

# A Reflection on Delivering a Game Specific Course on a Common Entry Programme.

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Over the last number of years many Irish higher level educational institutes have moved to replace their once ubiquitous direct entry routes into undergraduate programmes with less direct common entry routes. Those advocating this move highlight several benefits, such as providing students with additional time to choose their specialisation and reducing the demand for entry into programmes. While this may be the case, in this paper I reflect on some of the challenges I have faced when delivering a game design course as part of a common entry programme.

CCS Concepts: • **Applied computing** → **Education; Computer games.**

Additional Key Words and Phrases: game design, education, student engagement

## ACM Reference Format:

James Vincent Patten. 2022. A Reflection on Delivering a Game Specific Course on a Common Entry Programme.. 1, 1 (August 2022), 6 pages. <https://doi.org/10.1145/nnnnnnn.nnnnnnn>

## 1 INTRODUCTION

In recent years, Irish universities have increasingly transitioned entry into their undergraduate programmes from a direct route to what is generally referred to as a common entry route. When entering a programme through a direct entry route, an applicant joins their chosen specialisation, for example a Bachelor of Science in Computer Game Development, on day one and remains on the same programme until they complete their degree four years later. In the case of a common entry route however, an applicant spends their first year on a more general programme before transferring to their chosen specialisation for the remaining years of their degree.

The transition from direct to common entry routes was something prioritised by the Irish Department of Education and as they are the principle funder of Irish universities one can understand why many embraced the transition. There were several advantages highlighted by those in favour of the transition, for example:

- It would give undecided students more time to choose which particular programme specialisation they wanted to ultimately join [2].
- It would help to reduce the points (which are awarded based on a student's performance in their final high school exams) required for entry into programmes [7].

While this may indeed be an accurate assertion, I have encountered a range of challenges during my time as an academic with responsibility for delivering a specialised course, namely an introduction to game design and development, as part of a common entry Computer Science programme.

I have been an academic in the Department of Computer Science and Information Systems (CSIS) at the University of Limerick in Ireland for a number of years and in this role I was responsible for designing and

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XXXX-XXXX/2022/8-ART \$15.00

<https://doi.org/10.1145/nnnnnnn.nnnnnnn>

delivering a range of computer science (CS) courses on both undergraduate and postgraduate programmes. Several of these courses have a focus on aspects of game design and development, covering topics such as: storytelling and narrative, 2D and 3D level design, and artificial intelligence. One of these courses in particular, CS4043: Games Modeling Design<sup>1</sup>, is the focus of the remainder of this paper. CS4043 is a course designed to introduce participants to a range of fundamental game design and development topics. In the discussion which follows particular attention is paid to the apparent impact when CS4043 was transitioned from a direct entry programme route to a common entry one.

The remainder of this paper is laid out as follows: Firstly, in Section 2 an overview of CS4043 is presented; following this in Section 3, a number of observations made when CS4043 was transitioned from a direct to common entry route are presented; finally, in Section 4, a conclusion is presented.

## 2 BACKGROUND

CS4043 was first delivered in the 2006/07 academic year as part of a new direct entry undergraduate programme, from which participants would graduate with a Bachelor of Science (BSc.) in Multimedia and Computer Games Development. This programme was designed with a strong technical computer science (CS) core in order to ensure that participants were given an opportunity to develop a range of skills and competencies required for establishing a successful career in either the game development industry or other more mainstream software industries. In this context CS4043 was one of a number of specialised game design and development courses delivered as part of the four year programme. With each year in turn consisting of two 15 week semesters, with participants being required to complete five prescribed courses per semester. While CS4043 has undergone a number of revisions in the intervening 14 years, by a range of CSIS faculty members in the role of course leader, its stated learning outcomes (LOs) remain the same, which are:

- (1) Formally describe expectations for games and game playing.
- (2) Use an existing game framework to produce a simple game.
- (3) Formally describe game concepts.
- (4) Understand the various contributing factors to meaningful play.
- (5) Conduct analysis of a game.
- (6) Construct clear documentation for a game.
- (7) Discuss various story telling techniques.

In order to help students successfully achieve these LOs, activities were designed to take place during allocated classroom times (lecture hall and smaller lab and tutorial group sessions) as well as private study session times during which participants would work individually or as part of a team to complete specifically assigned tasks and exercises.

## 3 DISCUSSION

When CS4043 was first delivered in the 2006/07 academic year it had a modest intake of approximately 15 participants. This intake increased over time as the popularity of the programme it was delivered on grew, reaching a high point in the 2012/13 academic year with an intake of 53 participants. The annual intake remained reasonable stable until the 2018/19 academic year, one year after the common entry route was introduced. A summary of the intake numbers from when CS4043 was first introduced in 2006/07 until the most recent academic year (2021/22) can be found in Table 1. It should be noted that from 2017/18 onward, the numbers stated are those of participant who choose to continue with the BSc Computer Games Development in year two, after completing year one of the common entry programme.

