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# Alternative Methods to Traditional Written Exam-Based Assessment

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## Introduction

Donnelly and Fitzmaurice (2005, p.14) suggest that “assessment methods should be in accord with the learning outcomes of the module and should foster a deep approach to learning”. While unseen written exams do develop skills such as “examination techniques, writing under pressure, recall” (Smyth, 2004), there are a number of alternative assessment methods that determine what students actually understand and what they can do, in contrast to what they can recall. As one student noted “I hate to say it, but what you have got to do is to have a list of “facts” ...you write down the important points and memorise those, then you'll do all right in the test...if you can give a bit of factual information... “so and so did that, and concluded that” for two sides of writing, then you'll get a good mark” (Comment from student in Ramsden, 1984, p.144). Many modules are reliant on the written exams for the majority of their assessment methods. Brown (1999, p.8) states “the range of ways that students are assessed is extremely limited with around 80% of assessment being in the form of exam, essay and reports of some kind”. Race (2001) agrees when he says that 90% of assessments are unseen examinations and essay/reports and such assessments promote surface learning.

Having a depository of alternative methods of assessment facilitates learners with more opportunity to demonstrate their understanding, knowledge and skills (Ramsden, 2003). Additionally, having diverse methods of assessment can provide more inclusive approaches to assessment design. They provide a means of collecting valuable information and skills that cannot be solely assessed with the traditional written exam. Brown and Race (2013) convey that using a range of diverse methods means that students are assessed across a range of abilities and skills and that everyone has some opportunity to play to strengths.

Although this project outlines challenges to implementing alternative assessment methods such as preparation, cost, and time among other factors, they provide more authentic learning approaches that focus on the quality of students’ performance as an individual and within a team. These alternative methods of assessment can deepen understanding, enhance the learning environment and provide students with real-life transferable skills for future employability.

## Research

### Problem based learning (PBL) with case studies

PBL is a teaching and assessment method that is focused on investigating and providing solutions to real-world problems (Savery, 2015). PBL is rooted in constructivist theories of learning (Loyens, Rikers & Schmidt, 2006). Rather than having a teacher provide facts and then testing a student’s ability to recall these facts via memorization, PBL attempts to get

students to apply their knowledge to new situations (Duch, Groh & Allen, 2001). Students are presented with a problem, which they then investigate and provide a solution. Learning is driven by complex problems with no one correct answer (Duch, Groh & Allen, 2001). Teachers function as facilitators of learning, guiding the course of learning and encouraging an investigative environment in the classroom (Hmelo-Silver, 2004).

Adopting a PBL assessment approach in the classroom is not always straightforward as there are a number of cons associated with this method. It is difficult to implement PBL when students have little or no prior knowledge of a subject. Relinquishing control of the classroom can be initially difficult for some teachers (Tavakol, Dennick, & Tavakol, 2009). However, the pros of PBL easily outweigh these cons. PBL has been shown to develop critical thinking skills (Tiwari et al., 2006) and improve student's problem solving abilities (Choi, 2004). It has also been shown to increase student motivation and engagement in learning (Ahlfeldt, Mehta, & Sellnow, 2005). Finally, students learn to apply their knowledge to new situations (Massa, 2008).

Peter Ommundsen (2013) presents a useful guide to implementing PBL in the classroom. He describes four key steps for implementing PBL:

- (1) **Form small groups:** students form groups of 3-5 people.
- (2) **Present the problem:** present the students with a brief problem statement. Emphasize to the students that they are dealing with an authentic case. Unusual and complex problems work best.
- (3) **Activate the groups:** ask the groups to brainstorm possible causes of the problem case study. This is when much learning occurs, as the students help each other understand the knowledge required to solve the problem. PBL students must reflect upon their prior knowledge rather than just memorize facts.
- (4) **Ask for a Solution:** request a written analysis or presentation from each group describing the solution(s) to the presented problem.

