

2014-6

Teaching the Principles of Effective Online Course Design: What Works?

Clare Gormley

National University of Ireland, Galway, clare.gormley@gmail.com

Follow this and additional works at: <https://arrow.tudublin.ie/ijap>

Recommended Citation

Gormley, Clare (2014) "Teaching the Principles of Effective Online Course Design: What Works?," *Irish Journal of Academic Practice*: Vol. 3: Iss. 1, Article 3.

doi:10.21427/D7JM8D

Available at: <https://arrow.tudublin.ie/ijap/vol3/iss1/3>

Creative Commons License



This work is licensed under a [Creative Commons Attribution-NonCommercial-Share Alike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).

Teaching the Principles of Effective Online Course Design: What Works?

Clare Gormley

National University of Ireland, Galway

Abstract

While much has been written about the pedagogy and challenges of online learning, there is comparatively little research that advises how online course design competencies can be achieved. Certainly a growing range of course design resources is being created and made openly available, but there is a need to evaluate their actual impact on practice. This predominantly qualitative study describes the impact of two learning interventions – open online tutorials and a design and development workshop – aimed at introducing the fundamentals of online course design. Four online course developers at an Irish university were interviewed about their experiences creating multimedia-based online courses. Two of the developers were given access to targeted learning interventions and were subsequently interviewed about their experiences using those interventions. The main findings were that novice online course developers can potentially learn and apply design principles through a dedicated introductory phase, techniques that promote discussion of effective pedagogy, and ongoing collaboration in course design. These strategies could be adapted to specific contexts elsewhere.

Keywords: eLearning, Instructional Design, Open Educational Resources, OERs, Online course design, Online course development, Pedagogy

Introduction

The overarching purpose of Instructional Design (ID) is to create environments and activities that will help students learn. Therefore knowing about ID and related pedagogy could potentially help teachers create genuinely engaging and effective online learning experiences. The question is: how should ID be taught to encourage course creators to put its principles into practice?

According to recent US research, no single approach is being taken by institutions in relation to training for those teaching online. Most commonly, this type of training is made available through internally run courses and informal mentoring initiatives (Allen & Seaman, 2011). This would seem to be the case in Ireland also with most course design training being institutional- and project-specific, and chiefly disseminated through conferences and local initiatives.

This study evaluated the effectiveness of the course design training programme at one Irish higher education institution. The study was primarily qualitative, involving interviews with a sample of individuals who had been engaged as online course developers. The purpose of the research was to:

- Explore issues relating to the design of online learning today
- Investigate the experiences of novice online course developers
- Design and implement a training programme for online course developers
- Evaluate the effectiveness of the above training programme

Context and Rationale

The course developers in this context are responsible for updating modules for a Masters in Software Engineering & Database Technologies (MScSED) qualification. This course, which is offered through the *IT Online* (<http://www.nuigalway.ie/itonline/>) programme, has been running since 2004 and is delivered wholly online. While static learning materials (such as PowerPoint presentations) were employed initially, multimedia features were introduced in 2010 to enhance the learning experience for students. Since then, the Articulate® Studio '09 eLearning authoring software has been used as the primary multimedia development tool. Developers are tasked with updating the content of existing learning materials and creating as engaging and effective a learning experience as possible. Developers are also responsible for designing activities and assessments that leverage the discussion forums for each module. In this context, a team-based approach is followed and course developers work with an academic advisor, an instructional designer, and a project manager to create the learning experience (Figure 1).

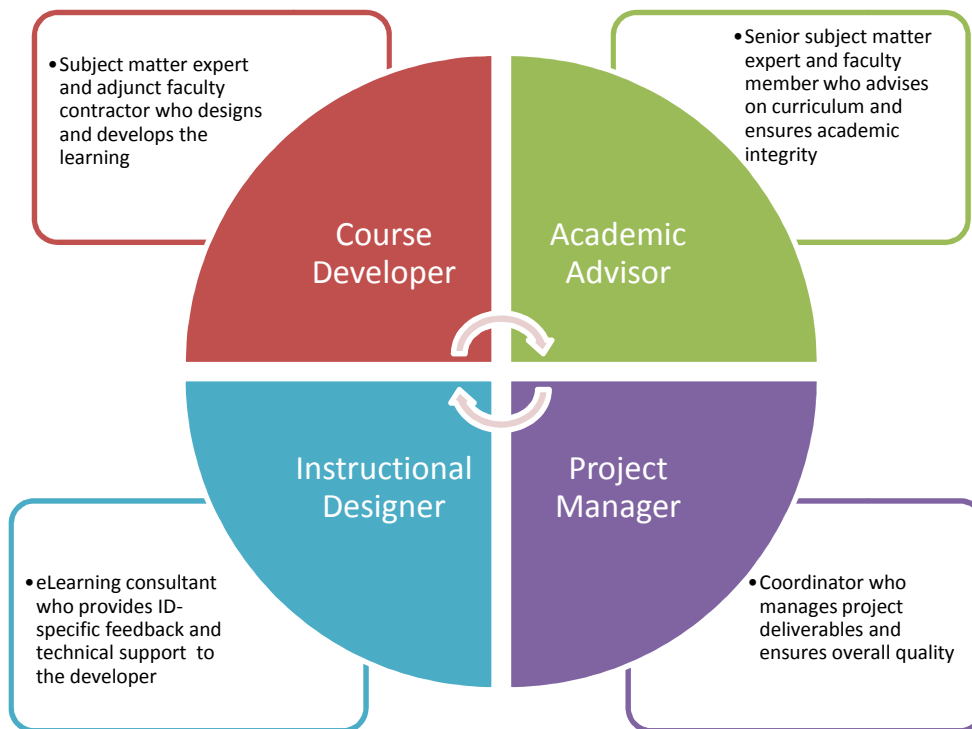


Figure 1 Members of the Course Development Team

This paper reviews the literature, introduces the research participants, and describes the learning interventions created. By interviewing developers who have used these interventions, it then aims to establish the impact of those strategies from a course design perspective.

