

Podcasting in a Project-Based Learning Environment (Industry Case Study Architectural Design Project)

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This case study explains how architectural design knowledge was captured/ utilised to improve student understanding of practical design-related issues. It used the example of an urban master-planning project in the South of England, which involved interviewing the lead design architect. Conceptual design drawings and other graphics were used to highlight key factors influencing the design rationale. This was captured and broadcast using a podcast of 30 minutes in length to provide students with audio-visual and context-specific design information to enhance their learning experience.

Reasons for engagement

At an *individual level*, the idea of this project emerged from a real need to enrich the quality of teaching material by utilising practice-based examples to improve student understanding of design-related issues from an architectural design project perspective. Initial attempts to time-table lectures from practitioners had been unsuccessful especially since lecture times and dates are fixed and offer little time flexibility. With a view to address this ongoing issue without compromising on student learning, the project began by exploring innovative ways in which this issue could be resolved. This led to a pilot study (awarded by the Teaching Award Scheme) that aimed to demonstrate the potential of multi-media podcasts in project-based learning environments. This approach had the potential to overcome previous hurdles to engage industry as it offered time flexibility to the industry practitioners and yet could be delivered to the students during the lecture slot.

At *departmental level*, the pilot aligns with the Department of Civil and Building Engineering's strategy pertaining to growth in work-based, flexible and distance-learning.

At *University level*, the flexibility this approach offers through the exploitation of technology to aid learning aligns well with Loughborough University's Strategic goals for education, particularly with objectives that concern: meeting changing needs of students and employees, developing flexible and distance learning provision, increasing the profile of 'quality enhancement in relation to learning, teaching...'; and making a leading contribution to the application of electronic learning technologies.

The engagement

The first step was to gain access to architectural design-project data with details of the functional requirements, spatial organisation, the design brief, design decisions and drawings, and

other related information. To initiate the dialogue with industry, practitioners with design experience i.e. architects, property developers and design engineers were contacted. Email exchanges and face-to-face discussions with them took place in order to explain the context and purpose of the pilot; and attain buy-in. From their perspective, the prospect of dynamically capturing key design decisions (i.e. project knowledge) was considered attractive as it aligned well with their employers long-term strategy and had the potential to address an ongoing issue of loss of project knowledge due to recurring changes in staffing and/or redundancies. Considering the potential long-term benefits to their organisation, obtaining initial buy-in from design practitioners was not difficult.

The next stage involved identifying a project for this pilot. Senior management from the client organisation helped to identify the project that could most benefit from an electronic archive of design decisions. An urban master-planning project in the south of England was selected for this purpose. The rationale: given that phase one i.e. the conceptual design of the urban master-plan had only recently been completed, the design team was still intact and records of design data easily accessible. This is important because, quite often complex urban master-planning projects, such as the one selected, last several years and involve a large number of stakeholders who form transient design teams through their lifecycle. Such projects are at a risk of losing vital design knowledge when teams disperse. Considering this, an archive of key design decisions that influenced the conceptual development would be advantageous, especially since subsequent design teams would be better informed about the design rationale and therefore take measures to ensure that the core project ethos defined at the conceptual stage is not lost in subsequent design stages.

The next step involved identifying the stakeholder/s who could best represent the design team. A senior manager from the client organisation identified people, depending on their role in the project. After much deliberation and face-to-face discussions, it was thought appropriate to interview the lead architect, who would represent the design team. During this period the uncertainties of the current economic downturn began surfacing. For example, in one instance, despite buy-in from senior management of client organisation, a near-successful attempt to interview the design practitioner fell through. This was because the lead contact at the client organisation moved to a different business unit within the organisation and was therefore no longer directly involved in the project. This had a negative impact on the project's schedule. Due to this set-back, the pilot could no longer be run in Semester one for the architectural design project module, but instead on the e-Construction module in Semester two of academic year 2008-09. This led to modification of the project scope to align with the learning objectives of the e-Construction module. In response to this new challenge, a revised strategy was developed, so that the primary objective of the project was not compromised. Primarily it considered:

- Revising scope of the project to align with the new modules intended learning outcomes;
- Revising project schedule and dissemination plans; and
- Modifying evaluation criteria.