Once students have become familiar with the use of PBL in the classroom, it is possible to assess module learning outcomes using PBL (Willis et al., 2002). The teacher should establish target goals early on in the process to provide purpose for the assessment and establish expectations of the final result (Willis et al., 2002).

Ideally, the assessment of PBL case studies should have three components, self, peer and instructor assessment (Papinczak et al., 2007). Self-assessment is an important part of the assessment process because it focuses on higher-level thinking and awareness of the course material and how it relates to the solution (Dochy, Segers & Sluijsmans, 1999). However, the literature states that students consistently under mark their own performance (Papinczak et al., 2007). Peer assessment is unique to group work, and it facilitates a better collaborative process because the teacher considers the student experience (Dochy, Segers & Sluijsmans, 1999). Teachers can use this information to hold students to account for their contributions to the team. However, students consistently over-marked their peers, particularly those with cynical attitudes to peer-assessment (Papinczak et al., 2007). Students should be fully aware that they will be given a group mark for the final report/presentation. The instructor's mark should form the largest percentage of the final mark (Papinczak et al., 2007).

### Assessment by observation

Observational assessment is based on teachers observing their students as they partake in the learning environment. Teacher observation might be viewed as a simplistic means of assessment. Campbell notes that “it is often used with little regard for, or knowledge of, its characteristics” (2004, p. 133). However, it can be used as a continuous cycle of the learning and teaching process in collecting valuable information about the learners’ individual demonstrations of the learning objectives (Drury, 1995). Observations can be used to put in context student behaviour, ability, curriculum development and evaluation, and teacher development (Wragg, 1999), or specifically focus on the teacher’ own development (Gosling, 2002; Donnelly, 2007). The value is not in just collecting the information but also to use the evidence to guide instruction and enhance learning. It is the intention that the feedback informs and enhances future practices (McMahon, Barrett & O’Neill, 2007). Challenges include the level of commitment required. However, in skills-based training, observation is often viewed as the only means of assessment considered. It facilitates an authentic experience and provides an opportunity for feedback to be given that is objective, constructive and confidential based on the learning experience. Within these settings, observation is one of few methods in determining what the learner understands from instruction and what they are actually able to do in a holistic environment (Smith & Ragan, 1999). Observations can also be applied to assess and determine the learners’ input from Problem Based Learning (PBL), role playing or other simulations. The strategies for assessment can be effective if logically planned out to focus on specifics. The evidence can be documented in various ways including on worksheets, rated scales, photographic or audio-visual evidence, with an oral assessment often used as a method of following up.

### Oral assessment

The oral assessment defined by Joughin (1998, p.367) as an “Assessment in which student’s response to the assessment task is verbal in the sense of being expressed by speech instead of writing”. Huxham, Campbell and Westwood (2012, p.125) define oral assessment as “The Oral examination in which the candidate gives spoken responses to questions from one or more examiners”. The literature tells us that it is one of the oldest forms of assessment, but despite its antiquity it is now rare in many undergraduate courses. Students are expected to respond verbally in their own words which will gauge student’s depth of comprehension and ability to apply knowledge to different situations. Huxham et al (2012) discusses five benefits to oral assessment:

1. Development of oral communication skills. This is a highly important graduate attribute which means these skills must be taught and assessed (Wisker, 2004)
2. Oral examinations are more authentic than most types of assessment (Joughin, 1998). Graduates will attend interviews and will have to defend their ideas and work in verbal conversation, whilst most will never sit another written exam.
3. Oral assessments may be more inclusive, oral assessments are preferred by dyslexic students.
4. Oral examinations are powerful ways to gauge understanding and encourage critical thinking (Gent, Johnston, and Prosser 1999).
5. Oral examinations are resistant to plagiarism (Joughin, 1998); students must explain their own understanding using their own words.

The literature does pose some challenges to Oral assessment such as costs in terms of examiner time and effort, high stress for students and examiner bias. However, these challenges can be overcome by Davis and Karunathilake (2005) recommendations; Orient the student, train the examiners, use simple grading system or rubrics, use multiple assessors and assess on multiple occasions.