Literature Review

A review of the literature confirms the importance of interactivity in teaching. Chickering & Ehrmann (1996) found that good teaching practice should include communication between learners and faculty, collaboration amongst learners, active learning techniques, and frequent, timely feedback. Moore (1989) makes a similar argument for interactivity in an online environment when he wrote about the three types of interaction that should be considered - interaction with content, interaction with instructors, and interaction with peers.

Unfortunately it appears that those elements are frequently missing from the online courses offered to students today. For example, a recent study into third-level online teaching and learning experiences revealed an emphasis on text-based content, little interaction with others, and limited variation in instructional modes or media (Boling, Hough, Krinsky, Saleem, & Stevens, 2012). This echoes earlier research (Hashim, 1999; Salter, Richards, & Carey, 2004) and suggests that many online courses tend to focus simply on presenting content online, offering little or no opportunity for interactivity and active learning.

The advent of Web 2.0 appears to have done very little to change this situation. Despite the exciting opportunities for user engagement and collaboration offered by such technologies, there is a marked gap between their potential and their actual use by teachers in practice (Conole, 2010). According to the Boling *et al.* (2012) study, it is possible that some

technologies are not being used because instructors do not know how to use them or they do not align with instructors' current, often conservative, philosophy of learning.

Most faculty adopt a “craft approach” whereby the teacher simply adopts the model that they are familiar with (the classroom) and attempts to duplicate that in an online context, with “limited positive results” (Moller *et al.*, 2008, p.69). The authors therefore argue that training in ID should be available and should be required for faculty designing online courses. More recently, Morrison (2013) makes a similar plea for ID, declaring that “Instructional Design methods are essential to online course development so that the focus is on student learning, not on the technology or the platform”.

The Role of Instructional Design

Instructional Design (ID) can be broadly described as a “systematic and reflective process of translating principles of learning and instruction into plans for instructional materials, activities, information resources & evaluation” (Smith & Ragan, 1999, p.2). Reigeluth describes instructional design as being “concerned primarily with prescribing optimal methods of instruction to bring about desired changes in student knowledge and skills” (Reigeluth, 1983, p.4).

Robert Gagné's Nine Events of Instruction were developed to initiate the internal processing activities that will result in learning (Gagné, Wager, Golas, & Keller, 2004). Offering a clearly-defined framework that is applicable across multiple disciplines, there is evidence in the literature to support the use of Gagné's Nine Events in the design of online learning materials (Lawson, 1974; Theng, 2011; Zhu & St. Amant, 2010). However, while there are advantages, and the model is particularly clear for novices seeking a starting point, there is

significant criticism of the ID approach that must be acknowledged. It is sometimes viewed as being excessively rigid and having an excessive focus on behavioural psychology (Gordon & Zemke, 2000); it has been accused of promoting “dull” eLearning which does not inspire creativity (Clark, 2006); and critically, it has been argued that ID does not always help the teacher to design instruction that facilitates deep rather than surface learning (Hakkinen, 2002). Hakkinen also calls for the field to “seriously recognize the importance of participatory and collaborative modes of designing” (p.466).

The Role of Learning Design

The field of Learning Design may help to address such concerns. “Learning design has developed as a means of helping teachers make informed choices in terms of creating pedagogically effective learning interventions that make effective use of new technologies” (Conole, 2013, p.118). While a detailed discussion of Learning Design and its growing range of software systems/technologies is beyond the scope of this research, key principles are to develop a standard notation and tools that will better enable teachers to create and share sound learning ideas (Dalziel, 2012). However it should be noted that there is an increasing body of research (Kali, Goodyear & Markauskaite, 2011) that argues that Learning Design initiatives must also take account of teachers’ institutional contexts as pedagogical beliefs will differ in different settings (as cited in Agostinho, Bennett, Lockyer, & Harper, 2011). The Seven Cs of Learning Design has been developed as a potential framework for those considering and possibly cherry picking aspects of this approach. This framework “illustrates the key stages involved in the design process, from initial conceptualisation of a learning intervention through to trialling and evaluating it in a real learning context” (Conole, 2014). The Conceptualise phase of this model provides techniques for articulating the desired pedagogy of a course or activity and will be explored later in this paper.

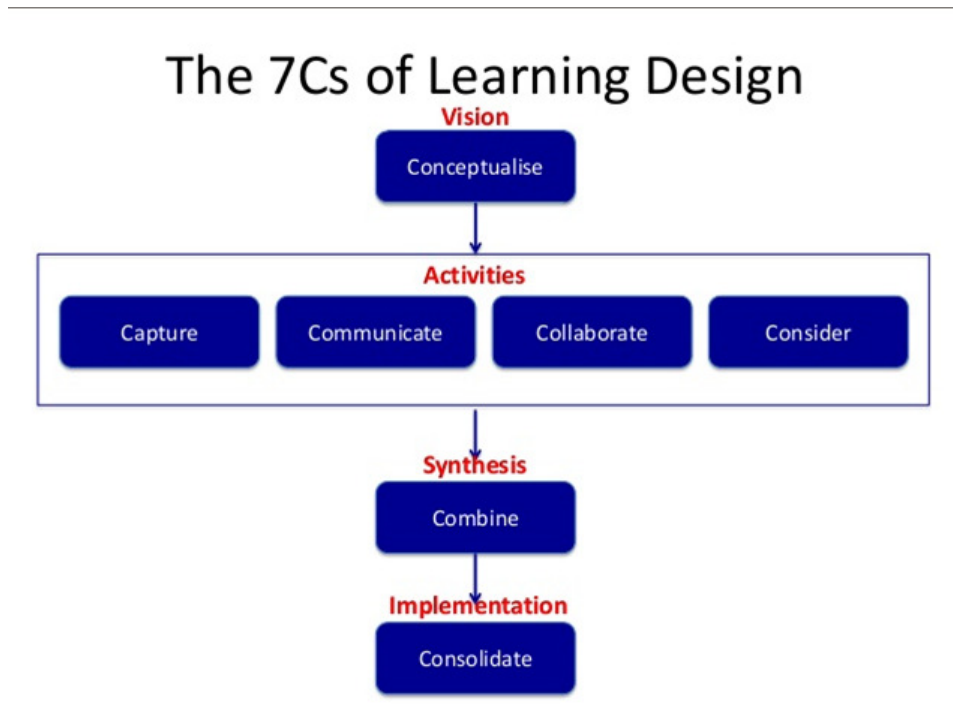


Figure 2 The 7Cs of Learning Design Model (Conole, 2014)