Issues and lessons learnt

The time taken to initiate dialogue with industry should not be underestimated, during your planning allocate sufficient time for initiation of meetings and dialogue. The current economic climate often means that recording a podcast is probably not a priority for practitioners. Be flexible and

prepared for changes, and develop a contingency plan. Delays in recording a podcast impacts on when it is delivered and tested. In this case, it was tested on a different module to the one originally intended. Podcasts require software and hardware components, which if not tested prior to recording may not always work. Prepare a 'test' recording to avoid this anomaly. The electronic capture of project data means there are Intellectual Property Rights (IPR) (both University and company IPR) issues that need consideration. Jointly discuss and agree on the approach to be adopted. Richness of audio-visual project content is largely dependent on the company's willingness to share data or even the availability of such data. Work with what is available and 'fill in the gaps' during lectures. The more audio-video content a file has, the larger the file size, therefore issues pertaining to larger file sizes need consideration. Handling the technological challenges posed by software and hardware malfunction would largely depend on the academic's competence and the available support from IT staff. Seek support prior to starting.

Issues arising and lessons learnt from student feedback on podcasts:

- If it is too lengthy, the listeners may 'drift' or lose attention.
- If the content is not interesting it may be ignored. To avoid this issue, include Q & A sessions
- If not supplemented with lectures, students may not have the opportunity to ask questions/clarify doubts.
- Podcasts should not be considered a substitute for clear reporting and lecturing.
- Efficiency depends on the level of detail in the podcast content and clarity and tone of the speaker to grab attention. It might be prudent to introduce humour to captivate the listeners' attention.
- Podcasts may not be suited to some learning styles.

Benefits

The project improved the lecturers understanding and generic know-how of using innovative multi-media based learning technologies. Podcasts can easily provide complementary material for teaching and a suitable addition to on-line learning, which aligns with both University and Department strategies. Podcasts enhance the teaching and learning experience through online publication of audio-visual case studies containing topical interviews with industry experts and other speakers. Content, such as interviews, are better delivered in audio/video formats rather than as pure text. Audio/video podcasts are re-usable knowledge repositories of considerable value to the learning experience given that 'experts' knowledge is accessible on demand as suited to time-table requirements. Podcasts offer flexibility to access knowledge independent of practitioner availability. Students benefit from expert knowledge and practitioner viewpoints regarding success and/or failure factors in building projects. Podcasts set academic lectures in context and assist in self-paced learning. The content is portable and can be downloaded online, but accessed at convenience. In a project-based environment audio-video-textual content of the podcast adds context, improves attention and increases interest and motivation to learn (read supporting discussion on student perspectives). They offer time flexibility to industry practitioners and the opportunity to archive project knowledge. The audio/video files contained in podcasts are online knowledge-repositories that can be shared (thus, RLOs-Re-usable Learning Objects).

Academic perspective

The project required the right contact within the company to assist in finding someone who would want to get involved. It required 'orienting' and 'steering' input from academics to set the context for the podcast including alignment with the

modules' overarching aim and intended learning outcomes. Interactive discussion on the podcast content was needed to engage students and respond to any queries. Audio-visual facilities had to be established and tested in the lecture-halls. The project enriched my personal learning and experience in using podcasting technologies, improved my understanding and know-how of podcasting technologies in project-based learning environments and also contributed towards my continuous professional development.

Industry perspective

Establishing the availability of practitioners beforehand and agreeing recording dates is important. Since this is done through goodwill, be prepared for changes to these plans and the potential impact on the delivery and broadcast date. Make sure you test equipment beforehand and comply with the company and the University IP rights pertaining to re-using/broadcasting data. Practitioners may not always work on 'goodwill' and may charge for their time, so you might have to budget for this.