### Performance-based assessment

Performance Based Assessment (PBA) requires students “to demonstrate their learning and understanding by performing an act or a series of acts” (Colley, 2008, p.68). Performance assessment has been variously described as direct assessment, alternative assessment, authentic assessment and performance-based assessment. This type of assessment is appropriate to use in a project-based, problem-based, or inquiry-based classroom because it is consistent with the way students learn. Since students in a project-based classroom learn by producing a product or performing an act, it is only fitting for them to be assessed using methods like those used to teach them which means the teaching is aligned with the assessment. PBA is a form of active learning, Mavroudi and Jons (2011) tell us that active learning or learning by doing is more likely to encourage students to adopt a deep approach to learning. Cognitive research indicates that most learning goes on within an active, rather than passive context and that children construct knowledge from their actions on the environment (Gardner, 1993). There are many strengths to PBA, Baker (1997) in Potter, Ernst and Glennie (2017, p.18) state that “PBA is an effective way of determining the level of student learning that has occurred in a lesson. While some multiple-choice tests tend to only assess the memorisation of factual knowledge, PBA’s focus on higher-level cognitive abilities that integrate and demonstrate an understanding of multiple subjects”. Resnick and Resnick (1992) state that all components of PBA measure aspects of the higher order of thinking processes. PBA is suitable for assessing nearly all types of learning because it allows students to demonstrate their competency in ways compatible with their learning experience.

### Reflective portfolio

In skills-based training and vocational education, reflective portfolios are useful in encouraging students to explore and interpret the learning experience while linking theory to practice. By students reflecting upon and understanding the positive and negative impact of their own actions during a learning experience, this process prompts thought in guiding students to think about what they might do differently next time (Schön, 1991; Copper, 1999; Salmon, 2002). Using reflective vocabulary can assist students in getting started. This provides the students with a deeper approach to learning by allowing them to individually reflect on their own actions and outcomes of the learning process by perceiving and interpreting this experience and prompting a series of thoughts for reframing the learning events that took place (Dewey, 1910). It can be viewed as a logical and rational thinking approach to learning, that enables reasoned thinking in addressing achievements and concerns encountered throughout the process, while encouraging exploration, self-development and independent learning to help build on students’ strengths and assist in determining and developing strategies to reduce their weaknesses (Boyd & Fales, 1983; Schön, 1991). Additionally, there are several ways in which this reflective process can be integrated into the curriculum including for internships, Enquiry-Based Learning (EBL) or Problem-Based Learning (PBL) for example (Bolton, 2001). Assessment can be made on the evidence of the learners’ collection of analysis, interpretation, evaluation, thoughts and deeper reflection (Cooper & Love, 2000).

Dunne & Ryan's (2013) rubric is particularly useful in assessing the reflective writing and providing students with prompt and constructive feedback. Although challenges include the students' level of academic writing and their awareness of ethical consideration, however students can be encouraged to articulate more appropriately for the purpose of academic assessment, including having a professional approach to writing (Bolton, 2001).

### Programme level assessment

"To be intrinsically motivated, they (students) need to see the relevance and importance of what they are being required to do" (Rust, 2002, p.150). The previously outlined assessment techniques and opportunities are available as alternatives to the traditional written exam within a given unit, or module, whereas 'Programme Level Assessment' (PLA) can provide another means to strengthen assessment design and development within a particular year, stage or complete programme. Variations in the description, and in some cases the actual strategy, exist such as "Programme Focused Assessment" and "Programme-Based Assessment". In its simplest terms, PLA seeks to align assessments with programme learning outcomes, rather than module learning outcomes. Based on a large body of work in the UK academic bodies such as University of Bradford, Oxford Brookes/ASKE and TESTA, strategies are discussed in the design of assessment with the aim of improving student learning, and the benefits are wide-ranging. In order for assessments to function properly, they must be "effective, efficient, inclusive and sustainable" (University of Bradford, 2012, p.7). Gibbs and Dunbar-Goddet (2006) summarise that increased formative assessment and reduced summative assessment provided a more positive learning environment. Boyd (2017) indicates that a programme level assessment approach is beneficial as it reflects that the fact that a programme award represents the students programme level knowledge, not just a collection of individual units of information.