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<sup>1</sup>referred to as CS4043 for the remainder of this paper

Table 1. CS4043 participant intake numbers from when course was first delivered in the 2006/07 academic year until the most recent (2021/22) academic year.

Academic Year	Semester	Programme Name	Registered Participants
2006/7	1	Multimedia and Computer Games Development	15
2007/8	1	Multimedia and Computer Games Development	26
2008/9	1	Multimedia and Computer Games Development	28
2009/10	1	Multimedia and Computer Games Development	18
2010/11	1	Multimedia and Computer Games Development	24
2011/12	1	Computer Games Development	37
2012/13	2	Computer Games Development	53
2013/14	2	Computer Games Development	43
2014/15	2	Computer Games Development	53
2015/16	2	Computer Games Development	33
2016/17	2	Computer Games Development	31
2017/18	2	Computer Games Development	42
2018/19	2	Computer Games Development	21
2019/20	2	Computer Games Development	28
2020/21	2	Computer Games Development	14
2021/22	2	Computer Games Development	21

In 2016 a decision was made to move the BSc. Computer Games Development into a common entry programme, along with two other previously direct entry programmes: BSc. Computer Systems and BSc. in Cyber Security and IT Forensics. In this new context participants applied to join Computer Science Common Entry in year one before choosing which of the three available specialisations to join from year two until the end of their degree in year four.

While the evidence may be somewhat anecdotal there does seem to have been a visible negative impact on the participant intake into the Computer Games Development specialisation when the programme was transitioned from direct to common entry. This is perhaps clearer when looking at the summary of the course intake over both periods, as can be seen in Figure 1.

While CS4043 was generally well received by those intending to take the BSc. Computer Games Development route (as evidenced by feedback in student evaluation of teaching (SET) surveys, informal discussions in class and student interviews conducted as part of the annual review of the programme it was delivered on), there is noticeably less engagement and enthusiasm for CS4043 among those not intending to take the BSc. Computer Games Development route.

While play and games are steeped in imagination, creativity and pretending [8], the formal process of game design and development, from the specification of an initial idea all the way to the production of a final tangible game artefact, is such that there exists a commonly used vocabulary or vernacular. The ability of participants to develop a competency with this vocabulary underpins their ability to not only express their own game ideas but also to critically analyse those of others and more generally to communicate effectively with their game design and development peers. As such it was important to help participants develop this vocabulary, but for some participants the later usefulness of this vocabulary seemed to temper their enthusiasm for CS4043. The activities of CS4043 were additionally designed to ensure exposure of participants to a range of theories related to “fun” and “entertainment”. Theories such as those of Koster [5], Hunnicke et al. [4] and Csikszentmihalyi [3],

