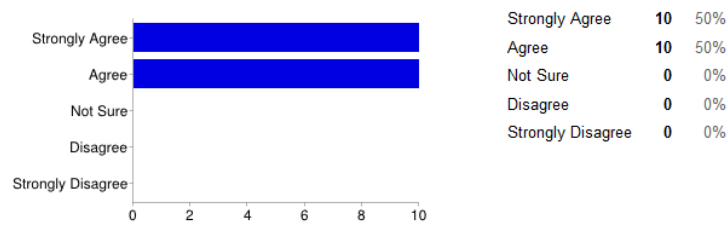
Fig. 5.13 AOD Peer-feedback encourages self-reflection

5.4.1.4 Identification of Knowledge Gaps

Everyone recognised that the AOD peer-feedback enabled them identify knowledge gaps they otherwise may have missed and 95% came to a more accurate realisation that more revisions were required than originally believed.

> P08: "To me peer feedback was extremely valuable and highlighted weaknesses in my report. These weaknesses were addressed and subsequently remedied. Perhaps without the feedback I mightn't have addressed these issues".

Similarly, 95% reasoned they became more aware of their learning progress as a result while 100% claimed they became more knowledgeable of errors and more importantly, how to correct them.

> P05: "Having the chance to see how others handled the same problem as myself was a great help in making improvements to my final draft".

5.4.1.5 Focused Revision Effort

All participants believed they were able to make more effective/productive decisions about where exactly to apply their efforts during assignment revisions.

> P18: It showed me the true worth of my project and the changes needed in specific areas.

5.4.1.6 Improved Judgement Skills

Findings showed that by having first peer-reviewed assignments, 96% believed they had a more informed understanding of how their work standard compared in relation to others and 100% felt they were better able to judge their work quality.

> P02: "The feedback exercise gave me an idea of my judgement skills".

After seeing the work of others, I believed I was better able to judge the quality of my own work.

Strongly Agree	10	48%
Agree	11	52%
Not Sure	0	0%
Disagree	0	0%
Strongly Disagree	0	0%
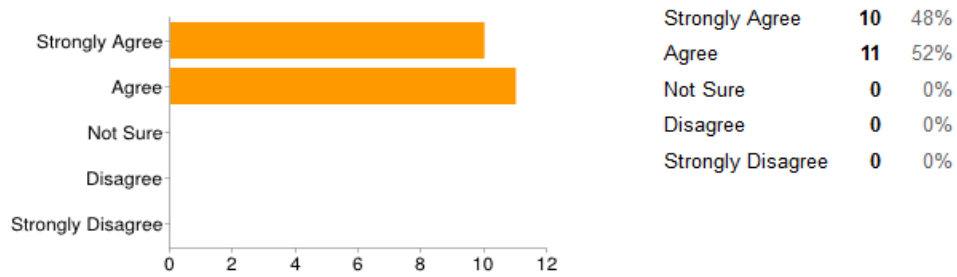
Fig. 5.14 AOD Peer-feedback enhances judgement skills

5.4.1.7 Increased Confidence to Self-Assess

Consistent with in-class observations that self-assessment were completed in less time the second time, students maintained they grew in confidence to self-assess. 90% rated their confidence before the peer-process with a 3 or less (1 being 'not confident'; 5 being 'extremely confident'). However a boost in confidence emerged after the AOD peer-feedback, with 76% selecting a 3 or higher.

> *P11: "The entire process was a valuable experience in that it gave me self the confidence to review my own work as compared to the peer reports I reviewed".*
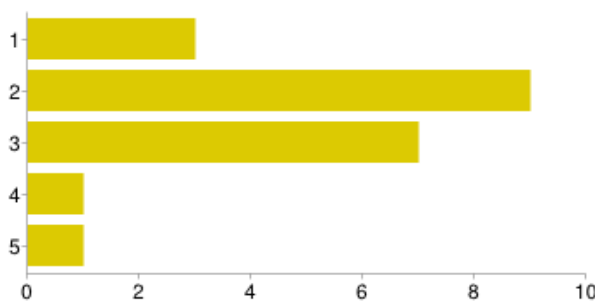
Fig. 5.15 Confidence levels pre AOD peer-feedback	Fig. 5.16 Confidence levels post AOD peer-feedback
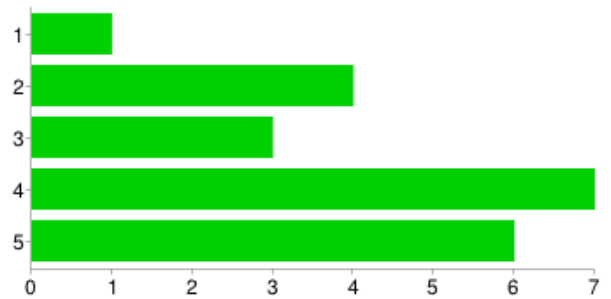
5.4.1.8 Improved Assessment Awareness

As a result of having to self and peer-assess, everyone acknowledged they connected more to assessment criteria and learned more about the assessment process itself.

> *P20: "It also gave the opportunity to get a better understanding of what was wanted from the project".*

5.3.1.9 New Insight & Suggestions

Most (90%) believed exposure to a peer's assignment encouraged new ways of thinking about their own performance with everyone admitting it provided new insight on how their work could improve.

> P04: *"Receiving feedback from my peers made me aware of the weak and strong points in my report which I may not have been able to see for myself, so another person's perspective was very helpful in helping me assess my report".*

5.4.1.10 Greater Self-Regulation

Although in-class observations noted a participant requesting the inclusion of teacher-feedback before commencing assignment revisions, 71% of respondents acknowledged that students appreciate/desire self-regulated learning. 95% believed the process facilitated a new level of freedom to discover their knowledge gaps themselves, without teacher dependence.

> P15: *"It allows for one to critically assess their work without the need for the reassurance or assessment of others."*
>
> P05: *"The teacher won't be there in the real world so it's a good thing to get used to. It helps you become more professional about your work".*

5.3.2 Teacher Perspective

The extent to which peer-feedback can enhance self-assessment from the teacher's position was determined through analysis of the (i) quantity and quality of AOD peer-inspired 'self'-feedback and (iii) up-take of sustainable 'learning to learn' skills.

5.3.2.1 AOD Peer-Feedback Stimulus towards 'Self'-Feedback

To ascertain if the AOD peer-feedback aided self-assessment by inspiring meaningful self-feedback, it was necessary to evaluate the feedback participants gave themselves in the open-questions i.e. Q.26 of the pre self-assessment and Q.1 of the post self-assessment.

Fig.5.17 P04's self-feedback during self-assessment pre AOD peer-feedback

Fig.5.18 P04's self-feedback during self-assessment post AOD peer-feedback

- **'Self'-Feedback Quantity**

In terms of quantity, the documentation of self-feedback established that 19% of participants wrote more self-feedback pre AOD peer-engagement while another 19% wrote roughly the same amount on both occasions. However a notable 62% wrote more detail in the self-assessment 'post' the peer-activity.

- **'Self'-Feedback Quality**

Paramount to feedback quality is its ability to help students move beyond present performance standard and develop action plans i.e. feed-forward (Hattie & Timperley, 2007). As such, self-feedback was coded for 'feed-forward' comments as a systematic

measure of quality (see Appendix P for feed-forward coded 'self'-feedback comments). This allowed a determination of which self-feedback dataset (pre or post AOD peer-feedback) exhibited more 'where to next?' guidance.

The findings highlighted that 24% wrote more corrective self-instructions pre the AOD peer-exercise and 9% wrote roughly the same amount in both. However an impressive majority (67%) articulated more feed-forward comments post the peer effort

5.3.2.2 Adoption of Learning-to-Learn Skills

A key educational objective is that students 'learn how to learn' (McCutcheon & Sherley, 2006). Remarkably, 95% of participants agreed the sustainable skills attained during the study experience would help in other written/practical assignments and in future professional, academic and social settings.

> P18: "I will probably start looking at my finished assignment and think about areas of concern, suggest etc. and look more closely at the grades being given to each section before I turn it in for correction".

5.5 Conclusion

The findings were conclusive the AOD technology made a valuable contribution in supporting the origination, coordination and delivery of the peer-feedback self-assessment process. Additionally, as delineated from the statistical outcomes in 5.3, the extent of this support was quantifiably established by increasing the degree of grade validity between teacher and students and augmenting final assignment grades. Correspondingly, under a wide range of relevant qualitative criteria (5.4.1.1 to 5.3.2.2) it was verified that AOD peer-feedback significantly contributed to enhancing self-assessment competencies.

Discussion and Conclusion

6.1 Introduction

This case study centred on the proposition of enhancing self-assessment through asynchronous online discussion peer-feedback. It involved 21 students and was grounded within a FETAC Business Computing class of a Further Education Computer Maintenance course. Findings are discussed within the framework of the literature and the three research questions.

6.2 Can an AOD platform support a peer-feedback self-assessment process?

Notwithstanding some technology modifications that needed to be made, in terms of delivering support, the meta-project study (Fogarty, 2013) was foundational in corroborating the effectiveness of the Moodle AOD platform for peer engagement. The current study equally produced a very positive confirmation.

The results in terms of how support was delivered are summarised in table 6.1 and discussed below.

Ease of sharing assignments and exchanging feedback discussion posts

Capacity to provide a supplementary, interactive learning space

Affordance of time to reflect & enage in higher order thinking

Anytime, anywhere accessibility

Effectiveness in executing anonymity and more freely allow critical discourse

Ability of AOD environment to incorporate multimedia support materials

Affordance of AOD environment to integrate the self-assessment activity as an online quiz

Table 6.1 AOD competencies in supporting peer-feedback self-assessments

Judging by the lack of in-class help requests, the lack of use of the Help Chat resource and negligible views of instructional videos, the technology clearly upheld the 'easy-to-use' dynamic Salmon (2011) maintains must be present. Such effortlessness was corroborated by the majority (ranging between 90% and 100%) of participants attesting to its simplicity in creating posts and sharing assignments. Accordingly, the AOD proved effective in meeting a primary design objective (see 3.2). Although AOD's are generally considered intuitive, the high degree of user-friendliness could be attributed to the fact that participants were technically-savvy students and they previously used a Moodle AOD during their course. Furthermore, many were accustomed to similar online discourse applications.

> P11 "The online discussion format is a useful resource and attractive to use because students will be familiar with the concept through other social media applications".

There was however a negative comment referring to the technology's potential to be better:

> P16: "The Moodle platform is not very user friendly. It needs to be updated to be in line with other web applications".

This comment suggests investigating later Moodle versions and/or alternative, more customisable discussion forums for future studies.

Since Further Education classes are not typically conducive to peer-activities, another design objective was met by the AOD's capability in creating a supplementary, off-campus learning space for peer-interaction. In addition, the anytime/anywhere engagement characteristic (Ellis, 2001) was leveraged and favourably acknowledged by almost all participants.

> P17:"More courses should be asynchronous it gives the students more flexibility in doing there course work which removes a lot of stress because you can do the work at your leisure".

Beyond flexibility and user-friendliness, the AOD added value that superseded the traditional face-to-face class alternative. One such quality was its ability to administer anonymity (Basheti et al., 2010), something impossible in a face-to-face setting but necessary for a less intimidating, more critical/honest feedback. While two participants

referenced student ineffectiveness in upholding anonymity, it is not known how many revealed their identity. For future studies this suggests that the importance of maintaining anonymity be more strictly emphasised and it directs exploration of the plugin *'Anonymous Posting in Forums'* available in newer Moodle releases. Nonetheless, anonymity removed the possibility of bias in teacher grading and the majority (85%) acknowledged its importance. Judging by some frank peer-feedback comments exchanged, evidence suggests anonymity afforded more openness in critiquing work.

> *P20:"I liked the fact that people were quite blunt about what was wrong with the work".*

In contrast to face-to-face or synchronous online discussions, the AOD added value in terms of 'time'. As endorsed by Young (2008) asynchronicity enabled time to reflect on assignments, a condition required to compare performance to criteria and construct quality feedback. As posited by Wang & Chen (2008) and evidenced by impressive feedback comments, value was also leveraged from the text-based attribute which clearly enabled higher order thinking (see sample feedback, Appendix Q).

As developing a more autonomous/self-regulated learner and learning environment was at the heart of the activity, the facility of the AOD to integrate support materials in the same virtual space was both necessary and feasible. Favourably perceived by everyone, such multimedia supports afforded participant independence to follow the learning program and constructively create/share knowledge without much teacher assistance. Although support material use was not measured, one student who was absent for preparation classes, successfully followed most tasks from home. The constructs signposted by literature to design a one-stop-shop interface containing instructions, graphics, deadlines, documentation and video etc. confirmed the technology's capability to scaffold and support self-sufficient learning exercises.