The Role of Professional Development

So far this review has outlined ‘how’ those responsible for creating courses can potentially approach designing an online learning experience. But the ‘when and where’ of that process is equally important. Research on this topic confirms that an effective programme of training must be designed with the working context of staff in mind (Donnelly & O’Rourke, 2007; Macdonald & Poniatowska, 2011; Oliver & Dempster, 2003). Academics who have previously been through the experience of developing online materials have said they would like to know more about the capabilities and potential of online media, develop their creativity in using the medium, and gain access to peers’ experiences in developing online materials (Torrissi & Davis, 2000, p.174). It is also important for academics who may be unfamiliar with technologies to learn *with* them, rather than about them (Kukulaska-Hulme, 2012).

The opportunity to learn from fellow staff engaged in development appears to have strong appeal for novice course designers in particular. One of the key benefits of a collaborative ‘Web Camp’ format at the University of Colorado was how it helped faculty avoid the drawbacks of designing courses in isolation, enabling participants to share ideas and discuss common concerns (Lowenthal & Thomas, 2010). Boling et al. also point out that “when faculty work together there is an opportunity to share ideas, study new technologies and build off each other’s courses” (Boling *et al.*, 2012, p.121).

As this review has highlighted, ID and Learning Design methods offer a broad framework for avoiding common course design pitfalls such as information-centric, solitary, and static learning experiences. However for academics involved in developing online courses, the literature is clear that there also needs to be some form of training that takes account of professional context. A suitable programme of professional development should enable communication and discussion between peers, provide access to examples, and facilitate good practices around the application of learning technologies. The following sections describe a training programme that was developed with the intention of addressing the above concerns and how it has been evaluated to date.

Methodology

The research was carried out using a descriptive case study approach where a case study is “an empirical study that investigates a contemporary phenomenon in depth and with its real-life context” (Yin, 2009, p.18). The researcher was also the instructional designer on the course development team and therefore had a prior working relationship with the research participants. Informed consent was requested from each participant and the project complied with DIT’s research ethics guidelines.

The case being studied here involved a group of part-time adjunct faculty who had previously or were currently engaged in updating modules for the IT Online programme. The sample was comprised of four individuals who were selected to discuss their experiences of developing multimedia materials for online delivery on this programme. They were asked to participate in this research because they had participated in the most recent module redevelopment projects and shared in common the fact that they were all new to multimedia online course design. This group was therefore classified as novice or new online course developers.

All members of the group had technical subject matter expertise and various forms of teaching experience. Some members had also acted as online course facilitators (i.e. online tutors) as outlined in the brief profiles below (note that pseudonyms are used):

- Karen is a manager in the IT industry who is also an experienced online facilitator on the IT Online programme. She had some prior experience with designing online learning using PowerPoint-based materials.
- John is a full-time PhD student who tutors and provides programming support to students. He had no prior experience with designing online learning.
- Brian is a lecturer in IT who is also an experienced facilitator on the IT Online and other online courses. He had no prior experience with designing online learning.
- Joan is a lecturer in Engineering, Computing & Maths and also an experienced online facilitator. She had no prior experience with designing online learning.

Overview of the Interventions Developed

Two targeted learning interventions were devised: **eLearning Developer Tutorials** (<http://elearningtoolkit.pbworks.com>) and a **Module Design and Development workshop**.

These interventions were developed to address a range of ID-related issues that the instructional designer had documented during reviews of previously developed content (Course Developers/ Gormley, personal communication, 2010-2012). These issues were frequently similar to those identified in the literature review, including limited variety in learning media and strategies, few collaboration and interaction opportunities, and overemphasis on information delivery. By providing appropriate preparatory training that addressed these types of problems, it was hoped that many of them could be avoided and rework time could be reduced.

The eLearning Developer tutorials were developed by the researcher. The overarching objective of the three tutorials was to provide developers with a foundation in the key principles of effective online course design. The three introductory tutorials focus on the following topics:

- **Introducing Instructional Design (ID)** explains what ID is and why it is considered important. This tutorial includes an overview of the Analyse, Design, Develop, Implementation, Evaluation (ADDIE) model (Gagné *et al.*, 2004) and a refresher on Bloom's taxonomy (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956). It also provides an introduction to Open Educational Resources (OERs), and includes directions on how to find further resources on the eLearning Toolkit.
- **How to Design Effective eLearning** covers important aspects of online course design, emphasising the criticality of student-student and student-facilitator interaction in effective learning. It describes traditional approaches from the field of Instructional Design, recent collaborative approaches from the field of Learning Design, and introduces the concept of storyboarding. An interactive quiz on designing eLearning is included.

- **Create Effective Materials with PowerPoint and Articulate** highlights seven “top tips” for designing & developing materials using PowerPoint & Articulate. It provides a review of the key points covered in the other two tutorials.

