Student Learning through the "Competition Experience"

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Engaging students and encouraging active participation is an ongoing challenge in higher education. This paper reports on findings from a research project that reflected upon a case study research experience of past students and coaches whom have gone through the ASC Region 8 competition experience. This paper aims to demonstrate a method of motivating students to engage in formative assessment as a tool for achieving learning outcomes. More specifically, the authors will explore one formative tool used in practice as an additional aid to summative assessment with third level students in a tutorial environment. The practice to be examined is the use of a "Student competition". The Kolb Learning Styles Model was applied to capture the student and coaches' experiences and to provide a basis for observation and reflection. The research adopted a qualitative methodology and gathered the perspectives of 32 participating students and the 9 accompanying coaches involved with a very diverse international reach with students participating from USA and Europe. Questionnaires were used to collect the data, which were assessed against current programme module content and learning outcomes. The outcomes of the reflection provide a reference for assessing what are the added benefits and unique attributes that can be gained from partaking in such an environment but can also inform course teams how to develop skills into their programmes.

Keywords: Student Attributes, Student Learning, Formative Assessment; Student Experience

Introduction

"Education is an admirable thing but it is well to remember from time to time that nothing that is worth knowing can be taught." Oscar Wilde

Traditional summative assessment techniques generally take the form of exams, in class tests, and assignments. Such techniques when applied alone can often-lead students to "play a strategic game" whereby the learning becomes secondary to completing the task and receiving a grade (Atkins et al, 1993). Indeed, research from Hinett and Knight (1996) showed that second year students "viewed assessment as a separate entity to learning". This perception of education as a series of tasks to be completed may leave students ill equipped for the skill set required in postgraduate employment (Shanahan, Hermans, and Haytko, 2006).

There is extensive research into undergraduate education and preparing students for entry into the professional workplace. The value of the competition experience to the student is the learning experience itself, which integrates all of the knowledge that the student has acquired on the program to date and enables the student to develop and demonstrate analytical, judgmental, presentation and communication skills. The competition environment provides the student with an experiential learning experience as a direct result of the students' active participation in the process, as described by Kolb (1984). Furthermore, as part of the process the student develops and utilise the ability to analyse, evaluate, reflect and resolve a range of issues that occur during the process. The expression "hindsight is a wonderful thing" is often applicable for the initial and early stages of implementation of a process in general. The experience and reflection of students and coaches contains valuable tacit knowledge that the authors believe should be captured and utilised to assess the effectiveness of the learning experience and aid continuous improvement.

There is extensive research into undergraduate education and preparing students for entry into the professional workplace. We ask employers in industry regularly what are their needs so we may produce a graduate that will fit their needs. Research tell us that Employers need graduates with not only technical expertise but there is great worth placed on other attributes such as People Skills; Organisational Skills; they also require graduates to be able to work and produce the required result in pressured environment such as "tight deadline" driven projects. (S.Meekel; J.Jenkins 2014)

The purpose of this paper is to reflect and evaluate on the competition experience as a formative assessment and as an engaging learning tool. The research also assess what are the levels of motivation to participate and the drivers of that motivation for students. It aims to contribute to a discussion in published literature and attempt to identify recommendations that can help to further develop this relatively under-explored area. The outcomes of the reflection provide a reference for assessing what are the added benefits and unique attributes that can be gained from partaking in such an environment but can also inform course teams how to develop skills into their programmes.

Competition

Formative assessment "refers to assessment that is specifically intended to provide feedback on performance to improve and accelerate learning" (Sadler, 1998). Used correctly it can motivate students to actively engage in classroom discussion and to take ownership of their learning outside of the classroom. Ruben (1999), as cited in Gordon and Gillespie (2006) believes formative assessment can improve on traditional "one-way information dispensing methods", promoting interaction and active learning.
Summative Assessments are given periodically to determine at a particular point in time what students know and do not know. Many associate summative assessments only with standardised tests such as state assessments. The key is to think of summative assessment as a means to gauge, at a particular point in time, student learning relative to content standards. Garrison (2011). Summative assessment rarely includes qualitative feedback, the key focus of formative investment is on the learner, it answers the question "how am I doing?" instead of "how did I do?" (Starkman, 2006).
Using competition as a motivator has received criticism in the past (Kohn, 1992. as cited in Gordon and Gillespie, 2006). However, studies have suggested that students enjoy this method of learning (Bergin and Cook, 2000, as cited in Gordon and Gillespie, 2006) and that it is beneficial as a classroom tool.
Burguillo 2010 believes CnBL (Competition Based Learning) is a methodology where learning is achieved through a competition, but the learning result is independent of the student's score in such competition; while Competitive-based Learning, implies that learning depends on the result of the competition itself. CnBL can be easily combined with other learning methodologies as CBL(Challenged Based Learning), PBL(Problem Based Learning), and altogether they support tournaments among students' groups, used to motivate students and helping to improve their performance.