The environment hosting the AOD resource i.e. Moodle, was positively regarded (95% agreement) in terms of its competence of enabling in the same page, the self-assessment marking rubric as an online quiz (delivering on design objective 3.3). Correspondingly this was favoured by the teacher in terms of removing the correcting workload and duplicating the rubric for pre and post phases.

Finally, despite one negative user-friendliness remark, the ability of the AOD platform to meet all design objectives and support a peer-feedback self-assessment brought unanimous agreement.

> P05 *"Having never done this type of thing before I would strongly recommend it for the future, especially in the way it was presented online with the ability to upload, download and view at your own convenience."*

6.3 To what extent can AOD peer-feedback support self-assessment?

6.3.1 Teacher Perspective

The extent to which the AOD peer-feedback supported self-assessment, for the teacher, was quantitatively confirmed in terms of 'self-assessment grade' validity.

The correlation analysis showed that twice as many participants produced grades closer to the teacher's grade in 'AOD peer-feedback supported' than in 'un-supported' self-assessments. By itself, this proves the research hypothesis that AOD peer-feedback as a pedagogical intervention has the capacity to deliver valid self-assessment results.

Although correlation does not prove causation, the resulting strong positive correlation (r=0.87) indicates that AOD peer-feedback can directly influence a student's ability to assess their work similar to how a teacher would assess it (aligning with Falchikov & Goldfinch, 2000). However, a further probing of whether student self-grading (preceded by AOD peer-feedback) could substitute for teacher-grading would undoubtedly depend on variables such as: education level, grade accuracy required by a subject/teacher and whether self-assessment is being used for formative or summative purposes.

Findings of similar mean grades, smaller grade dispersions and significant increases in teacher-student 'grade agreement' attainment further substantiated that self-assessment grades had a higher degree of correspondence 'after' AOD peer-feedback. Even so, it could be argued that such improved agreement was inevitable with a second self-assessment attempt since participants become more accurate markers with practice (Birjandi & Siyyari, 2010). However, because the number of grade agreements attained from pre to post AOD peer-feedback changed so substantially (doubling with +/-4%

parameter and tripling with a +/-3% parameter), the interplay of AOD peer-feedback was, if not responsible, certainly supportive.

Notwithstanding the higher degree of validity, the majority (90%) of AOD peer-supported self-grades were not identical to teacher-grades. Such a low 'identical grade' return may mean this assessment strategy is not good enough/suitable for summative assessments. Grade variations may be derivative of several factors such as the inability of students to comprehend or apply assessment criteria, rubric subjectivity and/or the fact that teacher marking it-self has been found to be unreliable (Falchikov & Magin, 1997). It is clear therefore that some moderating procedures should be adopted e.g. more self-assessment training, prolonged practice, involve students in rubric-creation, more premeditated grouping of peers and teacher oversight.

Although validity correlations can differ between studies (Boud & Falchikov, 1989), in this study, self-assessment was used formatively, in a vocational institute, to augment a written assignment standard and simultaneously cultivate self-regulation qualities. Thus the high correlation signifies, albeit still imperfect, that in such a setting a teacher can be confident that employing AOD peer-feedback, as a mechanism to support self-assessments, can produce more valid results.

6.3.2 Student Perspective
The extent to which the AOD peer-feedback supported self-assessment, for the student, was quantitatively confirmed in terms of 'assignment grade' outcome.

Concisely, following AOD peer-feedback, all participants who submitted a revised assignment on time (20 of 21) earned a teacher-awarded, grade increase. While 1 participant commenced assignment revisions in class, he failed to submit it on time thereby excluding himself from the prospect of grade enhancement. Remarkably, revised assignment grades increased, from first drafts by 3% to 28%, with an average increase of 10%. In FETAC terms, 40% moved up to 'Distinction' status (the highest level). Notably 20% who did not move up were already at Distinction standard with first drafts. While it could be challenged that grade increases would inherently follow revised work, the

significant degree of grade movement in many cases indicates that AOD peer-feedback was credibly supportive (one grade increased from a 'Pass' to 'Distinction').

Similarly it could be argued that final results may be questionable by the fact that participants may not have put their 'best foot forward' in writing first draft assignments (justifying a lackadaisical effort by knowing they could to revise it later). Although it is difficult to really know the full extent of effort made, it should be noted the majority (70%) of first draft assignments, from the teacher's grading standpoint, were of Merit or Distinction quality.

When asked the question 'what did you like most about the experience?' five participants responded with 'the ability to make improvements to assignments' and one acknowledged the 'collaborative' learning gain by saying:

> *P12:"liked the fact that each individual in the forum can only improve by these methods".*

Conclusively, 100% of students believed they learned from peer's comments and used their feedback in revisions (harmonising with Van den Berg et al., 2006). Significant to supporting the hypothesis, the vast majority (90%) resolutely validated their final grade increase was a direct result of AOD peer-feedback. This was expressed by one participant who summed-up the main hypothesis by saying:

> *P11: "The ability to provide and receive feedback online allowed me to self-evaluate to a higher level than would have been possible if the process was dependent entirely on self-review".*

6.4 How can AOD peer-feedback enhance self-assessment?

Notwithstanding the significance of the quantitative evidence, student and teacher gains should not be fixated on coefficients or effects of student-derived marks or assignment grades. The qualitative findings (summarised in tables 6.2 and 6.3) revealed how AOD peer-feedback enhances competencies for current and future self-assessment tasks.

6.4.1 Enhancements to Current Self-Assessment Task

Adding a dimension of realism
Exposing missed knowledge gaps
Promoting a deeper connection with assessment criteria & process
Revealing more revisions are required & allowing focus in revision effort
Offering suggestions for assignment improvment
Inspiring quality,feed-forward self-feedback

Table 6.2 AOD Peer-feedback competencies in enhancing the current self-assessment task

As confirmed by 90%, the extra peer perspective obtained through the AOD peer-feedback enabled a further dimension of 'realism' to be incorporated into own performance evaluation. From this study it can be deduced that if students over or under-estimate their effort (as indicated by Kruger & Dunning, 2009) such additional realistic perspective can help with reducing/removing the distortion.

> P05: "My second self-assessment was more accurate than my first and I think this is mainly down to being able to review other's work.

As assessee, a student may be simply oblivious to own knowledge gaps or may concentrate only what they believe is strong (self-enhancing theory, Mabe & West, 1982). Yet a peer acting as 'assessor' can bring insight by purposefully searching for errors and exposing weaknesses that may have gone unnoticed. In the same vein that Taras (2003) refers to teacher-feedback, it can be concluded from this study, that self-assessment without 'peer'-feedback cannot help students to be aware of all their errors.

> P13:"I compared all the feedback provided by my partners and made adjustments to the areas I overlooked for the first draft. I also paid attention to the mistakes pointed out by my peers.

As advocated by Stefani (1998) a key tactic for optimising grades requires understanding how work is assessed. By having to assess one's own and a peer's work, everyone agreed they became more aware/familiar of assessment criteria, an awareness they may not have achieved if the teacher did all the assessing. Such advantage consciously/subconsciously assisted students in evaluating work, constructing feedback and making revisions. Another construct instrumental to task success was the assessment rubric. While labour-intensive, its careful design, structure and ability to make expectations clear were highly regarded by two thirds, most attesting to the ease of self-rating based on selection from Mertler's (2001) competency levels (Beginning–Exemplary).

> P07:"I think it was easier to rate my work to accomplished or exemplary etc. than to give myself an actual grade".

For future studies, a further deepening of assessment familiarity may be obtained if teacher and students co-create the marking rubric and collaborate in criteria setting.

Hand-in-hand with peers exposing knowledge gaps, 95% of students realised more revisions were required than originally thought. This may have been disappointing to some.

> P20: "I think figuring out that I had a bit of extra work to get my project to distinction level, was the part I liked least".

Nonetheless, the feedback supplied enabled a clearer focus of where to apply revision effort thereby affording more efficient/productive use of revision time and effort (Moskal, 2010). Having to include corrective suggestions in the feedback message highlighted where knowledge construction i.e. stage four of Gilly Salmon's Five-Stage Model, 2000, was at its best (see sample feedback including suggestions, Appendix Q).

The ability to formulate constructive, quality feedback underpinned the success of this study. The success of peer-feedback messages was largely due to the 'Ladder of Feedback' (Perkins, 2003) construct. Notably 81% favourably considered this scaffolding of Value, Clarify, Concern and Suggest headings.

> P20: "We were able to give specific feedback for certain headings and it made it easier".

Not an end unto itself, the exchange of AOD peer-feedback served to fuel student 'self'-feedback. As such, findings established that as a result of AOD peer-feedback, two thirds of students produced higher quality, feed-forward 'note-to-self' comments. This surge in detail indicates that post AOD peer-feedback most participants had more insight and/or more to say about how their assignment could improve.

6.4.2 Enhancements for Future self-Assessment Tasks

Research findings surpassed expectations. Not only did AOD peer-feedback enhance the current self-assessment activity, but the all-inclusive process simultaneously cultivated viable, learning-to-learn skills that students can bring to further academic, professional and life contexts.

Reflection Skills

Judgement Skills

Self-Assessment Skills

Application of Knowlege Skills

Table 6.3 AOD Peer-feedback capabilities for enhancing future self-assessment tasks

Findings were conclusive in that all students attested to reflecting on work more than usual. Students reflected on criteria, own work, peer work and on feedback formulation, discernment and application. Foreseeing this, time was spent on reflection techniques in preparation classes and such training would have impacted the degree/quality of reflection practiced throughout. Equally the AOD's asynchronous feature, conducive to reflective practices, positively impacted the degree of reflection. It could also be said a key motivational driver to reflect may have been the fact that because participants had to justify self-grades, they had to concentrate more on the true worth of their work, a practice some enjoyed.

As stated by Clegg (2004, p.292) "Reflection is now expected to form part of every student's analytical learning-to-learn armoury", therefore like any skill, reflection needs to be practiced using reflection-enabling exercises and reflection-enabling technology, as with an AOD peer-feedback self-assessment.

Formally judging work is a skill required in all lines of professional practice (McCutcheon & Sherley, 2006) and this study highlighted the connection that everyone felt they were better equipped to judge the degree of their own goal achievement after first judging a peer's work. As pointed out by Brown & Knight (1994) students may show resistance to self-assessments because they lack confidence in their ability to judge work, yet this study proves that using AOD peer-feedback can serve to reduce such resistance. Some comments were conflicting however, e.g. P08:"*I hate judging myself*" and when asked what they liked most, P09 said *"having to judge my own work more closely than usual".* Equally important to making judgements, is the ability to take judgement from others as remarked by one student:

> P12 *"It helped me to be more critical of myself and enabled me to accept criticism".*

Such improved judgement skills may have been largely accredited to the carefully-designed marking-rubric which, literature claims, makes students more thoughtful judges of quality in their own and others' work (Andrade, 1997).

Observed and corroborated in questionnaire reponses, self-assessment confidence was lacking initially. Yet after the AOD peer-feedback exercise, the majority (76%) stated their confidence in self-assessing ranged from being confident to extremely confident. Such a boost could be a result of the 'training-effect'. Since the self-assessment test was administered twice, it could be argued that the process of learning to grade one's own assignment improves with practice.

> P20: *"I just had a better grasp of what I was doing the second time around".*

Alternatively, this increased confidence may be attributed to having to first peer-assess.

> P08:"*It gave me self the confidence to review my own work as compared to the peer reports I reviewed and the feedback that I received from peers".*

An interesting finding was the fact that the process not only heightened self-assessment confidence but also self-confidence.

> P08: "It also allowed some confidence to grow within my own writing skills as I recall I was well-praised by one of my partners for the report on my skills of writing".

The findings that self-assessment improves with AOD peer-feedback, training and repetitive practice indicates (as posited by Moskal, 2010) that self-assessment is a skill that is learned. The learning value was corroborated by the majority of students when they suggested using such skills in other assignments, harmonising with Andrade who says "if students produce it, they can assess it; and if they can assess it, they can improve it".

On a final note, while viable skills were clearly developed in the exercise, the acid-test is the application and recognition to apply such skills to different contexts. Findings indicated 95% acknowledged/appreciated the 'learning to learn' skills afforded by the AOD peer-feedback self-assessment experience.

> P01: "Not only in my education but in life I can use this method to reflect and improve everything I do. In sport I could use this to evaluate my performance and see what areas may need improvement and practice it to improve myself".