Informed by the literature and the researcher’s studies, these multimedia tutorials were designed to avoid a passive, ‘information dump’ approach (Moore, 2010) by using a variety of media and task-oriented activities to keep learners actively involved. For example, videos used surprise tactics and included well-respected speakers in an attempt to engage learners’ attention throughout (see Figures 3 and 4). Particular effort was also made to showcase some of the tools (such as wikis) that could be used to create collaborative and interactive learning activities. The tutorials were developed in online format so that the individual developers could take them at a time and place of their choosing, and could absorb and revisit concepts as needed. Developers were asked to take the three tutorials in the weeks preceding the Module Design & Development workshop as preparation for that event.



Figure 3 Awareness Test Highlighting the Role of ID

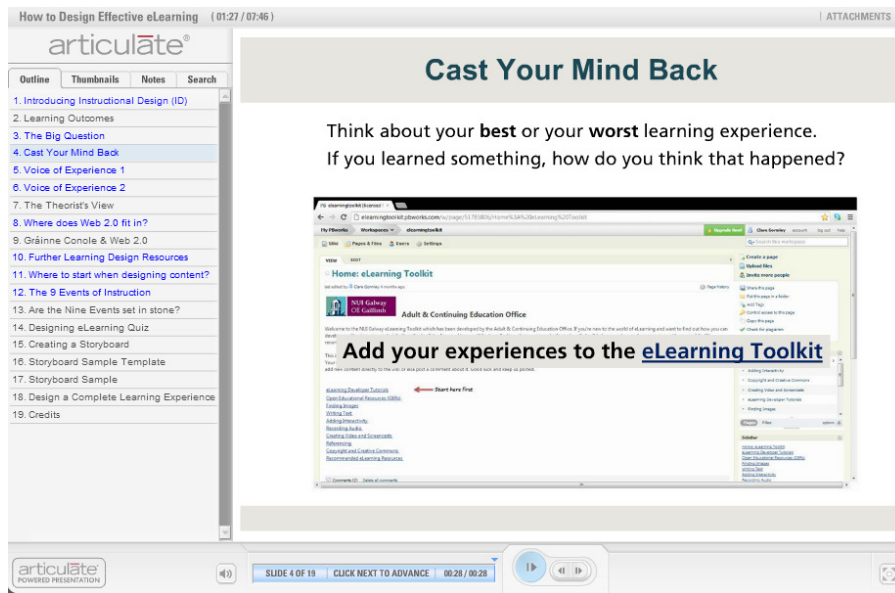


Figure 4 Wiki Activity to Encourage Active Learning

The Module Design & Development workshop was developed as the next stage in the learning cycle for the new developers. This two-day workshop was jointly devised and facilitated by the researcher and the IT Online project manager. The overall objective of the workshop was to prepare developers for their imminent redevelopment projects and start on critical tasks. Drawing on the collaborative philosophy of Learning Design, it set out to enable each team to:

- Conceptualise a design for each module (i.e. discuss who it is being designed for and potential pedagogical approaches)
- Create module aims that describe the broad scope of each module
- Create a high-level overview linking module aims, potential learning activities and potential assessments
- Draft specific learning outcomes for each module
- Capture potential Open Educational Resources (OERs) for reuse in modules
- Discuss and evaluate some potential tools for creating new content and activities
- Develop and share a draft storyboard for each module

For the Conceptualise activity, which is central to the 7 Cs of Learning Design (Conole, 2013), the Course Features Cards developed by the Open University Learning Design Initiative (OULDI) (<http://www.open.ac.uk/blogs/OULDI/>) were employed. For this, workshop participants were given a set of printed cards naming several possible pedagogical approaches (e.g. project-based learning, collaboration, ePortfolios) and worked in teams to discuss and select those that would be appropriate in their modules. The collaborative approach continued throughout subsequent workshop activities, each new topic being introduced with a short presentation before participants worked in groups or alone to complete the hands-on tasks. However, because of overruns on the day, the planned discussions about OERs and potential learning tools were very limited in time and had to be scaled back to approximately 30 minutes each. It should also be noted that as the workshop was held during term time, the academic advisors were not available for the entire workshop, meaning that at times developers worked individually on some of the activities.

Data Collection Methods

Data was collected through interviews and workshop feedback forms. To gain insight into the experiences of online course developers, one-to-one interviews were carried out. The purpose of the first set of interviews (with Karen, John and Brian) was primarily to validate and inform the approach being taken in the design of the new interventions. Once interviewed, John and Brian had no further involvement in the research project as they were not currently engaged in module redevelopment. The purpose of the second set of interviews (with Karen and Joan) was primarily to evaluate the effectiveness of the interventions. Therefore only the developers who had used them were interviewed on that topic. As Karen had experience of designing a course with and without the interventions, she was interviewed twice to inform both perspectives. In addition, post-workshop feedback forms were analysed.

Interview duration was 30 to 40 minutes. Interviews were mainly conducted via web conferencing tools, except for the interview with Joan which was carried out in face-to-face format at her request. Pre-intervention interviewees were specifically asked about their initial experience/knowledge of instructional design, their experiences of designing and developing a module for the first time, and their recommendations for training and support. Those who were interviewed after targeted interventions were made available were asked about their progress in the design process, the impact of the training interventions, and how they could potentially be improved.

The diagram below (Figure 5) summarises the overall research design and the data collection methods that were used in this project.