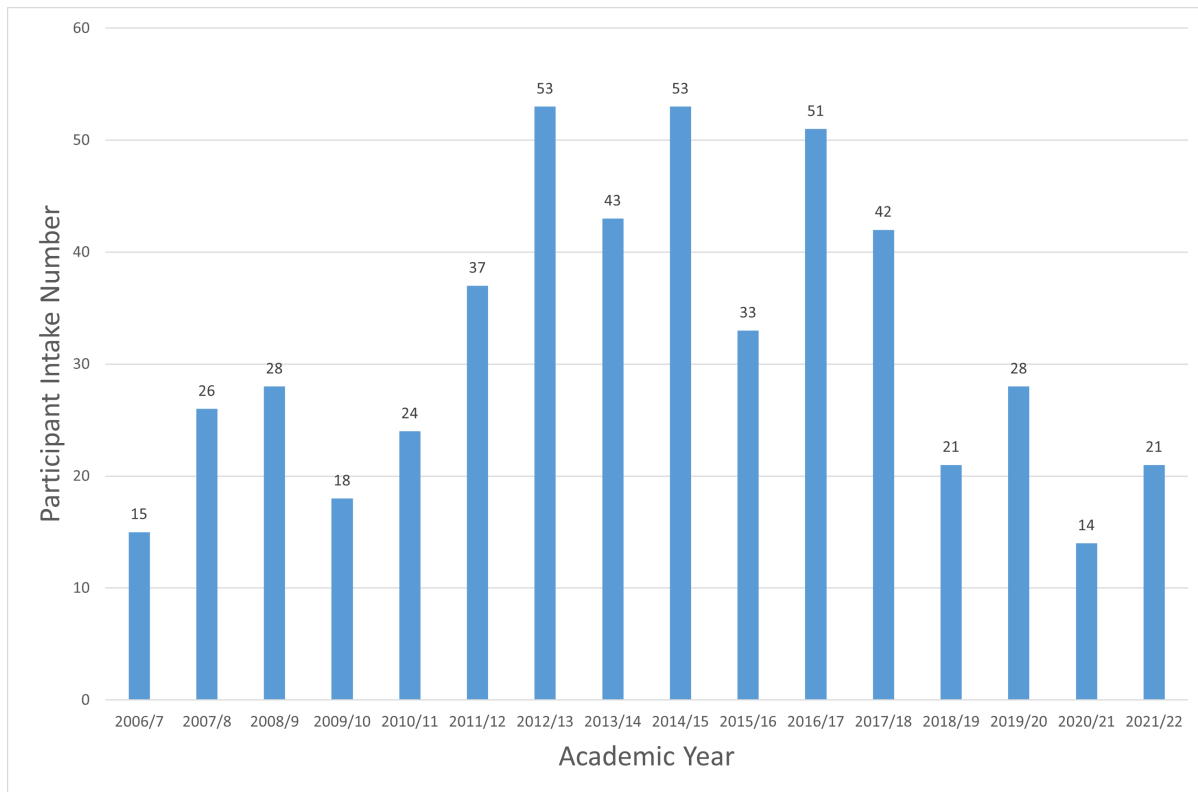


Fig. 1. Participant intake numbers for CS4043 from its first delivery in the 2006/7 academic year until present.

and how they can be used to both design opportunities fun in new games and evaluate the presence, or lack thereof, fun in existing games.

In order to make CS4043 as engaging and accessible as possible for all participants a range of educational principles, pedagogical best practices, were also followed. Principles such as ensuring there was constructive alignment, or a “web of consistency” Briggs [1], used in which participants were entrapped and provide them with opportunities to engage in appropriate learning activities. Briggs further outlined the importance of aligning teaching/learning activities (TLAs) and assessments tasks with a given set of curriculum objectives. The primary TLAs for CS4043 are weekly live (face to face or video conference) lecture and computer lab sessions, each of which runs for approximately two hours. Prior to each session participants will be required to complete a short (approx. 15 mins) preparatory activity. Activities are aligned to the topic of a given week and will range from analysing a set of gameplay videos to reviewing a lab exercise.

CS4043 also used a “blended learning” approach with an integrated learning management system being used to host the preparatory activities as well as a set of forum topics for post lecture/lab discussions (asking questions, providing insights, and more generally discussing materials and concepts with peers). This is designed to support what LittleJohn et al. [6] called “wrapping” between the in class and online activities, which can foster deeper engagement with the materials.

Each lecture began with a belief review of the previous week’s learning outcomes and address any pertinent questions raised in the integrated learning management system forums. After this I delivered a presentation

covering the key terms, theories, and techniques and other relevant materials for the topic in question. At pertinent points during the lecture participants were asked to respond to questions posed or to offer insights and/or opinions.

Tools such as the Wheel of Names, Mentimeter and Polls integrated into the learning management system were used. Wheel of Names to randomly select a participant and Mentimeter to conduct polls and quizzes (both tools can be used in either a face to face or video conferencing session). Polls were only to be used in video conference sessions. Responses statistics (% of participants that respond, % of responses that are correct or incorrect, mean time taken to respond, etc.) shall be used as a rudimentary means of measuring certain LOs. LO1, LO4, LO5 and LO13 all relate to participants being able to “Demonstrate an understanding” and an appropriately designed multiple-choice quiz could test this understanding. It was also proposed to use Microsoft Forms and the Word Cloud feature of Mentimeter, on occasion, for more free text entry type activities. There are of course challenges and compromises with each of these approaches.

It has been my experience that in semester two of year one many participants are still making the transition from the post-primary to the third level paradigm and so I tried to design the TLAs for CS4043 in a manner and sequence which takes account of this. I also endeavoured to design the delivery of the course to support active learning and allow participants to engage with the module materials in a manner which fosters critical thinking. In addition to this I also tried to incorporate opportunities for participants to build their own knowledge through engagement with not only the course materials but also their peers. This approach being very much aligned to the “social constructivism” theories of Vygotsky [9] which highlight learning as being a collaborative process.

#### 4 CONCLUSION

A great deal of time and effort was expended designing all aspects of CS4043 in the hopes of making it as accessible and engaging as possible for all participants, regardless of what specialisation they might be considering at the end of their common first year. Despite this there does seem to be a greater level of disconnect and lack of engagement among those who are not intent on choosing the BSc. Computer Game Development programme route. While there is scope to further optimize and improve the materials and engagements designed for CS4043 one cannot help but feel that the specialist nature of the subject area plays an important role in the level of disconnect some participants feel with the course materials. This would seem to be evidenced by aspects of the feedback received as part of the annual student evaluation of teaching (SET) survey. It is a regular occurrence that while a student might be relatively satisfied with the course delivery they explicitly question the relevance of it to their chosen programme specialisation. A caveat being that completion of the SET survey is not compulsory and so the participants who complete it tend to have strong (either positive or negative) opinions about the course.

Attempting to design CS4043 in a manner which makes it engaging and accessible for all participants does also seem to effect the engagement of some students that have a keen interest in game design and development. Again referring to the annual SET survey there has been instances where feedback related to the rudimentary nature of the game design content covered on course, despite it being an introductory one.

Balancing the concerns of two distinct groups of participants, those wishing to pursue the BSc. Computer Games Development and those that do not is a challenging and ongoing task which required further study.

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