6.5 Limitations of the Study

The limitations of this study which may have affected outcomes include the: small sample size (n=21); participant gender (limited to males only); teacher's teaching style; marking rubric design/objectivity; nature of the assignment and familiarity of technology-enthusiast students with using an AOD platform.

Also, the fact that each process phase carried formal assessment marks could mean results could vary in a study where formal grading was not motivating task completion. Findings may also be perceived as limited in that the learning context was narrowly focused on AOD peer-feedback. However it is important to note that it is the design of the technological environment, the peer-process and the self-assessment process that is the key to these findings and such methodologies are not restricted to the use of AOD technology only.

6.6 Scope for Future Work

In light of the limitations, recommendations for extending the research include using: a larger sample; a more diverse population (to include females); a range of assignments/ courses and non-technically minded participants. Further investigations are warranted on:

- A longitudinal study of teacher and self-grade validity over various subjects or courses throughout the academic year/s.
- Evaluating the utilisation of self-assessment learning-to learn-skills in follow-on education or employment.
- The use of alternative technological platforms for peer-feedback self-assessment.
- Teacher and student marker reliability and methods to increase grade alignment.

Conclusion

This thesis has shown that…

An AOD platform can support a peer-feedback self-assessment process

- By its ability to afford an auxiliary, ubiquitous and self-sufficient learning space where students can share assignments and exchange feedback.
- By facilitating reflection, anonymity and multimedia support materials.
- By its capability to enable, in the same learning space, the self-assessment task as an online quiz. (6.2).

AOD peer-feedback supports self-assessment to the extent of:

- Delivering a higher degree of teacher and student grade alignment.
- Generating a significant increase in assignment standard and grades (6.3).

AOD peer-feedback can enhance self-assessment by:

- Contributing a dimension of realism and exposing knowledge gaps
- Promoting a deeper understanding of assessment processes.
- Identifying and focusing revisions, suggesting improvements and inspiring quality self-feedback (6.4.1).
- Increasing self-assessment confidence and developing skills in reflection, judgement and learning application (6.4.2).

Conclusively, the mix of ingredients was critical to the success of this study i.e. the effective application of the numerous strategies and constructs revealed in the literature (2.24, 2.4.5 and 2.7.2). This, combined with the teacher's support for self-assessment, the amount of preparation and class time devoted to it and her enthusiastic attempts to convince students of its value, amplified the positive outcome.

In terms of the cost of change i.e. teacher input versus output, this technology mediated exercise was time and effort intensive in design, implementation and results analysis. While students clearly benefited, the ancillary value from the teaching standpoint may only be realised when the technology and exercise is 'recycled' and more efficiently replicated for other classes. However a higher return on effort-investment may only be earned when there is a shift in national curriculum specifications where peer and self-assessment practices become formally entrenched in syllabus learning outcomes (FETAC or otherwise).

In order to advance and utilise self-assessment abilities and shape autonomous/self-regulated learners primed for future academic and professional contexts, teachers must develop and validate, in theory and practice, suitable methodologies and appropriate technologies and embrace a culture where self-assessment is deemed a vital component in the educational system (in or out of classrooms). Teaching/assessing, like all life processes, is continuously evolving. There are no limits to the knowledge eco system, which involves technology, ideas and people. The basic question, as always, is: 'How might we learn to teach more effectively and affectively?' The practical approach taken in this study is based on the reality concept that 'none of us is as smart as all of us'.

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Appendix A

Literature Review Summary of Strategies

Self-Assessment Strategies	Peer-Feedback Strategies	AOD Design Constructs
Discuss student perceptions and convey knowledge goal.	Have peers work in small groups.	Ensure everyone has access.
Motivate by emphasising value; assigning marks, allocating class time and integrating the task as a course requirement.	Disallow peer-grading.	Ensure access is quick and easy.
Provide self-assessment training and practice.	Incorporate anonymity.	Create a supportive interface containing an image.
Ensure clear targets and assessment criteria.	Ensure students know expectations.	Provide access to technical support.
Ensure material being self-assessed is relevant.	Assign dedicated partners.	Design one screen of text and graphics.
Use quality questions.	Provided exemplars and other support materials.	Make posting protocols and netiquette known.
Use criteria-referenced self-assessments.	Encourage holistic/evaluative feedback comments through discussion posts.	Sell the technology's benefits.
Teach and provide an opportunity for reflection.	Encourage specific annotative feedback comments directly onto papers.	Ensure the technology's purpose is understood.
Use a marking rubric.	Train students as assessors.	Clearly state instructions and deadlines.
Allow self-grading.	Use an instructional feedback rubrics/template.	Activities related to the syllabus
Train students to grade accurately.	Teach how to reflect.	Use Keller's (1987) ARCS model promoting attention, relevance, confidence and satisfaction.
Use scales for strong/weak performance.	Use a VLE for feedback dissemination.	Incorporate some/minimal teacher moderation
Allow revisions.		Use role plays.
Make students aware their self-ratings will be compared to teacher-ratings.		Train in discourse-building.
Give students feedback on their self-assessments.		Embed instructional video support.
Use technology when possible.		Use a constructivist e-learning framework to scaffold the learning i.e. Salmon's (2000) Five-Stage Model.
Integrate external feedback to support self-assessment.		

Appendix B

Assignment Brief

	Senior College Dun Laoghaire		
	College of Further Education		

Module	Business Computing	Module Code	L22142
Assessment Technique	**Project & Skills Demonstration**	**Weighting**	**40% & 20%**

You and your two partners run an IT consultancy firm and have been invited, by new start-up Web Design business (Websites R Us Ltd.), to tender for a contract to set up their new networked office and be their outsourced IT support. You are required to complete the following 4 tasks:

1.0 REPORT (40%)   **[Draft 1: Deadline 6th Jan 2014] & [Draft 2: 27th Jan 2014]**

You have been asked to produce a report that investigates, evaluates and makes recommendations on the ICT requirements necessary for initial set-up. You are to explain research choices, evaluate and draw conclusions on the most suitable:

(i) Hardware devices (Input & Output),
(i) Data Storage / Management,
(iii) Software, (System & Application),
(iv) Local Area Network Requirements
(v) What expertise and services your firm can offer by way of an outsourced IT assistance.

Before sending the report document to Websites R Us Ltd., you ask your two partners to review it, comment on it and provide feedback on where/ how the report can be improved. Write a forum post inviting feedback and upload your draft to your assigned Moodle discussion forum so it is available to your partners.

2.0 SELF-ASSESSMENT 1 (5%)   **[Deadline 7th Jan 2014]**

2.1 On completion, reflect on your report and self-assess the project standard. This self-assessment must be carried out with a self-assessment rubric using 'Self-Assessment 1' on the Moodle course page.

3.0 PEER FEEDBACK (10%)   **[Deadline 19th Jan 2014]**

As a partner in the IT consultancy firm, you must review the first draft reports submitted by your two business partners, in an effort to enhance the report and jointly help win the tender contract for your firm.

3.1 Download a partner's draft report. Feedback should be given by annotating directly on their work (using the 'New Comment' feature in Word). Save the version containing your comments as '*Your Partner Number_feedbackto_Their Partner number. On completion of the annotative feedback,* upload their reports to your Moodle discussion forum for review by the original authors.

3.2 Additionally, write 4 separate forum discussion posts to each partner using the headings 'Value, Clarify, Concern, Suggest' with more descriptive/ constructive feedback comments.

4.0 SELF-ASSESSMENT 2 (5%)   **[Deadline 20th Jan 2014]**

4.1 Having seen other reports and on receipt of feedback on your own draft, re-self-assess your draft report using 'Self-Assessment 2' on the Moodle course page.

4.2 On completion of the 2nd self-assessment and in light of the feedback you received and gave yourself in the self-assessments, switch on 'Track Changes' in MS. Word's Review Ribbon and make changes to your report as you see fit. Upload this final version to the Moodle discussion forum for teacher grading.

Appendix C

Procedure Table 4.3

Location	Learning Content		Activity Breakdown	Instrument

In class
 	
[5 hours]
	Activity 1 - Preparation
	
	(1 hr.)
		Introduction & motivation
		
		Forum functionality.
			• Assignment marks and expectations.
			• Class discussion on the value of self-assessment skills. Relevancy to lifelong and professional practice.
			• Class discussion on the value of peer-feedback skills. Relevancy to professional practice.
			  - Explanation of the role play scenario
			  - Walkthrough of Assignment Brief
			• Walkthrough of Moodle course page, deadlines and expectations.
			• Assigning of partner login IDs. Enrol in group forums and write an introduction post inviting partner feedback.
				Direct Observation

	Activity 2 - Preparation (1 hr.) Activity 3 - Implementation	Reflection & Self-Assessment training Self-Assessment 1	• How to reflect • How to self-assess using a rubric. • Discussion on what constitutes beginning/ developing/ accomplished/ exemplary work. • In-class completion of Self-Assessment 1.	
	Teacher grades assignments using the Teacher Assessment 'First Draft' Rubric. Grades are withheld from participants.			Documentation
	Activity 4 - Preparation (1 hr.)	Introduction to Peer-Feedback Practice of critical reading using poor assignment exemplar.	• Class discussion/ motivation on value of peer-feedback. • What to look for when assessing a peers work hand-out. • Sample of good and bad feedback comments hand-out. • Analysis of Exemplar of Good feedback hand-out. • Practice reading poor standard assignment exemplar and class discussion of required feedback	Direct Observation
	Activity 5 - Preparation (1 hr.)	Practice writing feedback using poor assignment exemplar. Writing annotative feedback Writing feedback in forum posts.	• Download poor standard assignment exemplar. • Using MS Word's comment feature, practice typing annotative feedback directly on to the work. • Practice typing feedback within the Ladder of Feedback Rubric headings (Value/ Clarify/ Concern & Suggest).	

	Activity 6 - Preparation (1 hr.)	Walkthrough of online support resources	Walkthrough of: Project brief requirements Instructions, Role Play, Deadlines, Marking,	User-Guide Video tutorials Supporting documentation. Help Chat Netiquette – Dos & Don'ts Questions & Answers	
Online [2-4 hours]	Activity 7 - Implementation	Feedback to 1st peer.	Evaluating 1st partner's assignment, writing annotation and 4 discussion posts.		Online Observation
	Activity 8 - Implementation	Feedback to 2nd peer.	Evaluating 2nd partner's assignment, writing annotation and 4 discussion posts.		
In class [2-3 hours] **In class [1 hour]**	Activity 9 - Implementation	Self-Assessment 2	Reflect on feedback received from both partners. In-class completion of online Self-Assessment 2.		Direct Observation
	Activity 10 - Implementation	Assignment Revisions	• Re-visit feedback received from peers and feedback written to self in self-assessment quizzes • Discern what is useful and make revisions / amendments to draft assignment. • Upload final assignments to forums and thank partners for feedback		
	Teacher grades final draft assignments using the Teacher Assessment 'Final Draft' Rubric.				Documentation
	Activity 11 - Follow-up	Disclosure of grades to participants.	• One to one debrief of Self-assessment 1 and Self-assessment 2 grades and their relation to teacher grades. • One to one debrief of grades awarded for first draft assignment and the grade awarded for final draft.		Direct Observation
	Activity 12 - Follow-up	Exercise Reflection & Re-cap Completion of Questionnaire	Reflection on exercise and discussion on learning outcomes Participant information sheets, consent forms and online questionnaires.		Questionnaires

Appendix D

Screenshot of Self-Assessment Rubric as an Online Quiz

Start again

Note: This quiz is not currently available to your students

Page: (Previous) 1 2 3 4 5 6 (Next)

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16 ☞
Marks: 2

In my Conclusions section, I provided a summary list of all equipment and software required and the quantity needed.

Choose one answer.

○ Beginning – I did not put a summary in my conclusions

○ Developing – I summarised only a few of the requirements

○ Accomplished – I provided a satisfactory summary but didn't specify quantities

○ Exemplary – I summarised all requirements with quantities.

---

17 ☞
Marks: 2

In my Conclusions section, I listed the expertise and continued services that our company can offer as the outsourced IT firm.

Choose one answer.

○ Beginning – I did not discuss any services our firm could offer

○ Developing – I only mentioned 2 or 3 services

○ Accomplished – I gave a satisfactory list of 4 services; the list could be more comprehensive

○ Exemplary – I provided a list of 5+ support services we could offer

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18 ☞
Marks: 2

Overall, throughout the report, I showed evidence of original thought.

Choose one answer.

○ Beginning – My report lacks evidence of original though

○ Developing – I show occasional evidence of original thought

○ Accomplished – I show good evidence throughout but there is room for improvement

○ Exemplary – I show excellent evidence throughout

Marks: 2

Choose one answer.