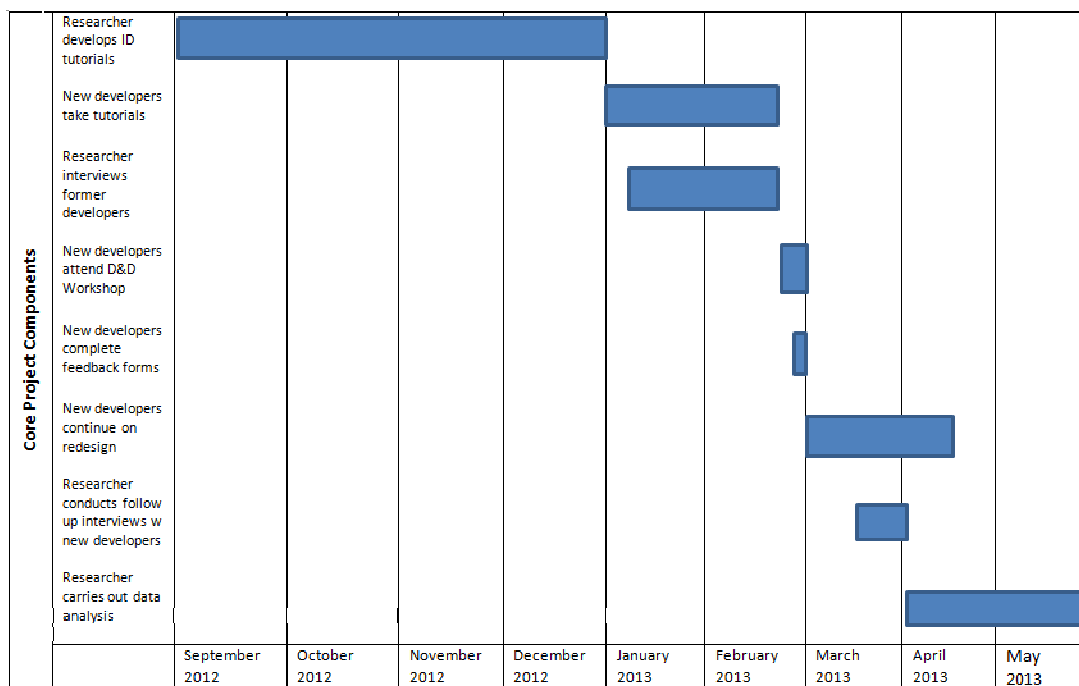


Figure 5 Overview of Research Design

Data Analysis Methods

All interviews and feedback form responses were transcribed and then imported into NVivo for analysis. Thematic coding was carried out using four stages of qualitative analysis

(Bryman, 2008) involving multiple readings of the text and code reviews. A critical friend reviewed the first set of codes to validate initial analysis. From these codes, the major themes were identified.

Findings

This section presents analysis of the key findings of the project according to those who had developed courses without specific training interventions (i.e. the pre-intervention group) and those who had used the interventions (i.e. the post-intervention group). It should be noted that although pre- and post-intervention statuses are discussed in this paper, it is not following a traditional experimental design.

Pre-intervention Findings

Little or no awareness of ID principles

None of the interviewees had worked with an instructional designer prior to their redevelopment projects or been formally introduced to the principles of Instructional Design. Although one of the interviewees had “some familiarity” (Karen, Interview 1) with the concept through prior studies, there was no indication that the sample had a common understanding of the purpose of the field and its relevance to online learning at the outset of their projects. Interviewees had either no familiarity at all with the concept initially or they had their own preconceptions as to what it was all about: “I had an idea in my head of what I thought it would be - developing materials that were well laid out in order to teach them online” (John).

Lot to Learn Initially

All interviewees reported that there was a vast amount of new information to absorb and apply in the initial stages of their projects. As well as adopting unfamiliar new processes, interviewees recalled how they had to identify where content updates were required, select appropriate learning software, learn new multimedia development skills, and work out how to most effectively group and align content. Furthermore, interviewees also felt under pressure to produce professional-looking courses that were consistently and clearly laid out. As a result of all the above, the time investment involved took all of the interviewees by surprise:

You want to do a very professional job and you want to provide content that is up-to-date and precise and you also have the additional weight of effectively presenting and designing it so that it looks well. I certainly underestimated the amount of time involved in all of that (Brian).

Mixed Abilities Using Tools

In general, there were mixed skills and comfort levels with the educational tools that were employed. John was experienced with some of the tools and therefore comfortable using them, but others described how they had weaknesses in that area and didn't fully appreciate the potential of the Articulate software at the outset. "I would go as far as to say that at the early stages I didn't really consider the tools that Articulate provided, like Quiz maker, Screenr and the tools for making the purely Flash-based slides such as Engage" (Brian).

Multimedia production issues were also frequently cited and even those with some experience creating multimedia found it sometimes challenging to create. In particular, issues around audio quality and the time it takes to narrate and record materials were noted as problematic. (Karen, Interview 1 and John) Karen suggested that allowing time for practice on non-course related, light-hearted topics might help developers learn and practice basic multimedia development skills.

Mixed Reaction to the Design Approach

There were differences of opinion on the online course design process that was employed prior to the targeted interventions. Karen (Interview 1) objected to what she viewed as a somewhat “rigid” and “narrow” format that did not adapt to learners’ diverse and changing knowledge over time. In short, her philosophy was to facilitate student interaction and foster creativity in her teaching, and so she felt restricted by some of the conventions of the original course design process:

What I would like to have been able to do better was to create spaces to enable students to interact and to learn and to play with the materials.... to give them a bit of space for creativity (Karen, Interview 1).

Recalling her previous experience, Karen felt that she had made the mistake of moving too quickly into development and become enmeshed in relatively trivial details too quickly. She also found that although she originally had ideas for a project-based approach, these did not ultimately come to fruition and she was unsure why.

I think we had very clear, practical instructional design principles, but I don't think we had agreed the kind of learning that we wanted to create. I don't think we were clear enough on that and what the values around that were (Karen, Interview 1).

On the other hand, neither John nor Brian referred to the underlying pedagogy at all during their interviews. Their discussion focus was primarily on presentation and layout related matters and they broadly seemed to welcome the clarity and structure of a highly-specified approach.

The structure of it, the learning outcomes, the weekly activities... these were all planned out perfectly and I had something to fall back on and make sure I was going in the right direction... (John).