In the UK and Ireland particularly, over the last number of years and now coming out of a recession contractors have had to compete. This competitive environment is becoming more and more part of the professional construction industry. Employers have indicated that students are often not prepared for the workplace and call on universities to produce more employable graduates by providing transferable skills that can be taken into the workplace (Smith, Clegg, Lawrence & Todd, 2007). According to Harvey (1997) employers need people who can work in teams, exhibit good interpersonal skills and communicate well. As Sweeny (1997) states "Employers are looking beyond content and focusing more on attributes and skills that will enable graduates to be adaptive, adaptable and transformative."

The case study

According to Yin (2003) the case study gives the story behind the result by capturing what happened to bring it about, and can be a good opportunity to highlight a project's success, or to bring attention to a particular challenge or difficulty in a project. Case study research excels at bringing us to an understanding of a complex issue or object and can extend experience or add strength to what is already known through previous research. Yin defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context.

According to Adams (2002) the 'learning outcomes are statements of what a learner is expected to know, understand and be able to demonstrate at the end of a learning experience.' During the student competition experience, the student is expected to be capable of demonstrating the ability to integrate the knowledge and skills gained on the programme for the previous years. With this in mind the student can analyse, evaluate and resolve a range of issues that occur during the management of the construction lifecycle.

The underpinning philosophy of modules are to provide students with an opportunity to take responsibility for their own learning, demonstrated through the use of the higher order learning outcomes of analytical judgemental presentation and communication skills.

The ASC Region 8 Student Competition held in Dublin Institute of Technology, Ireland which is the case study presented as the subject of reflection in this paper, took place in November 2015

Study Design

The research was undertaken to reflect upon a case study experience of past students and coaches whom have gone through the ASC Region 8 competition experience. This paper aims to demonstrate a method of motivating students to engage in formative assessment as a tool for achieving learning outcomes. More specifically, the authors will explore one formative tool used in practice as an additional aid to summative assessment with third level students in a tutorial environment. The research study undertaken was small in scale and exploratory in nature and adopted a qualitative methodology. The perspectives of 32 participating students and the 9 accompanying coaches involved were gathered.

The project involved the following data collection: Self-completion questionnaire to students and coaches
A self-completion questionnaire was designed and administered to all 32 of the students competing and 9 of the accompanying coaches with responses received from 41 of the 41 participants (100% of the complete sample). The questionnaire consisted of 5open questions covering a range of topics related to the Competition Experience.
The questionnaire for the research was designed to gather the experience of the participants, reflect and contribute to the following key questions:
1) In terms of a learning experience, what do students "take away" from the Student Competition Experience and what is the motivation for partaking.
2) What aspects of the students course studies to date that they felt were of considerable benefit to them during the Competition Experience
3) What aspects of the students course studies to date that they felt were lacking that might have hindered them during the Competition Experience

The practice to be examined is the use of a "Student competition". The Kolb Learning Styles Model was applied to capture the student and coaches' experiences and to provide a basis for observation and reflection. Kolb states that ideally this process represents a learning cycle where the learner 'touches all the bases'; a cycle of experiencing,

reflecting, thinking, and acting. Immediate or concrete experiences lead to observations and reflections. These reflections are then assimilated (absorbed and translated) into abstract concepts with implications for action, which the person can actively test and experiment with, which in turn enable the creation of new experiences (Kolb, 1984). The data from the questionnaire were analysed by the authors. The aim of the analysis was to identify themes and clusters within the student and coaches' experiences and compare them to the desired learning outcomes within the Construction Management Programme. The outcomes of the reflections also provided a reference for assessing what are the added benefits and unique attributes that can be gained from partaking in such an environment but can also inform course teams how to develop skills into their programmes. From the analysis of the data a picture emerged about the students' and coaches' experiences of the Competition Experience.

The competition brief was designed in conjunction with one of the Industrial panel members based on a real current ongoing project. The judging panel was made up of representatives from four current International Contractors.