○ Beginning – My report lacks evidence of original though

○ Developing – I show occasional evidence of original thought

○ Accomplished – I show good evidence throughout but there is room for improvement

○ Exemplary – I show excellent evidence throughout

---

19 ☞
Marks: 2

Overall, throughout the report, I showed good IT subject knowledge

Choose one answer.

○ Beginning – I rarely show good evidence of subject knowledge

○ Developing – I show satisfactory evidence of IT subject knowledge

○ Accomplished – I show good evidence of subject knowledge demonstrated but there is room for improvement.

○ Exemplary – I demonstrated strong IT knowledge and confidence throughout.

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20 ☞
Marks: 2

Overall - throughout the report, I exhibited good writing /verbal communication skills.

Choose one answer.

○ Beginning – My writing skills are weak throughout

○ Developing – I showed satisfactory written skills

○ Accomplished – I showed good written communication skills but there are errors.

○ Exemplary – I demonstrated excellent written skills with few / no errors

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Save without submitting   Submit all and finish

Page: (Previous) 1 2 3 4 5 6 (Next)

Appendix E

Self-Assessment Marking Rubric (Hard Copy Version)

Criterion		SELF-ASSESSMENT ASSESSMENT RUBRIC			
		Beginning	Developing	Accomplished	Exemplary
1 Methodology & Findings	**Terms of Reference** Did I discuss two criteria i.e. who commissioned the report <u>and</u> the specific purpose of the report?	Beginning - I did not write a Terms (0 marks)	Developing – I discussed only one of the two criteria. (0.5 marks)	Accomplished - Satisfactory but it could have been worded better/ some errors. (0.75 marks)	Exemplary –, I covered both criteria with no errors. (1 mark)
2 Methodology & Findings	**Procedure** Did I mention various sources used to gather information for the report?	Beginning – I did not mention any sources or only mentioned the internet. (0 marks)	Developing - I mentioned 2-3 sources (0.5 marks)	Accomplished - Developing - I mentioned 4 sources (0.75 marks)	Exemplary - I used 5+ sources. (1 mark)
3 Methodology & Findings	**Findings**: Did I cover all 4 key subheadings- Hardware, Storage, Software, Network **and** explain the key equipment/ programs required within these headings?	Beginning - I did not use all 4 sub-headings or barely any key equipment were explained (0 marks)	Developing - I used all subheadings but a number of key equipment/programs missing **OR**, the findings gave specifications only (i.e. brands, models etc.) rather than explanations. (0.5 marks)	Accomplished - I used all subheadings but a couple of equipment/ software topics were not covered / there is room for improvement. (0.75 marks)	Exemplary - I used all subheadings and gave explanations of all relevant equipment and software adequately and without error. (1 mark)
4 Methodology & Findings	**Findings**: Do my findings explain what of of the technical equipment required mean / why they are needed?	Beginning - My findings did not explain what equipment terms meant. (0 marks)	Developing - I explained/ simplified the terms but only a few were covered. (0.5 marks)	Accomplished - I explained and reasoned satisfactorily but some points could be improved upon / a couple of topics were lacking. (0.75 marks)	Exemplary - I covered all key requirements explaining what they meant / why they are needed clearly, concisely and without error. (1 mark)
5 Methodology & Findings	**Findings** Would my findings be clearly understood by a non-technical reader	Beginning - Poorly written or possible evidence of plagiarism (0 marks)	Developing - Some findings are adequate but some would not be very clear to a non-technical reader (0.5 marks)	Accomplished - My findings are satisfactorily written for non-technical reader but some detail lacking/ some errors. (0.75 marks)	Exemplary - My findings are very well worded in a simple manner without errors. (1 mark)
				MARK OUT OF 5	
1 Research	**Research**: It was clear I used other sources to obtain information for compiling the report.	Beginning – I did not show evidence of other sources used, only my own opinion (0 marks)	Developing – I occasionally showed evidence of other sources used (0.5 marks)	Accomplished – I demonstrated satisfactory evidence of use of other sources but didn't reference any sources throughout the report. (0.75 marks)	Exemplary – I gave excellent evidence of other sources used throughout and occasionally referenced them throughout the report. (1 mark)
2 Research	**Research**: My research was accurately summarised and written in my own words.	Beginning - I did not show evidence of use my own wording. (0 marks)	Developing – I occasionally showed evidence of summarising research in my own words but there is also quite a bit copied from websites/ other sources (0.5 marks)	Accomplished - I showed good evidence of research, in own words but some room for improvement, scaling back / spelling / grammar errors (0.75 marks)	Exemplary - I demonstrated excellent evidence of summarising, using my own interpretation throughout. (1 mark)
3 Research	My research is	Beginning - I did not	Developing – I showed	Accomplished -I	Exemplary -

95

	current and adds credibility to my findings / recommendations	show evidence of research in my findings or recommendations (0 marks)	occasional evidence of current research in findings / recommendations (0.5 marks)	showed good evidence of current research but there is room for improvement/ some errors. (0.75 marks)	Excellent evidence throughout (1 mark)
4 Research	I drew appropriate / logical conclusions from the research.	Beginning - No evidence of conclusions made from research. (0 marks)	Developing – Occasional evidence of conclusions drawn (0.5 marks)	Accomplished - Satisfactory evidence of conclusions from research (0.75 marks)	Exemplary - Very good evidence and analysis (1 mark)
5 Research	I showed the sources that I used during research on the references page. (0 marks)	Beginning – I did not provide a references page. (0.5 marks)	Developing - I had 2 to 3 sources on the Reference page (0.75 marks)	Accomplished - I showed evidence of 4 sources **OR** there was more than 4 but they were all website urls.	Exemplary - I used 4+ sources on the references page and the list contained a mix of sources types other than solely website urls. (1 marks)
MARK OUT OF 5					
1 Understanding & Development of Theme	Under hardware recommendations, I covered 5 attributes: Brand; Model; Specs, Price and gave reason for their choice.	Beginning – I did not cover any or only one of the 5 attributes covered. (0 marks)	Developing - I only covered 2 of the 5 attributes. (1 mark)	Accomplished - Developing - I only covered 3 of the 5 attributes. (1.5 marks)	Exemplary – All 5 were covered effectively. (2 marks)
2 Understanding & Development of Theme	Under Data Storage Recommendations, I indicated a preference of type of storage device/service a company should use **and** I also mentioned a couple data security issues	Beginning – I neglected to provide a storage recommendation or discuss any data security issues (0 marks)	Developing - I mentioned one of the two criteria (1 mark)	Accomplished - I gave more than one storage recommendation, but didn't address data security issues (1.5 marks)	Exemplary - Both criteria were sufficiently discussed and reasoned (2 marks)
3 Understanding & Development of Theme	Under Software Recommendations I discussed system software (O/S) **and** I mentioned several major types of application software suitable for a Web Design business.	Beginning – I did not discuss system or application software. (0 mark)	Developing – Only one of the two software types were addressed (1 mark)	Accomplished – Both were discussed but only a short list of application software programs were provided or the software did not really relate to a web design business (1.5 marks)	Exemplary - I covered both areas well giving a comprehensive list of software that would suit an Web business (2 marks)
4 Understanding & Development of Theme	Under Software Recommendations I mentioned antivirus, email and software licencing.	Beginning – none of these 3 topics were covered (0 marks)	Developing – two of these topics were covered (1 mark)	Accomplished – all 3 were covered but room for improvement (1.5 marks)	Exemplary - I covered all 3 topics in sufficient detail. (2 marks)
5 Understanding & Development of Theme	Under Network Recommendations I recommended a LAN setup method (e.g. P2P/ Server or /Star/Bus or Wired/Wireless) **and** mentioned broadband.	Beginning – Neither a LAN setup or broadband were covered (0 marks)	Developing – only 1 topic of the 2 were covered. (1 mark)	Accomplished – both topics were covered but room for improvement (e.g. these were mentioned elsewhere but could be moved). (1.5 marks)	Exemplary - I covered both criteria sufficiently (2 marks)
MARK OUT OF 10					
1 Conclusions	In my **Conclusions** section, I provided a summary list of all equipment and	Beginning – I did not put a summary in my conclusions	Developing – I summarised only a few of the requirements	Accomplished – I provided a satisfactory summary but didn't	Exemplary – I summarised all requirements with quantities.

	software required and quantity needed.	(0 marks)	(1 mark)	specify quantities (1.5 marks)	(2 marks)
2 Conclusions	In my Conclusions section, I listed the expertise and continued services that our company can offer as the outsourced IT firm.	Beginning – I did not discuss any services our firm could offer (0 marks)	Developing – I only mentioned 2 or 3 services (1 mark)	Accomplished – I gave a satisfactory list of 4 services; the list could be more comprehensive (1.5 marks)	Exemplary – I provided a list of 5+ support services we could offer (2 marks)
3 Conclusions	Overall, throughout the report, I showed evidence of original thought.	Beginning – My report lacks evidence of original thought (0 marks)	Developing – I show occasional evidence of original thought (1 mark)	Accomplished – I show good evidence throughout but there is room for improvement/ minor errors. (1.5 marks)	Exemplary – I show excellent evidence throughout, no errors. (2 marks)
4 Conclusions	Overall, throughout the report, I showed good IT subject knowledge	Beginning – I rarely show good evidence of subject knowledge (0 marks)	Developing – I show satisfactory evidence of IT subject knowledge (1 mark)	Accomplished – I show good evidence of subject knowledge demonstrated but there is room for improvement (1.5 marks)	Exemplary – I demonstrated strong IT knowledge and confidence throughout. (2 marks)
5 Conclusions	Overall - throughout the report, I exhibited good writing /verbal communication skills.	Beginning – My writing skills are poor (0 marks)	Developing – I showed satisfactory written skills (1 mark)	Accomplished – I showed good written communication skills but there are errors. (1.5 marks)	Exemplary – I demonstrated excellent written skills with few / no errors (2 marks)
				MARK OUT OF 10	
1 Structure & Presentation of the Report	I added a: Cover Page Report Title My partner number Client Name (Websites R Us Ltd) A space for a signature & date on the last page	Beginning – I did not show any or only 1 out of the 5 were included (0 marks)	Developing – I showed 2/3 out of the 5 criteria (1 mark)	Accomplished - I showed 4 out of the 5 criteria (1.5 marks)	Exemplary – All 5 criteria were demonstrated and well presented. (2 marks)
2 Structure & Presentation of the Report	I used an appropriate layout with: Headings, Subheadings; Paragraph numbering; Adequate spacing	Beginning – My report structure/ layout was poor and lacked headings and numbering (0 marks)	Developing -. I showed 2 out of the 4 criteria (1 mark)	Accomplished - Satisfactory layout with 3 out of the 4 adequately demonstrated (1.5 marks)	Exemplary – the report is very well laid out with all 4 criteria demonstrated (2 marks)
3 Structure & Presentation of the Report	I used: Page Numbering Page breaks; An accurate Table of Contents; A Footnote/ Endnote	Beginning – I did not use any or only one of these (0 marks)	Developing – I demonstrated 2 of the 4 criteria (1 mark)	Accomplished – I demonstrated 3 of the 4 criteria (1.5 marks)	Exemplary – I demonstrated all 4 of these criteria (2 marks)
4 Structure & Presentation of the Report	I made use of a: Table or Chart Image	Beginning – I did not use a chart/ table or an image (0 marks)	Developing – Only one or other was used i.e. a table/chart or an image (1 mark)	Accomplished – My table / chart is satisfactory and an image was used. However a couple of minor improvements need to be made (1.5 marks)	Exemplary - I used a table / chart accurately and made good use of images well present (2 marks)
5 Structure & Presentation of the Report	I demonstrated good spelling & grammar throughout the report.	Beginning – I have many spelling / grammar mistakes (7+) (0 marks)	Developing – I have moderate amount of mistakes (5 - 6) (1 mark)	Accomplished – I have a few spelling & grammar mistakes (around 3 or 4) (1.5 marks)	Exemplary – I have barely any spelling & grammar mistakes (less than 3) (2 marks)
				MARK OUT OF 10	
				OVERALL Total MARK OUT OF 40	

Appendix F

FETAC Syllabus Marking Sheet

Individual Candidate Marking Sheet 4	Business Computing L22142 Project 40%

Candidate Name: _____ PPSN: _____

Centre: _____ Centre No.: _____

Assessment Criteria	Maximum Mark	Candidate Mark
Project		
Introduction and Methodology	5	
Research	5	
Understanding of content and development of theme	10	
Conclusions	10	
Structure and presentation of report	10	
TOTAL MARKS *This mark should be transferred to the Module Results Summary Sheet*		