Value of Collaboration and Feedback Emphasised

At several points the importance of collaboration amongst the project team was highlighted. Regular contact with the academic advisor was deemed critical in order to verify the course

content. Interviewees described how the academics' in-depth knowledge of the field provided a useful sounding board and support for decision-making around topics that should be removed, extended or adjusted in emphasis. Talking through the curriculum details in depth was highlighted as being particularly important for ensuring that new module content was as current as possible.

The need for frequent feedback on draft learning materials was also mentioned several times as being important, particularly in the early stages of development. According to John, getting prompt ID feedback on the first draft materials helped to avoid time-intensive and unnecessary rework at a later date as that initial feedback would often have module-wide implications. Feedback was given throughout the development cycle and typically included a range of topics such as presenting text for online delivery, use of graphics and graphics-creating tools, and advice on audio and screencasting techniques.

Training Recommendations

Specific training was confirmed by all research participants as something that would be extremely useful for new developers. Interviewees suggested that a suitable training initiative for their context would enable collaboration and sharing of ideas; mimic the online student experience; introduce new tools (e.g. Articulate); include hands-on skills development; provide training on copyright and graphical considerations; and offer flexibility around location and timing. The following section explores the impact of the actual interventions – the online multimedia ID tutorials and the Module Design & Development workshop – that were devised to support the ID learning process in this case.

Post-intervention Findings

Immediate Impact of Online Tutorials and Workshop

As the developers of the next modules in line for redevelopment, Karen and Joan were asked to take the three eLearning Developer tutorials during the weeks prior to the Design & Development Workshop and were subsequently asked if tutorials helped prepare them for that event. According to the feedback forms distributed at the close of the workshop, participants confirmed that they had found the tutorials useful for enabling shared understandings of the terminology, concepts, and general ethos of the session.

Immediate reaction to the workshop itself was also very positive overall, with the teamwork it afforded being particularly mentioned on the feedback forms. The Conceptualisation-related exercises of the workshop were also highlighted for the role they played in enabling participants to step back and take stock of the overall course aims. However, some shortcomings of the workshop were noted, particularly the time constraints of a packed schedule which meant that only a small amount of module storyboards were drafted at the workshop. Another participant pointed out that they would have welcomed further opportunities for collaboration as they did not have sufficient time to complete required deliverables. One feedback form also mentioned the likelihood of needing further training and support in relation to Open Educational Resources (OERs).

Approximately three weeks after the workshop, while the design process was still in progress and developers had had some time to work on their designs alone, Karen and Joan were interviewed again about the impact of the interventions. These findings are explored overleaf.

Positive Impact Confirmed

Reaction to the tutorials was still positive, with interviewees repeating that they found them valuable as orientation material and as an introductory foundation in instructional design: “I couldn’t be where I am without them because they provided the basis, the Bloom’s taxonomy and all that kind of that stuff... That was important, it was very important to get that message across” (Joan). Neither of the developers expected to refer to the tutorials again, perceiving other aspects of the toolkit (such as the screencasting resources) as being more relevant to their current needs in the project.

Reflecting on the workshop itself, both developers were also still positive about its usefulness, particularly for its success in enabling deeper discussions around pedagogy:

The workshop was great in terms of highlighting the value of values; highlighting the need to sit back and think well what do we really want this course to do?...What kind of student experience are we going to try to create here? (Karen, Interview 2).

While the workshop was perceived as being the more important of the two interventions, both interviewees expressed the view that the combination of both approaches was important – the tutorials for providing the core foundation in ID and the workshop for enabling discussion and collaboration.

Storyboarding Challenges

Interviewees were positive about the creative potential of using a mind map for storyboarding, but found that populating it with appropriate learning activities was proving harder than expected. One developer in particular spoke about her fears in identifying the best resources to include given the vast array of OERs at her disposal: “I could watch a thousand presentations but how do I know what’s the best one? And why would I settle for one when I think there might be a better one out there?” (Joan).

Karen also noted that devising the core learning activities is the hardest aspect of storyboarding. The point was made that having access to exemplar storyboards would have been welcome so that they could be referred to and more fully explored after the workshop itself.

Mixed Emotions during the Design Process

Despite all the positive emotions expressed about the workshop, feelings of panic and being overwhelmed were in evidence some weeks later. Joan described how she felt constrained by her lack of experience with the learning tools, finding it difficult to select and employ potential tools that she had no substantial experience with. She also pointed out the differences between online and classroom teaching (such as the requirement to be very succinct for online delivery). While Karen did not express these particular concerns, she did mention the iterative nature of the design process, describing how she needed to draft and subsequently revisit her storyboard multiple times during the design phase. “What I find is that you nearly have to let it settle for a little while and then go back to it again because if you try and get it all in one go, you’re just not going to get it” (Karen, Interview 2).

Value of Collaboration and Feedback Reiterated

As in the first set of interviews, the value of collaborating on the design process rather than working in a solitary capacity was reiterated. Mentioning the fact that two modules were being developed in parallel, one interviewee described the synergies of both developers sharing their ideas. It was also strongly emphasised that the collaborative process should not simply end with the workshop and that ongoing support and feedback was critical if the modules were to be completed.

You may be all fired up as soon as you’re there but once you walk away, and life gets in the way, things are forgotten ... Unfortunately, we all have pressures and I don’t

think that I could manage to do this unless I had people around me who were there to keep an eye on me. I would most likely go off in my own direction and go completely wrong (Joan).

In summary, this section has presented detailed analysis of the data relating to the design and impact of the targeted learning interventions. Reaction to the interventions was broadly positive, which was further confirmed by the data from the feedback forms. To understand the broader implications of this research, the core themes that have emerged will be discussed next.

Discussion

The main findings indicate that novice online course developers will benefit from a number of inter-related supports to increase the likelihood of developing engaging and effective learning experiences. Based on the findings above, there appear to be three key strategies that show promise for achieving this goal.