Practitioners' motivation to participate is primarily because of the potential to present recordings of audio-video content in absentia. The dynamic, re-usable archives of project knowledge are suitable for future use by industry. Archives of design decisions influencing design are beneficial to successive design teams as they would be better informed about the design rationale and therefore take measures to ensure that the core project ethos is maintained in subsequent design stages.

Student perspective

The discussion presented here is based on student feedback received during an in-class evaluation that was carried out to assess the effectiveness of podcasting as a mechanism to *support learning* and

capture knowledge in project-based environments. An evaluation questionnaire was distributed in class and the results are from those present (i.e. 22 students out of a possible 30).

Feedback from students revealed that the audio-visual content of the podcast 'added context', was 'easily understood', 'attractive in appearance', and 'clear'. A few considered it to be better than traditional whiteboards, because of the 'visualisation' potential. Some students thought that the visual element combined with audio and text was effective in capturing their attention and therefore very interesting. They, however, pointed out that in order to avoid 'drifting' and 'boredom' and to keep students attentive, it was important that 'podcasters' avoided monotone speech and introduced humour. One even stated that the voice over *must be engaging* and thought that the timely animations and use of contextual graphics (plans, elevations, sections, maps, etc) in the podcast, gave a better visual understanding of the project and increased their interest in the designers' dialogue. It was also thought that the audio-video-textual content added context and it was therefore difficult to get distracted and increased their interest in the topic and therefore their motivation to learn. Another stated that: *'the visual data gives a clearer picture of the project and improves understanding of the design project and captures 'my' attention...and therefore my visual memory.'*

The flexibility and personal convenience of 'anytime' access that podcasts offer was considered important, as it is easier to re-listen and revisit details/lectures, which have been missed. Also, the students felt that simply knowing that podcasts could be re-accessed, took the note-taking pressure off them and they could focus more on listening to the speaker rather than juggling multiple tasks.

Many students highlighted the importance of self-paced learning and the opportunity

such an approach presents. It also provides an opportunity to catch-up on elements that were either missed or misunderstood during the lecture. This opportunity was considered very important especially if English wasn't their first language.

Reflections

In spite of the 'timing' issues, the experience of this academic-industrial partnership has largely been fruitful. In the main, the content of the podcast determines its success. It is therefore important to select a project with a good 'recording history', be it presentations, photographs, video-files, drawings and other related documents.

Considering this, projects at early stages of design are relatively straightforward, given that the design teams are more-or-less intact and data in this case would be developmental. If, however, post-project or 'retrospective' discussions are the focus, then time taken to contact and interview dispersed design team members would be longer. However, such projects could benefit from additional visual components such as construction videos, site 'development' photographs and such like.

To keep listening and watching interests up, it is important that the presenter (i.e. podcaster) pre-prepares dynamic audio-visual presentations with animations, delivers speech in a variable tone (not monotone) and where possible, introduces humour. Where the 'ready' data is fragmented or static (few animations), the story-telling exercise becomes time-consuming and onerous in attempting to introduce the dynamism. However, care should be taken to keep file sizes manageable.

Context

Kirti Ruikar is a Lecturer in Architectural Engineering in the Department of Civil and Building Engineering at Loughborough University since 2007. With a first

degree in Architecture, Kirti undertook a Doctor of Engineering (EngD) degree at Loughborough University. The focus of her EngD was to examine the business process implications of e-Commerce in Construction Organisations. En-route the doctoral studies, she completed an MSc in Construction Innovation and Management. Following this she was awarded a research fellowship at the 6* Salford Centre for Research and Innovation (SCRI) in the University of Salford. Her research interests are in the fields of ICT, knowledge and information management, strategic technology management, collaborative working, process improvements, e-readiness and electronic-business. Her research is widely publicised and she has over 40 publications in these fields. Recently, she has co-edited a book on e-Business in Construction (Wiley-Blackwell) and has also authored 5 chapters in this book.