Internal Assessor's Signature: _____ Date: _____

External Authenticator's Signature: _____ Date: _____

Appendix G

Moodle's Grade Report

First name / Surname	Teacher Assessment Draft ...	Self-Assessment 2	Self-Assessment 1	Teacher Assessment Final ...
Partner 01	55 % (Pass)	53 % (Pass)	66 % (Merit)	83 % (33)
Partner 02	82 % (Distinction)	74 % (Merit)	74 % (Merit)	85 % (34)
Partner 03	76 % (Merit)	80 % (Distinction)	82 % (Distinction)	85 % (34)
Partner 04	73 % (Merit)	71 % (Merit)	66 % (Merit)	81 % (32)
Partner 05	73 % (Merit)	78 % (Merit)	56 % (Pass)	83 % (33)
Partner 06	80 % (Distinction)	79 % (Merit)	84 % (Distinction)	92 % (37)
Partner 07	61 % (Pass)	71 % (Merit)	66 % (Merit)	69 % (28)
Partner 08	65 % (Merit)	78 % (Merit)	56 % (Pass)	68 % (27)
Partner 09	46 % (Fail)	46 % (Fail)	48 % (Fail)	57 % (23)
Partner 10	63 % (Pass)	53 % (Pass)	78 % (Merit)	76 % (30)
Partner 11	92 % (Distinction)	94 % (Distinction)	64 % (Pass)	97 % (39)
Partner 12	50 % (Pass)	44 % (Fail)	55 % (Pass)	56 % (22)
Partner 13	56 % (Pass)	53 % (Pass)	76 % (Merit)	66 % (27)
Partner 14	66 % (Merit)	73 % (Merit)	62 % (Pass)	69 % (28)
Partner 15	66 % (Merit)	73 % (Merit)	59 % (Pass)	88 % (35)
Partner 16	71 % (Merit)	55 % (Pass)	74 % (Merit)	86 % (34)
Partner 17	73 % (Merit)	83 % (Distinction)	83 % (Distinction)	80 % (32)
Partner 18	86 % (Distinction)	84 % (Distinction)	78 % (Merit)	89 % (36)
Partner 19	53 % (Pass)	46 % (Fail)	56 % (Pass)	63 % (25)
Partner 20	73 % (Merit)	73 % (Merit)	56 % (Pass)	81 % (32)
Partner 21	69 % (Merit)	66 % (Merit)	56 % (Pass)	69 % (28)

Appendix H

Sample of Coding applied to Open-text Questionnaire Questions

How do you believe the peer feedback exercise assisted you in your self-assessment?

"It allowed me to make changes to my report that I would not have noticed on my own." [R1]

"It was able to allow me to see where it went wrong in my report and showed me what was needed in more detail. [R2]

"There would be certain spelling mistakes and bad grammar that might be over looked. Also my peers helped to point out certain relevant information missing [R3]

"Receiving feedback from my peers made me aware of the weak and strong points in my report which I may not have been able to see for myself, so another person's perspective was very helpful in helping me assess my report". [R4]

"I think that the peer feedback exercise helped majorly because it showed parts and sections that I had missed in my other partner's reports. It also gave the opportunity to get a better understanding of what was wanted from the project". [R5]

"It gave me the chance to see how others handled the same problem as myself. Also, seeing other people's comments on my work helped me to give a more accurate self-assessment. [R6]

"I over estimated my work which I later got the chance to see with the aid of my classmates were I could improve my overall grade". [R7]

"It helped me improve greatly in my arrangement of information and point out simple or bigger mistakes on my report. It also allowed some confidence to grow within my own writing skills as I recall I was well-praised by one of my partners for the report on my skills of writing" [R8] [R11]

"The feedback exercise encouraged me to reflect on the role and contribution to the process of the group, also made me more willing to get involved and gave me an idea of my judgement skills." [R9] [R12]

"I felt it helped me a lot in seeing what my peers had written and how there project was structured it helped me improve my own self-assessment" [R13]

"Peer feedback provided a better view of my work, by giving critiques from alternate points of view." [R14]

By others giving me feedback made me think more about my own report standard and how it actually rates [R15] [R16]

Only for my peer feedback I would have thought my report was better than it actually was. My peer feedback indicated I misunderstood some parts of the report. [R17] [R18]

"It pointed out areas that needed attention, areas that needed more content and areas that were void of appropriate content. It suggested ways of strengthening the report. To me peer feedback was extremely valuable and highlighted weaknesses in my report. These weaknesses were addressed and subsequently were remedied. Perhaps without the feedback I mightn't have addressed these issues. " [R19] [R20] [R21] [R22]

It helped me see mistakes and pointed out areas that weren't as good as I thought they were. [R23] [R24]

It helped me add more information that I had either missed or didn't explain in more detail [R25] [R26]

Helped me to be more critical of myself and enabled me to except criticism. [R27]

It pointed out what specific areas I should improve upon [R28] [R29]

The peer feedback exercise helped me to understand more about which sections of my report were weak and which parts were strong [R30] [R31] [R32] [R33]

Theme	Number of Occurrences
More Realistic Evaluations	5
Encouragement to revisit own work	1
Increased Reflection	1
Identification of Knowledge Gaps	6
Focus my efforts in revisions	2
Improved Judgement Skills	4
Increased Confidence to self-assess	2
Improved Assessment Awareness	3
A New Insight	9

Comment [R1]: New Insight
Comment [R2]: Identification of Knowledge Gaps
Comment [R3]: A New Insight
Comment [R4]: Identification of Knowledge Gaps
Comment [R5]: A New Insight
Comment [R6]: More Realistic Evaluations
Comment [R7]: A New Insight
Comment [R8]: A New Insight
Comment [R9]: A New Insight
Comment [R10]: Identification of Knowledge Gaps
Comment [R11]: Improved Assessment Awareness
Comment [R12]: Improved Assessment Awareness
Comment [R13]: More Realistic Evaluations
Comment [R14]: More Realistic Evaluations
Comment [R15]: Identification of knowledge gaps
Comment [R16]: Increased Confidence
Comment [R17]: Increased Reflection
Comment [R18]: Increased Confidence
Comment [R19]: Improved Judgement
Comment [R20]: A New Insight
Comment [R21]: A New Insight
Comment [R22]: Encouragement to revisit own work
Comment [R23]: Improved Assessment Awareness
Comment [R24]: More Realistic Evaluations
Comment [R25]: Improved Judgement
Comment [R26]: Focus revisions
Comment [R27]: Identification of knowledge gaps
Comment [R28]: Identification of knowledge gaps
Comment [R29]: More realistic evaluation
Comment [R30]: A New Insight
Comment [R31]: Improved Judgement
Comment [R32]: Focus revisions
Comment [R33]: Improved Judgement

Post Activity Questionnaire (Hard Copy Version)

I have read the above and wish to proceed. *Required*

☐ Yes ☐ No

I understand completion of this form is voluntary and I can withdraw at any time by not clicking the final 'Submit' button. *Required*

☐ Yes ☐ No

Partner Number...

Have you carried out self-assessment / self-grading in formal education before this recent exercise?

○ Yes ○ No

Feedback on my work is important to me.

○ Agree ○ Disagree ○ Not sure

I would like to get more feedback during my course.

○ Agree ○ Disagree ○ Not sure

Feedback should come from...*(Tick ONE)*

○ Teacher's only. ○ Teachers and peers. ○ Teachers, peers and myself.

Which self-assessment did you think was a more precise evaluation of your draft report?

☐ Self-assessment 1 (Before the peer feedback exercise).

☐ Self-assessment 2 (After' the peer feedback exercise).

☐ Both were equally precise.

If you chose 'Self-assessment 2 (After the peer feedback) in the previous question....why do you think that is?

My second self-assessment grade was closer to the teachers' grade than my first self-assessment grade.

☐ True ☐ False ☐ There was little/ no difference.

How do you believe the peer feedback exercise assisted you in your self-assessment?

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
I believe peer feedback leads to self-correction amongst students.	○	○	○	○	○
After the peer-feedback activity, I re-read my draft report more critically.	○	○	○	○	○
The feedback from my peers encouraged motivated me to make changes/improve my draft.	○	○	○	○	○

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
Having to exchange feedback with my peers encouraged me to reflect on my own work / assignment.	○	○	○	○	○

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
By having to provide feedback to peers, I reflected more on the assessment criteria which I then used to provide feedback to myself.	○	○	○	○	○

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
By finding weaknesses in others work, I was more vigilant in proof-reading my own draft report, looking for similar weaknesses.	○	○	○	○	○
Having peers find gaps in my work allowed me see oversights I would have otherwise missed.	○	○	○	○	○
After the peer-feedback activity, I was more aware of my own learning progress and knowledge gaps.	○	○	○	○	○
After the peer-feedback activity, I realised there was more/ other areas I needed to change in my report than I originally believed.	○	○	○	○	○
After the peer-feedback activity, I was more knowledgeable of mistakes in my report and more knowledgeable of how to make those improvements.	○	○	○	○	○

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
By the self- assessment and peer activity highlighting my strengths and weaknesses, I made more effective decisions about where to apply my learning efforts to improve my work.	○	○	○	○	○

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
After seeing the work of others, I believed I was better able to judge the quality of my own work.	○	○	○	○	○
After the peer-feedback activity, I had a more informed understanding of how my work standard was in relation to the standard of my peers.	○	○	○	○	○

	1	2	3	4	5
On a scale of 1 to 5, how confident did you feel in making an accurate self-assessment the first time? (1 being not confident & 5 being extremely confident)	○	○	○	○	○
On a scale of 1 to 5, how confident did you feel in making an accurate self-assessment the second time? (1 being not confident & 5 being extremely confident)	○	○	○	○	○

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
Peer and self-assessment techniques allow students learn about the assessment process itself.	○	○	○	○	○
Having to make judgments and give feedback about others' work helped me gain a deeper understanding of the formal assessment criteria and standards.	○	○	○	○	○
Students want to be more involved in assessment practices in higher education	○	○	○	○	○

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
Exposure to my peers' assignments helped me consider new ways of thinking about my own performance.	○	○	○	○	○
My peers shed some new light on how I could go about improving my work.	○	○	○	○	○

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
Self-assessment allows a level of independence by allowing me the time and space to consider my knowledge gaps without relying on the teacher.	○	○	○	○	○
Students want to become more independent / self-regulated learners rather than always relying solely on teachers.	○	○	○	○	○

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
Seeing the work of my peers assisted and having read their feedback on my work, assisted me in making a more realistic assessment of my own abilities the second time round.	○	○	○	○	○

The ability to be able to assess one's own performance is important?

○ **Agree** ○ **Disagree** ○ **Not Sure**

If you chose 'Agree' above, why do you think being able to self-assess is important?

I found it useful to write feedback to myself and my peers within the headings of Value, Clarify, Concern and Suggest?

☐ **Agree** ☐ **Disagree** ☐ **Not Sure**

If you chose 'Agree', why do you feel it useful to have to write feedback under the headings of Value, Clarify, Concern and Suggest?

When marking my work, I liked using the marking scale of 'Beginning, Developing, Accomplished and Exemplary'.

○ **Agree** ○ **Disagree** ○ **Not Sure**

If you chose 'Agree' above, why did you like the marking scale of 'Beginning, Developing, Accomplished and Exemplary'?

I reviewed the self-assessment scores I gave myself before making changes to my draft.

○ True ○ False

I benefited from the experience by having to consider my own progress more closely than usual.

☐ True ☐ False

Having to justify my self-grade helped me concentrate more on the value of the work done.

☐ True ☐ False

Training and practice in self-assessment is important.

☐ True ☐ False

Do you think the fact that you carried out self-assessment and had to think about your own work will help you in the future?

☐ Yes ☐ No

If you ticked 'Yes' above, how do you think it might help?

I found assessing another student's work valuable.

○ Agree ○ Disagree ○ Not Sure

I reviewed the feedback from my peers before making changes to my draft.

○ Agree ○ Disagree ○ Not Sure

Students should be more involved in assessing and giving feedback to other students

☐ True ☐ False ☐ Not Sure

The anonymity was an important factor in assessing and giving feedback to other students.

☐ Agree ☐ Disagree ☐ Not Sure

I learnt from my peers comments about my report.

☐ True ☐ False ☐ Not Sure

Training and practice in constructing peer feedback is important.

☐ Agree ☐ Disagree ☐ Not Sure

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
I found it easy to use the discussion forum and create posts.	○	○	○	○	○
I found it easy to upload and download files for sharing.	○	○	○	○	○
I like how the discussion forum allowed an additional space for interaction with fellow students.	○	○	○	○	○
I liked the asynchronous (anytime/ anyplace) feature of an online forum which allowed flexibility in time and location to do course work.	○	○	○	○	○
I liked how the discussion forum was supported by instructions, deadlines, exemplars, user-guides, video and chat.	○	○	○	○	○
Online Discussion Forum technology effectively enabled the peer feedback and self-assessment	○	○	○	○	○

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
exercises.					