A phased approach that introduces foundational concepts before practicalities

Course developers are adult learners so their particular needs should be taken into account in any well-designed training/professional development programme. According to Knowles (1984), adult learners (1) need to know why they need to learn something (2) learn experientially and by their mistakes (3) approach learning as problem-solving, and (4) learn best when the topic is of immediate value and relevance (as cited in Culatta, 2013).

To meet (1) and (4), those who are about to embark on the process of online course development need an initial foundation that teaches them about the rationale for ID and the pedagogical contributors to effective online learning. As the findings in this paper indicate, a

set of introductory tutorials illustrating the important aspects of ID is of value to new developers as a starting point.

Furthermore, as several of the interviewees noted, there is much critical information to take in when learning about ID and course development at first. For this reason it is vital to be mindful of the developers' cognitive load. Designing the foundation tutorials as a pre-workshop resource meant that the critical background concepts on ID could be decoupled from other important learning. The concepts of the tutorials could be absorbed early and at the developers' own pace and the tutorials themselves acted as a model for how various strategies could potentially be applied. Delivering those tutorials in online mode offers a flexibility and accessibility that matters to those who would otherwise need to travel and juggle training time with their day jobs.

Design techniques that put the emphasis on pedagogy

While no one would argue against the need to develop a sound pedagogical strategy for online modules, what is less clear cut is how that strategy can be executed. One of the most interesting elements of the workshop was the use of the printed cards for the Conceptualisation activity. As Karen (Interview 2) described, this technique worked well to promote a considered conversation about desired pedagogical values. Through discussing and selecting various pedagogical approaches, developers could ultimately agree an overall vision for each module which could potentially be applied to their design(s).



Figure 6 Set of Sample Course Features Cards

However, simply expressing a desire for a range of pedagogical approaches is no guarantee that all of them will necessarily come to fruition. For example, both of the developers had originally expressed an interest in using ePortfolios at the workshop but in fact neither included them in their draft storyboards. This highlights the fact that discussions about vision should not be seen as a one-time event and should continue throughout development.

Furthermore, even though the findings indicated that learning how to use the tools effectively was important, the time spent on specific tools during the workshop was insufficient for any real learning to occur. Although the workshop facilitators wanted to avoid the mistake of running a typical tools-focused workshop (advised against by Koehler & Mishra, 2005), the reality was that developers had very little supported opportunity to practice with Articulate prior to project commencement. Getting the chance to practice could have helped build confidence with how this tool and others could be leveraged. The earlier suggestion made

about allowing time for practice on non course-related topics could possibly help to address this issue in future.

Finally, the issue of presentation cannot be ignored. As the participant Brian outlined, the desire to create a visually-consistent and professional-looking course can prove troublesome to implement. This is particularly true of small teams who may not have access to multimedia, graphic design or programming experts to carry out development work. It is therefore important to provide developers with agreed visual standards as early as possible so that potential layout issues can be minimised and consistency can be achieved relatively easily. This is supported by research asserting that “Whether development is by the individual faculty member or a team the need is for simple, highly templated instructional models and tools for building learning objects and entire courses” (Moller *et al.*, 2008, p.68).

Teamwork and Ongoing Collaboration

The theme of teamwork and collaboration has resonated throughout this project. The data has shown that developers’ collaboration with the academic advisor, instructional designer, and project manager have been viewed as essential elements of the course design and development process. Karen (Interview 1) talked about how important it was to get into the same frame of mind as the academic advisor early on and others highlighted the time they put into reviewing and planning the curriculum with their advisors. The support role of the instructional designer was also mentioned: “Having someone to talk to that knows where you’re coming from – they may not know the subject matter but they know the issues that you’ll be facing – is vital” (Joan). This viewpoint echoes research that suggests the team-based approach as an essential requirement for successful online learning development:

Online course development is a complex endeavour, and it is not reasonable to believe that a high calibre online course of instruction can be created by just one or two people. Quality courseware production requires a highly organized, concerted effort from many players (Caplan & Graham, 2008, p.256).

Finally, the importance of feedback that continues throughout development cannot be underestimated. In order to learn ID, developers need to apply ID principles through the creation of draft materials. To learn how those materials can be improved from an instructional design perspective, developers need to share them and receive detailed, constructive feedback. As the findings have confirmed, timely feedback is an essential component of the learning process for course developers and as such is deserving of further research.

Conclusion

Given the potential challenges of online course design, there is a clear need for an effective programme of training and development to support those undertaking it. For the course developers in this study, the combination of individual and collaborative learning activities worked well and opened up conversations about online pedagogy that had not happened previously.

The fact that the resources are being made available as an OER (in the case of the tutorials) and were created with the assistance of existing open resources (in the case of the workshop) is also significant. This approach ensured that the practice of using, creating, and sharing useful resources was modelled and will hopefully encourage good practice in kind.

Further research and a larger sample would be needed to confirm this approach but initial findings are encouraging. The models for online course development will differ across institutions, of course, but the strategies presented here may offer ideas and techniques that

could be adapted to specific contexts elsewhere. Although the findings of this case study are limited in generalizability, this approach could potentially offer a starting point for beginners in particular and help to fill a gap for faculty that is not currently being met.

