An academic's toolkit for innovative project reporting using audio visual media

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An academic's toolkit for innovative project reporting using audio visual media.

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Abstract

The paper introduces a novel method of injecting additional motivation to team projects. Teams of students, engaged in a variety of different assignments are encouraged to learn while creating their own audio-visual media; they are required to prepare and edit a short video documentary as a replacement for the more conventional written or oral report. Using survey data, collected over several years at two separate UK universities, the authors provide evidence that this medium generates much needed engagement, help teams to bond and promotes a deeper understanding of the subject matter. An additional benefit is that the assessment process is considerably less tiresome for the academics. There appears to be vast potential for transferability of this method to many different applications, disciplines and age groups, but while the idea may sound attractive to many lecturers, it marks a significant departure from the norm. The authors have, therefore, created an easily accessible 'toolkit' resource that focuses on issues faced by a new adopter based on their own experience and on feedback from staff and students who participated in the pilot projects. The 'toolkit' incorporates appropriate resources, including teaching and assessment materials, with example projects taken from the science and engineering subject areas.

Keywords: *Video, Engagement, Teamwork.*

1. Introduction

The video documentary is a very widely used and effective medium through which investigative journalism is disseminated on all kinds of topics. Such works present information in a way that is easily accessible and often entertaining. Video reporting has now proven to be a surprisingly useful innovation in engineering education where it has been successfully adopted by two UK universities as part of a programme to enhance student engagement and reduce wastage; an issue that is currently of great interest in the sector.

There is already a large body of knowledge about student engagement but, according to Tinto[1], most institutions are yet to translate what we know into forms of action that improve persistence and retention. It is known that "…the adoption of teaching approaches that actively engage students from the outset" can enhance the student experience[2]. These ideas are founded in constructivist learning theory where learners are invited to construct knowledge for themselves, become actively involved and learn how to learn while they are learning. Innovators, looking for ways to improve motivation, therefore, tend to focus on self-directed learning through the use of projects, competitions and teamwork[3], also the central idea of a learner-led curriculum that is increasingly made possible through the appropriate use of technology.

In this paradigm, student teams, engaged in a research project prepare and edit a short video documentary as a direct replacement for the more conventional written or oral report and in doing so, help to build their own autonomy as effective learners and develop valuable employability skills. The potential for transferring this idea across disciplines is obvious, but for many lecturers, though the idea may sound attractive, it is a leap into the unknown. Having recently completed a 12-month Royal Academy of Engineering (HE-STEM) project to prepare an easily accessible 'toolkit' for lecturers that addresses the issues faced by a new adopter, the authors are now in a position to describe their own case studies and provide help and advice to others who may wish to adopt the idea.

2. Enhancing Team Projects

2.1 Methodology

Themed student-centred team projects have been widely used in STEM (Science, Technology, Engineering and Mathematics) subjects as a vehicle for developing desirable transferable skills and can now be found in all parts of many forward-thinking engineering degrees. The 'Engage' Engineering Project[4] confirmed that these strategies improve motivation, enhance learning, improve performance and retention rates and increase student commitment to engineering careers. Nevertheless, a poorly constructed project assignment can fail to result in either improved skills or deep learning, and can be seen as simply a chore by the participants. Team projects, for example, where the individuals simply divide the task up by the number of team members, perform individual internet research and subsequently paste together their findings as a single document provide little intrinsic motivation, little long-term knowledge acquisition and a false basis for skills development.

Figure 1: A student presenter, on location.

The video reporting method enhances a project and proactively addresses these deficiencies. Research projects traditionally require students to submit a substantial written report and

possibly an oral presentation. However, assuming these key skills are adequately addressed elsewhere in the programme, it is reasonable to suggest that the assessment method for one or more assignments might be different; an additional written report is hardly going to motivate students. A small team at Sheffield Hallam university provided the initial inspiration to further trial and adapt this new method at Loughborough, when they presented their initial ideas at EE2008 [5]. They claimed that the video report added realism and aided communication skills development; that students were motivated by this methodology and that it enhanced achievement and learner autonomy although, at that time, the claims were largely anecdotal.

Essentially, a research task is set in the familiar way, and can presumably be set on any theme, but instead of the usual written and oral report, teams are required to report their findings in the form of a documentary video file. Students are provided with suitable, user-friendly filming equipment (Pre and post production) they are also encouraged to conduct research and seek out appropriate locations and props to support their reports. Clearly, it makes sense to use this method for topics that have the potential for location filming or to show moving objects but the method has been successfully exported into other, non-STEM areas such as nursing and history. The creative opportunities open up and the need to work as a team becomes paramount. Certainly, we have discovered that students like to be challenged and generally respond well. Their ability to deal with the audio-visual technology, without much training, has consistently exceeded expectations.