The competition was arranged into four stages:
      1) Initial Competition Brief release information
      2) Competition Day - Competition Brief release student lock down- hours,
      3) Competition Day – Presentation to Panel,
      4) Finals – Top three teams Interviewed by Panel

The Region 8 ASC Competition Process began with:
1. The students and coaches receiving an initial competition brief available online from September 2015.This information gave some primary information and location so the teams could commence some form of desk top research prior to the competition day.
2. The next phase of the competition was on the competition day itself. Student and coaches arrived for registration and welcoming addresses from the host and also the Industrial judging panel. The students are then locked down for six hours with the full detailed competition brief pack. After the allotted time the students must hand up their submissions which must include their power point presentation.
3. The students were then asked to give their 15-minute presentation to the Industrial Panel. The Industrial panel assessed the teams with the assessment matrix Table 1.1
4. Based on the outcome from the assessment matrix Table 1.1 the top three teams were brought forward to be interviewed and questioned by the Industrial Panel to defend their submissions. The Industrial panel assessed the teams again with the assessment matric Table 1.2

The competition (based on this year's competition brief) was assessed by the industrial panel with the following criteria:

Table 1.1   **Presentations to Industrial Panel**

Site Layout
Traffic Management
Delivery Systems
Budget/Cost Control
Risk assessment
Planning/Programme
Strategy
Curve Ball (Challenge given to student midway through lockdown)
Presentation Skills
Wow Factor

Table 1.2   Final Presentations to Industrial Panel

Response to Pressure
Team Togetherness
Quality of Answers

Analysis and Findings

This paper aims to demonstrate a method of motivating students to engage in formative assessment as a tool for achieving learning outcomes. More specifically, the authors will explore one formative tool used in practice as an additional aid to summative assessment with third level students in a tutorial environment.

The overall aim of the research was to endeavour to gather the findings, reflect and contribute to the following key questions:

1) In terms of a learning experience, what do students "take away" from the Student Competition Experience and what is the motivation for partaking.
2) What aspects of the students course studies to date that they felt were of considerable benefit to them during the Competition Experience
3) What aspects of the students course studies to date that they felt were lacking that might have hindered them during the Competition Experience

Learning Experience and Motivation.

In terms of learning the competition provided students with an experience in a number of areas, which encompassed not just the theory previously covered in their modules to date, but also other skills such as working networking.

Networking and meeting other academic university /industry (future studies and employment opportunities)

Students also got an opportunity to test their creative skills and critical thinking under pressure.

"I had never felt that kind of pressure before".

Following analysis of the surveyed responses a number of key skills were highlighted such as *Communication Skills*; *Teamwork*; *Presentational Skills* and *Time Management*. The majority of the students identified that they expanded their knowledge through the competition experience and added their skills and attributes were tested. All participates unanimously identified the competition to be a *unique learning experience* that they had never experienced before an environment where they got to test their skills in a stressful yet positive way.

It was also felt that the lack of warning (competition brief only being released on the day) gave all students an equal footing in the competition. Students commented that if advanced warning this would have meant that teams would be at differing levels of preparation. Additionally, students felt that the lack of warning ensured they were able to self-assess their own knowledge in a very tangible way.

Although most students reported challenges at some point during the experience the feedback was mainly positive and referred in various ways to a great sense of pride and personal achievement having taken part.

When probed about what motivated the student to take part in the Student Competition there was a repeating theme from the analysis. Maslow's theory of human needs and motivation was supported by the research with over half of

the students surveyed stating they wanted the *"Challenge"* but there were a number of other factors uncovered such as *The Internationalism*; *Fun Learning Experience*; *To Feel the Pressure of a Real Project* and *Winning*.

> *"The competition definitely helped- the prize was not the motivation, the competitive element is what got me interested- I wanted to test my skills and win!!"*

What aspects of Studies Benefit or are Lacking?

The students were asked, which (if any) of the module learning outcomes were being formatively assessed on the day. Students reported that demonstrating developed and strengthened analytical and critical thinking skills were the underlying principles.

Also the skill sets students found that equipped them for taking on the challenge of the Student Competition were: *Estimating and Scheduling*; *Programming* and *Law*. The importance of *communication skills* cannot be denied and their ability to *Work in a Group*. They also found *LEED* a very useful Knowledge base to draw from, which again supports the Internationalism of our programmes.

When probed about an area of weakness in the skill set of the students all those surveyed said that overall they did not experience weaknesses per say. It was the students feel that the focus on the engineering knowledge could be stronger and that they lacked *structural knowledge*. Another area that was highlighted as an area for improvement was the importance of *time management*. The students were aware of procedures and processes but again felt that they lacked knowledge and awareness for *International construction practices and terminology.*
The research also highlighted that some skill sets highlighted as benefits by students were also highlighted as missing within other student's programmes. *Programming* and *Law* and Communication *Skills*