References

- Agostinho, S., Bennett, S., Lockyer, L., & Harper, B. (2011). The future of learning design. *Learning, Media and Technology*, 36(2), 97-99.
- Allen, I. E., & Seaman, J. (2011). *Online Education in the United States 2011: Going the Distance*. Newburyport, MA: The Sloane Consortium.
- Bloom, B., Engelhart, M., Furst, E., Hill, W., & Krathwohl, D. (1956). *Taxonomy of Educational Objectives - The Classification of Educational Goals - Handbook 1: Cognitive Domain*. London: Longmans, Green & Co. Ltd.
- Boling, E. C., Hough, M., Krinsky, H., Saleem, H., & Stevens, M. (2012). Cutting the distance in distance education: Perspectives on what promotes positive, online learning experiences. *The Internet and Higher Education*, 15(2), 118-126.
- Caplan, D., & Graham, R. (2008). The Development of Online Courses. In T. Anderson (Ed.), *The Theory and Practice of Online Learning* (2nd ed., pp. 245-263). AU Press. Retrieved: 10, May 2014 from http://www.aupress.ca/books/120146/ebook/10_Anderson_2008-Theory_and_Practice_of_Online_Learning.pdf
- Chickering, A., & Ehrman, S. (1996). Implementing the seven principles: Technology as lever. *AAHE Bulletin*, 3-6.
- Clark, D. (2006). *Gagne's Nine Dull Commandments*. Retrieved: 10, May 2014 from <http://donaldclarkplanb.blogspot.ie/2006/09/gagnes-nine-dull-commandments.html>
- Conole, G. (2010). Facilitating new forms of discourse for learning and teaching: harnessing the power of Web 2.0 practices. *Open Learning: The Journal of Open and Distance Learning*, 25(2), 141-151.
- Conole, G. (2013). *Designing for Learning in an Open World*. New York: Springer.
- Conole, G. (2014). The 7Cs of Learning Design – a new approach to rethinking design practice. (pp. 502-509). *Proceedings of the 9th International Conference on Networked Learning*, April 7-9, Edinburgh.
- Culatta, R. (2013). *Andragogy (Malcom Knowles)*. Retrieved: 10, May 2014 from <http://www.instructionaldesign.org/theories/andragogy.html>
- Dalziel, J. (2012). *The Larnaca Declaration on Learning Design*. Retrieved: 10, May 2014 from <http://bit.ly/WtK8mg>
- Donnelly, R., & O'Rourke, K. C. (2007). What now? Evaluating eLearning CPD practice in Irish third-level education. *Journal of Further and Higher Education*, 31(1), 31-40.
- Gagné, R. M., Wager, W. W., Golas, K. C., & Keller, J. M. (2004). *Principles of Instructional Design* (5th ed.). Belmont, CA: Wadsworth Publishing.

- Gordon, J., & Zemke, R. (2000). *The_Attack_on_ISD.pdf*. *Training*, 43-53.
- Hakkinen, P. (2002). Challenges for design of computer-based learning environments. *British Journal of Educational Technology*, 33(4), 461-470.
- Hashim, Y. (1999). Are instructional design elements being used in module writing? *British Journal of Educational Technology*, 30(4), 341-358.
- Koehler, M. J., & Mishra, P. (2005). Teachers Learning Technology by Design. *Journal of Computing in Teacher Education*, 21(3), 94-102.
- Kukulska-Hulme, A. (2012). How should the higher education workforce adapt to advancements in technology for teaching and learning? *The Internet and Higher Education*, 15(4), 247-254.
- Lawson, T. (1974). Gagné's learning theory applied to technical instruction. *Training and Development Journal*, 28(4), 32-40.
- Lowenthal, P. R., & Thomas, D. (2010). Digital Campfires: Innovations in Helping Faculty Explore the Online Learning Wilderness. *Merlot Journal of Online Learning and Teaching*, 6(3), 665-672.
- Macdonald, J., & Poniatowska, B. (2011). Designing the professional development of staff for teaching online: an OU (UK) case study. *Distance Education*, 32(1), 119-134.
- Moller, L., Foshay, W. R., & Huett, J. (2008). The Evolution of Distance Education: Implications for Instructional Design on the Potential of the Web. *TechTrends*, 52(4), 66-70.
- Moore, C. (2010). *The big mistake in elearning*. Retrieved: 10, May 2014 from <http://blog.cathy-moore.com/2010/05/the-big-mistake-in-elearning/>
- Moore, M. (1989). Three types of interaction. *American Journal of Distance Education*, 14(2), 1-6.
- Morrison, D. (2013). *Why Online Courses [Really] Need an Instructional Design Strategy*. Retrieved: 10, May 2014 from <http://onlinelearninginsights.wordpress.com/2013/05/07/why-online-courses-really-need-an-instructional-design-strategy/>
- Oliver, M., & Dempster, J. A. (2003). Embedding e-learning practices. In R. Blackwell & P. Blackmore (Eds.), *Towards Strategic Staff Development in Higher Education* (pp.142-153). Berkshire, England: SRHE and Open University Press.
- Reigeluth, C. (1983). *Instructional-Design Theories and Models: An Overview of their Current Status*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.

- Salter, D., Richards, L., & Carey, T. (2004). The “T5” Design Model: An Instructional Model and Learning Environment to Support the Integration of Online and Campus-Based Courses. *Educational Media International*, 41(3), 207-218.
- Smith, P., & Ragan, T. J. (1999). *Instructional Design*. New York: Wiley.
- Theng, L. (2011). Designing a Multimedia-mediated Student-centred Learning Environment (MMSLE) with Gagne’s 9 Events: Students' Perceptions. In *Unknown* (pp.1-12). Retrieved: 10, May 2014 from [http://iclll2011.oum.edu.my/extfiles/pdf/Designing_a_Multimedia-mediated_Student-centred_Learning_Environment_\(MMSLE\)_with_Gagne%92s_9_Events_Students%92_Perceptions.pdf](http://iclll2011.oum.edu.my/extfiles/pdf/Designing_a_Multimedia-mediated_Student-centred_Learning_Environment_(MMSLE)_with_Gagne%92s_9_Events_Students%92_Perceptions.pdf)
- Torrise, G., & Davis, G. (2000). Online Learning as a catalyst for reshaping practice - The experiences of some academics developing online learning materials. *International Journal for Academic Practice*, 5(2), 166-176.
- Yin, R. K. (2009). *Case study research: design and methods*. Thousand Oaks, California: Sage Publications.
- Zhu, P., & St.Amant, K. (2010). An Application of Robert Gagné’s Nine Events of Instruction to the Teaching of Website Localization. *Journal of Technical Writing and Communication*, 40(3), 337-362.