Any other comments on the Online Discussion Forum platform?

I liked being able to annotate directly on drafts using Microsoft Word's 'New Comment' Feature.

○ **Agree**   ○ **Disagree**   ○ **Not Sure**

I like the way the self-assessment was automated as an online multiple choice quiz with immediate grading.

○ **Agree**   ○ **Disagree**   ○ **Not Sure**

I believe Moodle is a good vehicle for disseminating feedback.

☐ **Agree**   ☐ **Disagree**   ☐ **Not Sure**

What did you like most about the self-assessment and peer experience?

What did you like least about the self and peer experience?

Peer and self-assessment techniques should be used in other subjects of the course.

☐ **Agree**   ☐ **Disagree**   ☐ **Not Sure**

If you agreed, which subjects?

If a similar self-assessment and peer feedback method was to be used on future occasions in other subjects or assignments, what changes would you suggest to the procedure?

I believe the self-assessment and peer activity helped me obtain a higher grade in this assignment.

☐ **True**   ☐ **False**   ☐ **Not Sure**

My final grade of my report...

☐ **Went up from the first draft.**

☐ **Went down from the first draft.**

☐ **Stayed the same.**

Click 'Submit' to finish.

Thank you, your input is highly valued. Please click Submit. If you have decided not to submit your responses,

do not click Submit. Simply exit from the web page and your responses will not be recorded.

Observation Notes

IN CLASS OBSERVATIONSNOTES				
Class	Topic	Topic Breakdown	Participant Behaviour	Participant Comments/ Questions
1 6th Jan	Introduction to Assignment expectations	Assignment weight 60% Explanation of 60% breakdown to 40% for the report, 10% for peer feedback and 5% for each of 2 self-assessments.	Look of concern/ anxiety Appeared less worried	*"Do we have to give each other grades?"* *"Why do we have to do 2 self-assessments?"*
	Introduction to process of first and final draft.	Explanation of submitting a first draft, obtaining peer feedback and using it to amend it before teacher grading.	Seem happy with the prospect of being allowed to get help to achieve a higher grade.	*"Will you also give us feedback before we make changes?"*
	Explanation of self-assessment	Q. Who has self-assessed in educational setting before? Q. Why is it important/ what are the benefits?	Show of hands indicated 6 (2 students absent) 2 students were absent so were emailed a reminder to complete the self-assessment online before access was closed off.	*"You need to be able to look at your own work to see if it is up to standard and meets certain requirements"* *"You need to be able to find your mistakes and correct them since there won't always be a teacher or someone there to point them out". You may not be able to depend on anyone else to give you feedback".* *"It is needed when you make all kinds of decisions, like in work or college or even in more routine jobs like cooking or driving and so on"*
	Explanation of peer-feedback	The benefits, the value of sharing collective IT knowledge / experiences amongst the class at large. Q. Why is it important/ what are the benefits?	A few appeared a little sceptical/ dubious Many were forthcoming with benefits of peer feedback A couple seemed apprehensive at the idea of feedback with fellow students/ friends. Most students began to relax about the idea of giving feedback when they heard there would be training, no grading of each other, it would be anonymous and there would be exemplars and practice time.	*"What if you don't want to use the feedback from someone?"* *"What if you don't agree?"* *"It will be hard to giving feedback if the work isn't very good"* *"What if we are peer-reviewing good friends?"* *"You often have to work in teams in jobs so you could be asked to help each other out with something".* *"People you work with or people in class often come up with ideas you didn't think of"* *"It is handy to be able to ask for help before finishing something that goes to your boss or teacher or customer".* *"Peers are usually honest and they can tell you out-right if something sounds rubbish or if it is decent"*
	Explanation of small groups and role play.	Walkthrough of Assignment Brief and logic of working as partners in a small ICT firm.	Students seemed to like the idea of having to role play as a 'team-effort'. Appeared more motivated and at ease.	*"Will you be looking at the feedback we give to each other?"*

	Explanation of using Moodle's Discussion Forum for peer work.	**Walkthrough of Moodle course page, expectations and contents.** **Assigning of partner login IDs. Enrol in designated group forums.** **Hands-on practice with the Discussion Forum Practice writing a post – option to email/not email**	Students appeared un-phased/ confident about having to use the forum to share assignments. Students seemed to like the anonymity of new Moodle logins. All successfully wrote their introductory posts & uploaded draft assignments without any problems. All students selected the option '*I don't want email copies of posts to this forum.*	*"So we can do most of this assignment from home?"* *"What do we say in our first post?"*
2 **7th Jan**	Reflection & Self-assessment training	**Walkthrough of** *'How to Reflect'* **hand-out on Moodle course page.** **Practice of reflecting on own draft assignment** **Ladder of Feedback (Perkins, 2003) and how to apply it to your own work. What constitutes:**	All seemed content with understanding what reflection entails Students went quiet and began to read their own assignments more slowly. Students seemed more at ease that they didn't have to give themselves a score but rather one of 4 standards.	*"Is self-reflection and self-assessment the same thing?"* *"Can we make changes now?"*
	Self-Assessment 1 Activity	**Beginning, Developing, Accomplished, and Exemplary?** **Students logged in to Moodle using new logins and commenced self-assessment 1.**	Most opened their draft assignments from within Moodle and switched screens between the soft-copy assignment and online self-assessment 1 rubric. A hand-full took out and turned pages of their printed draft and entered responses in Self-assessment quiz online. Students went quiet for and busily completed the task without questions or functionality issues. Completion took between 25 & 40 minutes.	*"That was kind of hard, there was a lot to think about in that"* *"Glad we get another chance to make changes, mine needs work"*
3 **9th Jan**	Peer-feedback introduction. Practice critical reading of poor standard assignment exemplar	**Class discussion/ motivation on value of peer-feedback.** **Role peer-feedback can play in self-assessment?** **Walkthrough of** '*What to look for when assessing a peer's work*' **hand-out.** **Walkthrough of** '*Good and bad feedback comments*' **hand-out.** **Analysis of**	Participants were forthcoming in answering questions on the benefits of peer feedback at large and in self-assessments. At first, some looked confused as their first impression was that the exemplar assignment wasn't that bad. However, as soon as we began reading the assignment, most began pointing out all the mistakes.	"Peers can help you see if your work is as good as you think it is or if it is not as good" "Peers can give an unbiased opinion of your report standard" "Peer feedback can make you re-think your ability and show you mistakes you didn't notice" *"Will our feedback be graded?"* *"What if you can't find something good in their assignment?"* On reading the poor comment 'I can't find much to change' one said *"That's the kind of thing I would write"*

		'Exemplar of Good feedback' hand-out. **Practice reading poor standard assignment exemplar and class discussion**	Majority gave the impression they were enjoying this part. Some laughter emerged as smart comments were made but this showed they were engaged and even enjoying being critical.	*"This* actually d*oesn't look like too bad".* *"This needs a lot of work; they haven't put in some really important equipment".* *"I'd fail this guy"*
4 **13th** **Jan**	Feedback Formulation Training	**Practice in writing feedback using MS Word's comment feature.** **Writing within the framework of the Ladder of Feedback Rubric headings – Value, Clarify, Concern, and Suggest.**	Students got to work typing comments on the page of the exemplar assignment. Some were quick to notice grammatical mistakes or headings/sub-headings not appropriately applied. Students read the hand-out on what to think about within these 4 titles. This seemed to help and some looked relieved they had a structure for framing feedback comments. The 4 headings were discussed at group level and then students individually typed up summative comments (as would be put in discussion posts). Several re-read their typed annotation comments on the assignment before writing up forum post comments. The teacher invited different student to read aloud what they wrote under each heading. Fun and engagement was evident as students were agreeing and/ or disagreeing with each other's feedback.	*"Looks like he copied too much off a website here"* *"Has he never heard of spell check?"* *"Man, you were harsh, hope you are not giving me feedback!"*
5 **14th** **Jan**	Resources Walkthrough	**Netiquette Rules Reminder of Instructions, Time frame/ Deadlines, Role Play scenario Marking, Walkthrough of video tutorials Supporting documentation. Help Chat Q&A.**	Students seemed relaxed. Questions were invited but none arose indicating they were clear on what to do next and what was expected.	
6 **20th** **Jan**	Reflection on Feedback from peers and from self Self-Assessment 2 Activity	**Students logged in to Moodle using new logins and researched feedback** **Commenced self-assessment 1.**	Students seemed eager to make revisions to draft work. Most students started printing feedback from their peers. Some made screenshots of forum posts and printed their self-assessment review pages. All opened their draft assignments from within Moodle and switched screens between the soft-copy assignment and online self-assessment 2 rubric.	"Can we make changes to our assignment now?" "Oh, I got a lower grade this time" "Can we start making changes now?" "Can I print the self-assessment review page?"

			Students worked quietly completing the task between 18 & 32 minutes. (Less time taken than SA-1). Students appeared to be more confident in self-assessing the 2nd time. 3 students were absent so were sent an email to complete Self-Assessment 2 at home before quiz closure deadline.	"Can we print the feedback comments from Moodle?"
7 21st Jan	Assignment Revisions	Whole class-time was allotted to making changes to draft assignments.	Most students were eager to print their peer feedback Nearly all students opened their '*second*' self-assessment review page where they wrote instructional comments to themselves. Students spent time reading and thinking before typing. A couple finished their revisions in the class and uploaded the final draft to Moodle. Most completed the revisions at home. Class was very quiet and seemed deeply engaged in assignments. 1 student (partner 21) was present in class reading feedback and making assignment revisions however, he **failed to upload his final assignment to the AOD before closing deadline**.	"Can I print the self-assessment quiz questions?" "Can we finish these tonight if we don't get it all done here?" "Can we find out who are partners were now?" "Do I upload my final draft to myself?"
8 27th Jan	Follow-up Teacher Feedback	Self-assessment grades 1 & 2 and disclosure of teacher grade on draft assignment Final assignment grade disclosure.	Most students were happy with the fact that they were closer to the teacher the second time. All were very happy they increased their grade with their final draft. 1 student was absent so was emailed his results and verbal feedback was given the following day.	Most comments resembled: "Nice one" "Cool, not a bad jump eh?" "Glad I got to make changes"

Appendix K

Online Observations

ONLINE OBSERVATION NOTES	
Date 16th – 19th Jan	Notes
peer 1 Review and Feedback	All met deadline for first peer review completion with some finishing in class and the remainder finishing at home. 4 who were absent on 16th were emailed and reminded of deadline. 2 acted on this email that same evening.
Peer 2 Review and Feedback	The majority met this deadline completing the feedback by 18th Jan. Reminder emails were sent to 6 over the weekend that completion date was 19th. They were reminded in the email that others were dependent on them so they could make revisions to their first draft by the final draft submission date. 2 did both peer reviews in one evening (19/01)
Final Upload.	All but 1 met this deadline. This participant had a sick-note so was permitted to submit two days later. It was this student who did not make any changes to his draft assignment and consequently re-submitted the same assignment again and therefore did not earn a grade increase.
Structure of replies	The forum post headings were emerging successfully showing each student receiving 8 posts in total.
Times of replies	Most posts were coming in around evening time between 6pm and 10pm.
Help Chat Room	No one used this facility giving the impression the technology was easy to use and without technical fault.
Absent students	One student was out on sick leave for all assignment preparation classes. However he corresponded with me via email and told me he understood the requirements through the embedded videos and user-guide and managed to meet deadlines.
Feedback Quality	Most detail appeared to be done via annotations. Several forum posts appeared rushed and very brief. Overall however, good, constructive comments and suggestions were being shared. Students were complimentary under the Value heading. Tact was being exercised. There was no evidence of anyone being too critical or offensive. One student appeared agitated his peers were not critical enough and slow in giving him feedback.
Overall impression	I was impressed with the detail some students went into and the constructive suggestions made. Substantial IT knowledge was being shared. Some were benefiting from receiving as their peers were of much higher standard General perception was that students took this exercise seriously and were happy to help each other.

Appendix L

Ethical Approval

Tricia Fowler <Tricia.Fowler@scss.tcd.ie>   12/12/2013
to me, Research

Hi Pauline

Many thanks for this revision. You may now proceed with this study.

We wish you success in your research.

Kind Regards
Tricia

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Appendix M

PARTICIPANT INFORMATION SHEET

You are invited to take part in a case study that seeks to qualify if self-assessment and learning can be enhanced through a peer-feedback activity using Asynchronous Online Discussions.