The research participants were asked to reflect upon the competition as a whole and by means of assistance to future students, contribute advice to any student who may be contemplating whether to get involved with a Student Competition. "*Do it!"* was the overwhelming response. This was elaborated and supported with "*Grab the opportunity with both hands*". The conclusion to the advice forms not only advice for students considering a student competition but also advice for the professional working world ahead "*Expect the unexpected*" "*Work hard*" and "*Have fun*"

Coaches Perceptions of Learning Experience

The coaches believe that student competition gives students the opportunity to experience real life scenarios prior to graduation. It offers the students an opportunity to learn to cope with setbacks and developing alternative strategies. The coaches realise that this may be the student's first attempt to undertake a group project of this nature with strict time restrictions. Most students do not understand or under estimate the amount of work or size of their project at the start of the day, which causes challenges for the students in planning. The coach's highlight this can help student learn how to deal with teamwork and personality issue.

> *"Deal with teamwork and personality issues"*

The coaches identified the student competition as a tremendous learning experience for the students. The setting offers the students an opportunity to consolidate their theoretical knowledge on the program and put their learning into a real context.

"Practice Based Learning"

The actual value of the competition to the student form the coach's perspective is that learning experience itself, through their active participation during the process to develop and demonstrate analytical, judgmental, presentation and communication skills.

"Valuable contribution to the overall student learning experience"

Experiential learning is often used synonymously with the term "experiential education", but while experiential education is a broader philosophy of education, experiential learning considers the individual learning process. As such, compared to experiential education, experiential learning is concerned with more concrete issues related to the learner and the learning context, with this in mind winning and losing will be part of a student's future.

Reflection and Recommendations

 "What we have to learn to do, we learn by doing" - Aristotle

The general concept of learning through experience is ancient. Experiential learning requires self-initiative, an "intention to learn" and an "active phase of learning". This paper is based on findings from a research project that reflected upon a case study research experience of past students and coaches whom have gone through the ASC Region 8 competition experience. This paper demonstrated a method of motivating students to engage in formative assessment as a tool for achieving learning outcomes. More specifically, a "Student competition".
Do pressured induced environment and recreation of pressured deadline driven environments of the real world benefit the student for the "real world "experience. The research probed into this question.
The key findings of the research suggest that the student's belief that the overall student competition was indeed a very worthwhile learning experience and an excellent way of expanding their knowledge in their chosen field. The feedback, comments and recommendations reflect the students' satisfaction and delight with the learning process, and their overall learning experience throughout. However, the research also highlighted some challenges for students.
It was the students feel that the focus on the engineering knowledge could be stronger and that they lacked structural knowledge. Another area highlighted as an area for improvement was the importance of time management. The students were aware of procedures and processes but again felt that they lacked knowledge and awareness for International construction practices and terminology.

Graduates from some professional courses are often described by employers as lacking in useful immediately skills. According to Vignali (2007) it is essential that higher education be responsible to provide its graduates the skills to be able to operate professionally within the work environment. A very important and valuable finding was unveiled from the Industrial Contracting Panel. When it came down to having to separate and judge who shall take the lead; how to distinguish between the best of the best, it was not judged on a team's technical ability but from a different set of attributes. Response to Pressure; Team Togetherness and the WOW factor. This would support findings from the Carnegie Institute of Technology, which puts forward that "85% of your financial success is due to your personality and ability to communicate, negotiate and lead. Shockingly, only 15% is due to technical knowledge."

According to Slotte and Tynjala (2003), employees who cannot network with others to share and construct knowledge will fall visibly behind their peers in the possession of such abilities. Interaction between novices and experts is also of crucial importance in learning. Curricula need to be evaluated for the desired outcomes to be

achieved in the Construction Management Programmes need to be mindful of the competencies that are required when preparing students for the workplace and their employability on completion of their qualifications. Rainsbury (2002) discusses the importance of the work-integrated learning experience cannot be denied as students will be exposed to realities and the competencies that they require in the work place.
Some recommendations put forward for consideration are to increase the amount of Structural focus within the construction management programmes. Review how we are embedding the significance and competence of "Communication skills"

Going forward Program Teams need to reflect on the overall experience of students and refined certain areas within the program in order to develop and enhance the student learning experience to its full potential. When looking at the results from the analysis it is interesting to note that some of the skills and attributes come up in both what assisted the student and what hindered the student. Thus telling us that the programming of construction programmes should be more aligned to ensure that the students across all construction management programmes are being equipped with the same tools to perform their roles on an international world.

Albeit that evidence base is on only one cohorts experience so far, there is solid evidence that all involved with the competition experience to date believe that a vital source of knowledge is experience. One student in particular put forward a very profound viewpoint about his student competition experience that the authors believe is very applicable not only to the competition but that also for our future "Winning is Good- Learning is Better!"

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