Video reports can be incorporated into new or existing modules to form part of the coursework assessment. Existing examples have catered for student cohorts up to 150 where the assignment accounts for typically 20-30% of the modular credit. Assignments, incorporating video reporting at Loughborough and Sheffield vary in length, and have been set with both first and final year engineering and materials science cohorts. Various formats have been tried and these are described in some detail three separate short case studies, included in the 'toolkit', which will be available, free of charge, at the conference or by contacting the authors.

2.2 Reported Outcomes and Feedback

There is strong evidence that film production adds to the challenge and enjoyment of assignments, which consequently enhances motivation and leads to high quality work. This first became obvious to staff at both institutions when viewing the students' video creations, the quality of which generally exceeded expectations. Most of the videos are particularly strong visual records of close teamwork in action and the toolkit contains examples of student work that clearly illustrate this.

The benefits of this approach have been thoroughly evaluated through focus groups and online surveys. The focus group analysis was presented at SEFI-2011 as part of World Engineering Education Flash week [6]. The focus group discussions were captured on video, which has enabled a selection of short clips, organised in themes, to be presented on a DVD which is included in the toolkit, so that enquiring lecturers can experience the

staff and student voice at first hand. The survey provided much needed qualitative feedback which was used to develop the process. A small selection of the online results is displayed in figure-2. The charts, which are largely self explanatory, present feedback on three first-year groups from Loughborough University (LU) and one final-year group from Sheffield Hallam University (SHU) with a total of 198 individual responses. Aside from the expected improvements in key transferable skills, around 90% of respondents consistently claimed that they had improved their subject knowledge and typically, 80% of participants report that they enjoyed the coursework. The results are remarkably consistent over three separate cohorts and the small improvement over time suggests appropriate developments have been made. We have not surveyed an equivalent research project using traditional reporting methods but speculate that these figures would represent a significant improvement.
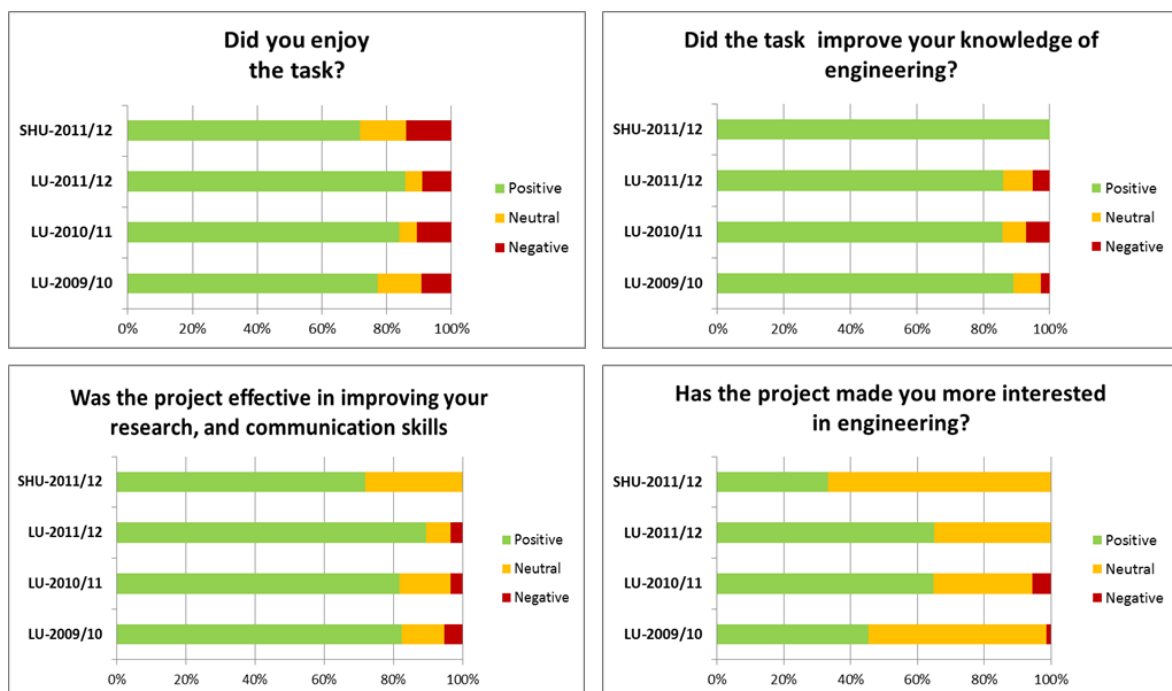

Figure 2. Selected responses from the online questionnaire.