'Bunching' of assessments (Yorke, 1998) can initiate stress in the student and also negatively impact on the quality of both input and output in individual unit assessments. This 'bunching' phenomenon can also incur additional workload on the lecturer(s) involved, due to the volume of assessment correction and subsequent feedback required. Jessop, Kakim and Gibbs (2014, p.86) note the challenges in "restructuring assessment design ... to reduce summative assessment in favour of formative". Active participation is also required from both management and all of the programme team in the development of appropriate assessment techniques.

### Practitioner implementation

Within the DIT Product Design programme, a group-based assessment is introduced in the second stage of the programme which connects assessment in multiple modules via a year-long, design project. The assessment, known locally as a 'super-assessment' or the 'Last Mile project' is currently in its second iteration and has been very positively received by both students, programme and management.

Learning outcomes from individual units, which previously may have been difficult for students to contextualise, are connected by the assessment delivery. Both formative and summative assessment components from multiple modules are strategically managed within the individual module itself but are designed as sequential milestones throughout the lifetime of the overall assessment.

Authenticity of assessment, in the context of product design, is achieved through the (essentially) multi-disciplinary aspects of the overall design brief, including Management and Strategy, Creativity and Innovation in Design, CAD, Visualisation, Modelmaking and Prototyping. The component assessments include a variety of assessment techniques including group presentations, report writing, reflective blog pieces, project review portfolio, physical prototype creation and technical drawing documentation. This assessment suite also provides opportunities for the enhancement of graduate attributes and employability. This super-assessment also provides a preparatory platform for students entering industrial competitions in the programme's third stage and capstone projects in programme's fourth stage, providing further connections for the student through the programme's integrated trajectory.

A complete PLA strategy has not been implemented within the Product Design programme as yet, and as such, this super-assessment could be categorised as 'synoptic assessment', but the results from historical development of this super-assessment have provided a broader outlook to the programme team, and there is now more lecturer activity in seeking collaboration opportunities and developing synergy between previously-isolated modules, and to further design and develop the programme with a PLA strategy in place.

## Conclusions

"If you ask someone else for help on a problem in an exam, you are cheating, but if you don't ask someone for help on a problem in the real world, you are a fool" (Wieman et al. 2014).

As argued there are numerous contexts for a negative student experience with traditional written exams. Research suggests that if the criteria of assessment is based on repetition of facts, the learner often adopts a 'surface' approach to learning in contrast to a 'deep' approach (Biggs, 1999), that we would like to promote as teachers. Assessments should be reflective of the learning experience, support students in achieving the learning outcomes and promote lifelong learning. This project outlined diverse methods of assessment that support these goals. Although group members come from a variety of disciplines, and their chosen assessment implementations are applied in their specific modules, there is scope to apply and/or integrate the outlined assessment alternatives in many fields/disciplines. As noted, there are challenges, including the implementation, level of student academic skills and writing, ethical considerations (privacy, sensitivity), the volume of workload for lectures, and up-front assessment design. Our alternative assessment methods can easily be aligned with learning outcomes. They provide an inclusive approach that addresses different learning abilities and learning preferences. Finally, our alternative assessment methods also enhance the development of DIT graduate attributes, such as 'Enterprising' (Collaborative Worker), 'Engaged' (Excellent Communicator), 'Enquiry-based' (Critical Thinker, Problem Solver), 'Expert' (Reflective Practitioner, Work Based / Work Related Learner) and 'Effective' (Active Team Player).