Case Study Relevance:
The study is being undertaken as a research assignment within the MSc in Technology and Learning programme in Trinity College Dublin.

Case Study Description:
Through use of a technology mediated learning experience, this study seeks to evaluate the effectiveness of peer-feedback to support self-assessment in a Further Education class. Two core questions underpin the study:

1.   Can peer feedback inform self-assessment?
2.   How/ to what extent can peer feedback enhance self-assessment?

As part of your PC Maintenance FETAC Business Computing L5 module, you are required to demonstrate your ability to research, collate and present ICT recommendations in a report.
*   On completion of a draft report, you will be required to self-assess the quality of your work.
*   Such reports can vary amongst students in perspectives, ideas and recommendations and by reviewing the work of your peers, you should gain an insight into how others have complimented or contrasted with your recommendations. After reviewing others' work and after receiving feedback on your report from two peers, you are required to re-self-assess your draft report.
*   You will then be afforded the opportunity to amend the draft with the aim to increase subject knowledge, assignment standard and grade.

Case Study Background:
As a workaround for the common problem of inaccurate self-assessments, this case study seeks to explore if peer feedback can inform self-assessment to increase accuracy and reliability. This study seeks to gain a deeper insight into if and how peer-feedback impacts self-assessment. Due to limited opportunities during class to engage in peer-learning activities, this study will also evaluate the use of Asynchronous Online Discussions as the peer communication platform where peers can share assignments, work in small groups, exchange feedback dialogue and complete an online self-assessment.

Procedures Relevant to Participants:
1.   You will be required to write a report and upload it to your assigned group Online Discussion Forum on Moodle. This report will be assessed by the teacher and assigned a preliminary grade which will not be made known to you.
2.   You will be required to self-assess the quality of your draft report.
3.   You will be required to attend instructive classes on how to self-assess and how to peer review and provide constructive feedback.
4.   Your draft report uploaded to Moodle Online Discussion will be accessible by the other two peers in your group for review and feedback comments. Likewise, you are required to review the reports of the two peers within your group and query/ provide feedback via annotation and via online postings.
5.   You will be required to reflect on the feedback provided to you by your peers and in this new light, complete the self-assessment once more.
6.   You can then make changes to your draft report as you see fit, creating a final version for upload to the Moodle forum and subsequent grading by the teacher.
7.   During a debrief class you the researcher will reveal both preliminary and closing grades of each of the self-assessment activities and the preliminary and closing grades of the first and final draft report. The higher grade of the two will be recorded for formal assessment purposes. You will be then invited to complete an online questionnaire requesting comments on the self and peer activities and the technology.

Anticipated Benefits to Participants:
*   Through the experience of reviewing the work of others, and by receiving peer feedback, the student should gain an insight into the perspectives of others on the same subject matter and in doing so, broaden/ heighten their awareness of their own work quality.
*   The disparity in grades between 'pre' peer-review self-assessment of draft and 'post' peer review self-assessment should indicate students getting closer to a more informed, more accurate assessment of ability instilling confidence to self-assess work in other subjects.
*   Participants may learn from the process of having their work reviewed by their learned others and receive suggestions for improving draft assignment work.

- Participants may learn from the process of having to critically review work of others, express constructive feedback and explain suggestions to peers.
- Both the activities of self-assessment and peer-assessment mimic's peer assessment processes that happen in the workplace providing opportunity for the learning of new /transferrable skills.
- From seeing how work is reviewed against set criteria, participants may use such insight to enhance the quality of further assignments.
- By working in an online environment, participants will get the opportunity to work autonomously, practise reflection, collaboration, practise writing formally on anonymous work and learn how to evaluate own work as well as that of a peer.
- While there is no guarantee learning will occur; the study may lead to further research in the self-assessment and/or peer-learning domains with view to promoting such activities in other modules and courses in Further Education. Further experimentation into the adaptation of Asynchronous Online Discussions across other learning activities and assignments may also be resultant.

Potential Conflict of Interest:
Due to the fact the participants of this study will be known to the researcher since the researcher is their Business Computing teacher, the researcher will make every effort to ensure all data from the study is recorded without bias and the research work will be submitted and graded anonymously. Participation / early withdrawal from the study or non-participation in the study will not affect Business Computing coursework, assessment, the teacher-student relationship or grades.

Participation Vs Non-Participation

Activity requirements if you participate:

1. Create a draft report,
2. Self-Assess,
3. Make the report available to 2 peers in a Moodle Forum,
4. Review and provide feedback to 2 peers,
5. Self-Assess a second time,
6. Make revisions and re-submit report,
7. Complete a post-activity questionnaire,

Activity requirements if you do **not** participate:

1. Create a draft report,
2. Self-Assess,
3. Make the report available to 2 peers in a Moodle Forum,
4. Review and provide feedback to 2 peers,
5. Self-Assess a second time,
6. Make revisions and re-submit report.

Expected Duration of Participant Involvement:
The study will commence the week beginning January 6th 2014 and aim for completion on January 27th 2014.

Voluntary Nature of Participant Involvement:
Participation is completely voluntary. You can withdraw at any time during the process. You are feely invited to question/ discuss any part of the study before, during and after the process. Questions may be directed in person or emailed to **fogartpa@tcd.ie**. Participants will be invited to complete an online questionnaire. Participants may choose not to answer all questions and can decide not to continue or partake at any stage during the questionnaire process.

Preservation of Anonymity:
Your personal identifying information will not be documented or used in publication of findings. Any personal information collected will be stored in accordance with the Data Protection Act. The researcher will act in accordance with the information provided (i.e. If I say I will not do something, I will not do it). In the extremely unlikely event that illicit activities occur during the study, the researcher is obligated to report it to appropriate authorities. Findings of the study will not use participant names but anonymous comments and statistics will be used in a case study assignment submitted to Trinity College Dublin as part of the Technology and Learning Master's program.

Provision for Debriefing after Participation:
Should you choose to take part in this study, you will be asked to attend 3 instructional classes on how to self-assess and how to provide peer-feedback. On completion of the overall feedback activity, you will be given an opportunity to answer questions in an online questionnaire. Following analysis of the grades and participant responses, you will be informed of the findings/conclusions of the study.

- Having read and understood the contents of this Participant Information Sheet, you are required to also read the attached Participant Consent Form.
- Should you decide to participate, please sign and date both Consent Forms
- Submit one signed copy to the researcher and retain the other signed copy for your own records.

Thank you.

Appendix N

PARTICIPANT CONSENT FORM

LEAD RESEARCHER/S: Pauline Fogarty

BACKGROUND OF RESEARCH:
Through use of a technology mediated learning experience, this study seeks to evaluate and gain a deeper insight into if/how peer-feedback impacts self-assessment in a Further Education class. Two questions underpin the study: (i) Can self-assessment enhance learning? (ii) How/ to what extent can peer feedback enhance self-assessment?. Due to the limited opportunities during class to engage in peer-learning activities and assess the merit of such experiences, this study seeks to use online discussion forums as the learning space outside class hours where peers can interact, share resources and work in small groups. The findings of the study will support further exploration into incorporating self and peer assessments and Asynchronous Online Discussions across other subjects and in other courses within the Further Education Institute.

PROCEDURES OF THIS STUDY
- You will be required to write a report and upload it to your assigned group Online Discussion Forum on Moodle. You will be required to self-assess the work to date. This report will be assessed by the teacher and assigned a preliminary grade.
- You will be required to attend 3 or 4 instructive classes on how to self-assess, review work and how to provide constructive feedback.
- Your report on the discussion forum will be accessible by the two peers in your group for review and feedback comments. You are required to review the reports of the two peers within your group and provide feedback via comments directly on work as well as in discussion forum posts.
- You will be required to reflect on your first draft and self-assess again, this time in relation to the work you have reviewed and the feedback you have received.
- You will be given an opportunity to amend/make revisions to your draft report in line with peer-feedback as you see fit and upload the amended/ final version of the report to the Moodle forum for teacher-assessment and final grading.
- You will be required to attend a one-to-one debrief with the researcher and provided with both preliminary and closing grades. The higher grade of the two will be recorded for assessment purposes. You will be asked to partake in an online questionnaire requesting your thoughts and comments on the self-assessment & peer feedback activity and on the technology used.

PUBLICATION: No personally identifying information will be used in analysis, publication or presentation of data and findings.

DECLARATION:
   Tick

I am 18 years or older and am competent to provide consent.	
A description of the research has been provided to me.	
I have read or had read to me a document providing information about this research and this consent form.	
I have had the opportunity to ask questions and all my questions have been answered to my satisfaction	
I agree that my data is used for scientific purposes and I have no objection that my data is published in scientific publications in a way that does not reveal my identity.	
I understand that if I make illicit activities known, these will be reported to appropriate authorities.	
I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights.	
I understand that I may ask any questions about the research project before, during and after my participation.	
I understand that I am under no obligation to take part in this project and that a decision not to participate will not affect my assessment now or in the future.	
I understand I have the right to withdraw from this project at any stage and that doing so will not affect my assessment.	
I understand that the text based communication and images collected as part of this research will not be used to affect the results of my assessment.	
I understand that the questionnaire data will not be used to affect the results of my assessment.	
I understand that my participation is fully anonymous and that no personal details about me will be recorded.	
I have received a copy of this agreement.	

PARTICIPANTS NAME:.………………………….PARTICIPANT'S SIGNATURE: …………………………DATE……..

Statement of investigator's responsibility: I have explained the nature and purpose of this research study, the procedures to be undertaken and any risks that may be involved. I have offered to answer any questions and fully answered such questions. I believe that the participant understands my explanation and has freely given informed consent.
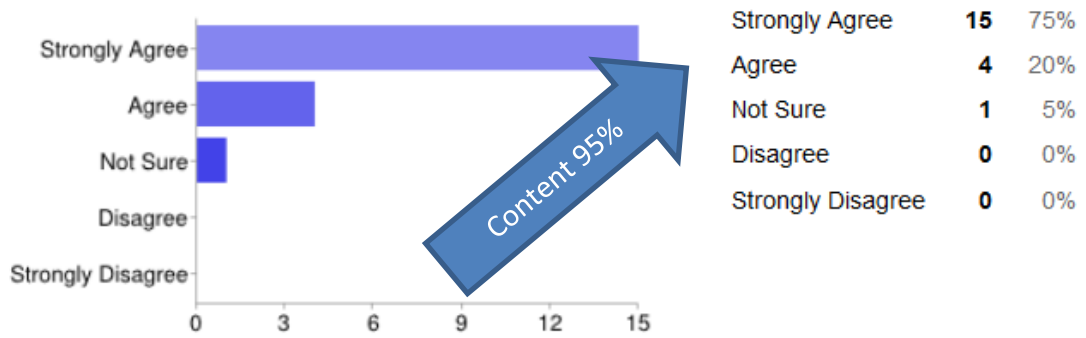
RESEARCHER'S CONTACT DETAILS: Pauline Fogarty, Senior College Dun Laoghaire, Dun Laoghaire, Co. Dublin.
Phone 01 2800385   Fax: 01 2800386   Email: fogartpa@tcd.ie

INVESTIGATOR'S SIGNATURE: ………………………………………   Date: ………………………………

Subset of Findings as per Meta Project, Fogarty (2013)

[I found it easy to use the forum and create posts]
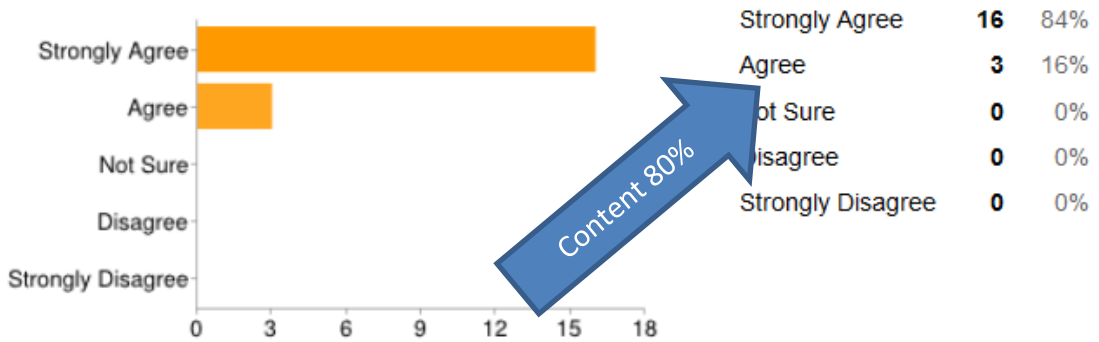
Strongly Agree	**15**	75%
Agree	**4**	20%
Not Sure	**1**	5%
Disagree	**0**	0%
Strongly Disagree	**0**	0%