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### Abstract

The team members deliver content on programmes with a large emphasis on the development of practical skills. We feel that the traditional written exam does not provide sufficient experiential gain and authenticity of learning, and as such alternatives must be sought to ameliorate this. Written exams have been shown to encourage, or exhibit, surface learning and memorisation.

As teachers, we can build a picture of our students' learning and development through various activities and alternatives to exam-based assessments. Furthermore, students learn in different ways, and by offering alternative methods of assessment, students can attain the learning objectives in ways that best suit their learning abilities.

This project presents a variety of assessment methods relevant, and appropriate, to our disciplines that can have benefits to both student and teacher. With fewer written exams, students spend less time memorising facts/ information and thus have more opportunities to deepen their understanding of a subject through other approaches.

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**"Assessment methods and approaches need to be focused in evidence of achievement rather than the ability to regurgitate information"**  
*(Brown, 2005)*

"Most students can adopt either surface or deep approaches to their learning and one of the most important influences on which approach they take is the design of the course and the assessment strategies used"  
*(Rust, 2002)*



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alternative methods to  
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## Rationale

FOR EXPLORING ALTERNATIVES

Students are also more likely to take a deep approach if they are motivated. To be motivated, they need to see the relevance and importance of what they are being required to do. If students see an assessment as just a hoop to be jumped through, with no relevance or importance to them beyond passing the assessment, the student is likely to take a 'surface' approach.

- ✓ Surface Learning vs Deep Learning
- ✓ Rote Memorisation
- ✓ Accurate Performance/ Measurement
- ✓ Typically high-stakes
- ✓ No obvious development of graduate attributes
- ✓ Feedback opportunities

## Strategy

WHO CAN USE THIS MATERIAL?

Teaching staff from any discipline can implement a variety of the described assessment methods discussed in this document.

- ✓ DIT Teaching Staff
- ✓ Other Third-level academic institutions
- ✓ Higher Education Researchers

## Alternative methods

### Problem Based Learning (PBL) with Case Studies

- Learning is driven by challenging, open-ended problems with no one "right" answer
- ✓ Develops critical thinking and creative skills
  - ✓ Improves problem-solving skills

### Reflective Portfolio

- Reflection-on-action*  
*Reframing the learning events*
- ✓ Collection of analysis, interpretation, evaluation, input, thoughts and deeper reflection.

### Observations

- ✓ Collection of valuable information about the learners' individual demonstrations of learning objectives
- ✓ An authentic experience : objective and constructive.

### Oral Assessment

- 'The candidate gives spoken responses to questions from one or more examiners.'
- ✓ More authentic than most types of assessment and more inclusive than written assessments.

### Performance Based Assessment

- 'Requires students to demonstrate their learning and understanding, performing an act or series of acts.'
- ✓ A focus on higher-level cognitive abilities, allowing students to construct their own answers.

### Programme Level Assessment

- '.. assessment is specifically designed to address major programme outcomes rather than very specific or isolated components..'
- ✓ Not a specific assessment technique, but an overarching strategy employed at programme level.



## Conclusions

**"Feedback is arguably the most critical element in facilitating student learning"**

*(Gibbs & Simpson, 2005)*

Alternative assessment methods can be implemented in a variety of disciplines.

Even though the team have differing backgrounds, and have applied their chosen assessment implementations in their specific modules, there is scope to apply and/or integrate the outlined assessment alternatives in many fields/disciplines.

Less focus on time-constrained, unseen exams and recalling of facts, and a greater emphasis on assessments that measure the student's ability to use the material they have learned, will provide a better learning and performing environment for the student.

### Effectiveness of alternate assessment methods

- ✓ Inclusivity
- ✓ Learning abilities and assessment performance are considered
- ✓ Enhancement of a collection of Graduate Attributes
- ✓ Authenticity

*"If you ask someone else for help on a problem in an exam, you are cheating, but if you don't ask someone for help on a problem in the real world, you are a fool"*

*(Weiman, 2005)*