[I found it easy to upload and download files for sharing]

Strongly Agree	**16**	84%
Agree	**3**	16%
ot Sure	**0**	0%
isagree	**0**	0%
Strongly Disagree	**0**	0%

[I like how the discussion forum allowed an additional space for interaction with fellow students]

Strongly Agree	**8**	40%
Agree	**12**	60%
Not Sure	**0**	0%
Disagr	**0**	0%
St ag ee	**0**	0%
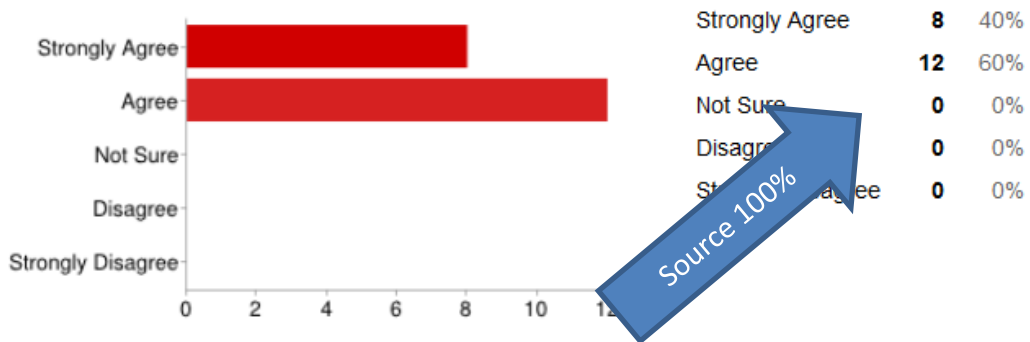
[I liked the asynchronous feature which allowed flexibility in time and location to do course work]

Strongly Agree	**10**	50%
Agree	**9**	45%
Not Sure	**1**	5%
Dis	**0**	0%
sagree	**0**	0%
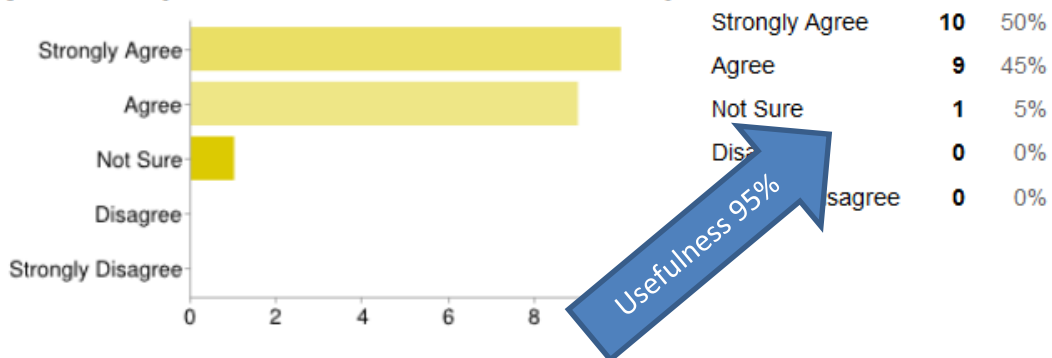
Appendix P

Sample of Self-Feedback Comment coded for Feed-Forward Comments

Partner07 — Wrote more in SA-2 — Greater feed-forward in SA-2

In draft two the report can be re jigged. The areas which need work can be addressed and remedied. ... need to be moved to relevant sections. Paragraphs could be numbered. The contents page needs to be amended. The report needs better spacing.

Suggest: I will take into consideration all of my peer and tutor reviews. I will amend to aforementioned points in the concern section and redraft the document.

Value: I think my findings where done well with a lot of research and information.
1. Structure, use of page breaks, correct spacing, grammar and spelling.

Clarify: I think my conclusions need more information.
2. Why each piece of equipment is needed.

Concern:
3. Writing more in my own words and more knowledge of specs.
4. Research each topic more and use my first draft to know where needs to be improved.

Partner08 — Wrote more in SA-2 — Greater feed-forward in SA-2

I think the layout and structure of the report is good and does not need improvement.
1. The Layout and research of my report are good. The recommendation section was detailed

I addressed antivirus at the last minute so more detail could be added there.
2. Some details could be improved such as use of more sources and I left out some necessary information such as broadband and internet services. I need to clarify on the differences between the different computer manufacturer's products.

The terms of reference and procedure sections could be improved; no sources were listed on the procedure section and were listed in the reference section instead. I'm not sure if this was adequate.
3. I need to change one of my recommendations from Windows 8 to Windows 7 and I did not explain computing terms such as RAM, HDD etc.
4. I need to add more explanation of computer terms in my findings section and change a couple of ...

equal amount in both — Greater feed-forward in SA-1

2. The section on Local Area Network requirements need to make adjustments to it.

Recommendations was done really well.
Clarify. I need to add a Data Storage Section.

3. Hardware devices and Software section Local Area Network requirement might need more content, will have to make adjustments.

Suggest Wouldn't need to include Apple IMac as it's expensive.

Concern I needed to add a Data Storage Section.

4. Will have to research some more material, make adjustments to each of the sections.

Partner10 — Wrote more in SA-2 — Greater feed-forward in SA-2

1. The report is detailed and simple.

Value think my report is easy to read and well laid out. Description of hardware is detailed and the recommendation of using the hardware is well defined.

2. There are certain areas that could be clarified better especially on the network area.

Clarify. Some areas in my report I will need to go more in-depth especially with some of the web software I suggested.

3. Lack of company support is a big concern and is a very important product when giving a report for evaluation.

Concern. There are two areas that need attention and that would be the cost lay out in which I have not included also greater detail in the recommended software and also as one of my peers suggested was to give more detail on my recommendations when consulting with manufactures.

4. More research will be needed and I must realize that I must accommodate the web company and not myself.

Suggest. The issues I'm burdened with are quite minor and will just need a little more bling. I will also have to implement a pricing/cost table and give more detail on software recommendations.

Partner11 — Value...

Self-feedback Quantity		
Partners who wrote more BEFORE	Partners who wrote more AFTER	Partners who wrote similar in BOTH
01, 02, 03, 12,	04, 05, 06, 07, 08, 10, 11, 15, 16, 17, 18, 19, 21	09, 13, 14, 20
4 (19%)	13 (62%)	4 (19%)

Self-feedback Quality		
Partners who wrote more corrective strategies BEFORE	Partners who wrote more corrective strategies AFTER	Partners who wrote similar amount of corrective strategies in BOTH
01, 02, 03, 09, 12,	04, 05, 06, 07, 08, 10, 11, 13, 14, 15, 16, 17, 20, 21	18, 19
5 (24%)	14 (67%)	2 (9 %)

Appendix Q

Samples of Peer-Feedback Messages Including Suggestions

Notes - Suggest, From Partner 11
by Partner 11 - Wednesday, 15 January 2014, 07:42 PM

Hi Partner 12,

Further to my previous concerns, I have been thinking about the aspects raised and have some suggestions for you to consider.

Stick to the paragraph format for the main sections of the report and use appropriate heading formats. Use table presentation as much as possible to clearly list requirements and options – it reads easier for the client and aids the review process.

Consider making these format changes for the existing sections and when you have the missing sections included, I will be happy to take another look.

Use the expertise of the other partners if required. We all have a part to play in the process and we all an obvious interest in securing the business.

When you have completed this project, we might look at meeting to decide on a standard template format for future proposals from our company. You could bring the benefits of your experience and conclusions to the table, for consideration.

Regards,

Partner 11.

Suggest
by Partner 06 - Friday, 17 January 2014, 03:00 PM

Hi partner 5,

A detailed explanation of computer networks needs to be included in the report.

The following items could be included and explained.

LAN
VLAN
WAN

The following network types could be explained in the report.

Peer to peer ?
Client / server ?

When these topics / networks have been explained I would suggest deciding upon either a client / server network or a peer to peer network and then explain why you decided this.

Software, (System & Application),

The operating system is the most important program that runs on a computer. Every general-purpose computer must have an operating system to run other programs. Operating systems perform basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers. There are many types of operating systems the main ones being windows, Ubuntu and mac ios.

Local Area Network Requirements

A local area network (LAN) is a computer network that interconnects computers in a limited area such as a home, school, computer laboratory, or office building using network media. The defining characteristics of LANs, in contrast to wide area networks (WANs), include their smaller geographic area, and non-inclusion of leased telecommunication lines. To setup a LAN network a router is required but for a small business you would need a large one with 15-20 ports so all computers would be able to connect.

Comment [P145]: What about application software ? email, browsers, word, photo editing.

Comment [P146]: Mention topology, a wire/wireless network or p2p.

What about the server what is it and why is it important

Router/cabling/Switch?

---

disk drive

Printers: An external device responsible for taking computer data and generating a hard copy of that data.Printers are one of the most commoly used devices in the office.

Speakers: A hardware device connected to a computer that outputs sound generated by the computer.

Scanners: A scanner is an output device that scans documents such as pages of text and coverts them into a digtal format.Scanners work in conjuction with computer software programs. Which import data from the scanner.

Modems, broadband, and wireless connectivity. Higher transmission speed alternatives other than regular phone lines are offered by telephone companies through digital subscriber lines (DSL) and cable modem companies. These "broadband" alternatives have become quite common. Wireless connections to the Internet work through wireless routers.

Networks. Even those working solo can benefit from computer networking--basically connecting two or more computers through a router (wired or wireless) so that they can share tasks and applications. For work purposes, accessing files on other computers on your network and using one printer for all the computers are the main purposes for having a computer network.

Photocopier: Your options for a printer range from rather slow and inexpensive (inkjet printers) to fast and more expensive (laser printers). In comparing the costs of different printers, it's important to look beyond just the initial purchase price. Impact printer, inkjet printer, laser printer, dot-matrix are all the most common.

Comment [P017]: What sizes are available?

Comment [DC18]: What types of printers are available?

Comment [DC19]: What speakers would be available? Are they suitable for the office?

Comment [DC110]: What scanners are available?

Comment [DC111]: What Modems, Broadband and wireless connectivity are available?

Comment [DC112]: Availability?

Comment [DC113]: What price range is considered inexpensive?

Comment [DC114]: What price range is considered more expensive?

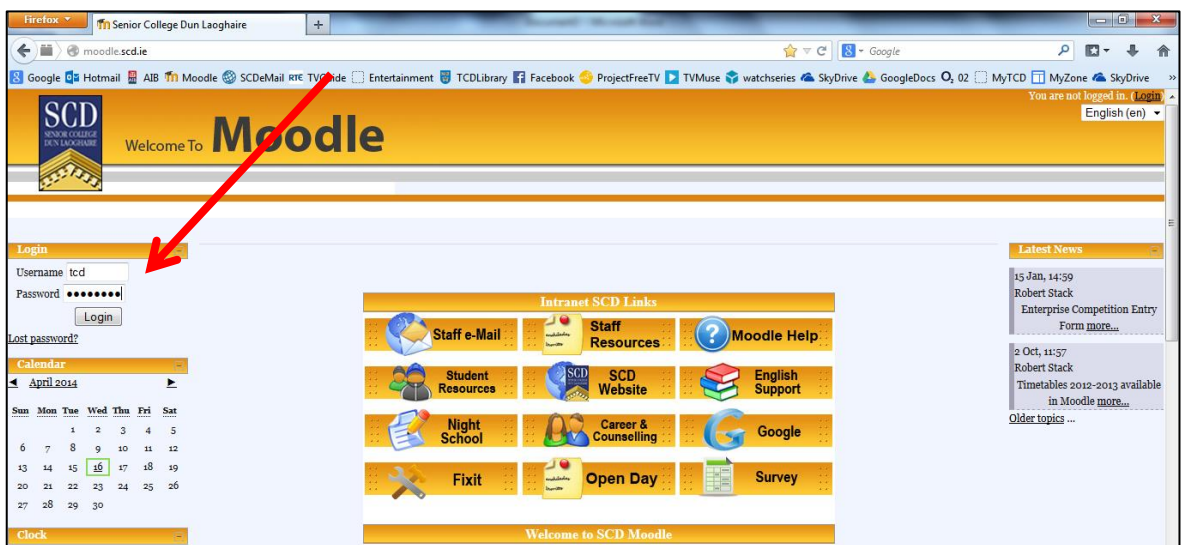**Appendix R**

Artefact Access

1. In the browser address bar type: **moodle.scd.ie**

2. In the top left Login area, enter:

Username: **tcd**

Password: **password**

3. Below the category 'My Courses', click '**Peer-Feedback Discussion Forum PCM'.**