The main identified outcomes from the combined feedback are:
-
- increased student motivation
- enhanced learning experience
- higher marks
- development potential for deeper learning of the subject
- development of learner autonomy
- enhanced team working and communication skills
- a source of evidence relating to skills for interviews
- learning resources for future cohorts to use
- opportunities for staff development - (CPD)

2.3 The 'toolkit' resource for lecturers.

A colourful loose-leaf resource pack has been generated containing three distinct case studies and a fully referenced refereed paper describing the development of the idea and providing qualitative and quantitative evidence from the two universities of the potential benefits of the method. The pack also contains the comprehensive DVD, showing examples of student work, edited interviews with stakeholders from both institutions, video training resources for student self-teaching and printable advice sheets that can be adapted or incorporated into new projects. Most of the self-teach video production resources have been produced specifically for this project but there are also links to useful external websites.

The authors took account of feedback from earlier dissemination events [e.g.[7]] when compiling the 'toolkit'. These events had clearly demonstrated there was a need to provide a resource for potential

Figure 3: Video toolkit folder.

adopters and gave a useful guide to what was required and, therefore towards its eventual contents. The resource provides specific advice using a combination of printed words and short video clips on:

- Briefing students
- Recommended equipment
- Story-boarding
- Audio and video editing
- Good practice in camera use
- Assessment methods and criteria
- Copyright issues

3. Trial and Evaluation

An evaluation workshop was organised by the Engineering and Design Education Network (EDEN) took place at Loughborough with 25 attendees from the HE community. The concept was enthusiastically received and many suggestions were recorded, to improve the effectiveness of the resource and to finally define the mode of delivery. Participants were asked why they might or might not consider implementing video reporting into their teaching and what additional advice and resources they would need. After collecting feedback, examples of resource materials were demonstrated and a discussion ensued to establish the most appropriate formats. The following is a list of the issues raised by delegates:
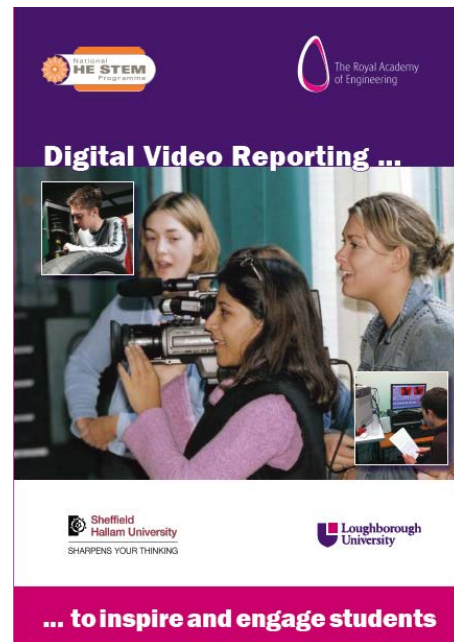
Drivers

- To develop Teamwork skills.
- Promote engagement.
- Use of today's technologies.
- To save having to read 300 reports and listen to 50 presentations
- Use as teaching resource / promotional / research material
- Future use by staff and students (training, CV etc.)
- Incorporating new skills

Concerns

- Would not wish to use this for a high coursework contribution to a module
- Skill contribution of each member could be difficult to assess.
- Assessment criteria.
- Submission (how?)
- Time taken / duration / time allowed
- Focus on the content, not the media.
- Doubts on suitability for: mathematical & analytical subjects, part-time students, overseas students.

Required resources

- Understanding of editing technologies: Technical skills, facilities and equipment.
- How to brief students: Need for examples of student videos, copyright instruction, assessment acceptability and criteria.
- Evidence of achievement of learning objectives.
- Student advice and instruction.
- Equipment booking?
- Guidance on production.
- Recommended software.
- Disseminate actual student's sound bites (to inform other students).

There was much discussion, in particular, concerning appropriate assessment methods. Assessment of a large number of written team project reports is notoriously tiresome and was always hoped that the video method makes the task more rewarding for staff but, nevertheless, there appears to be an initial reluctance in some to accept the validity of video assessment. The authors believe that, while the notion is real, the problems are not and the workshop discussion served to reinforce this view.

In academia, we universally accept the validity of written reports and oral presentations. In everyday life, we are quite familiar with professional reviews and critiques of both documentary films and non-fictional books where critical judgements are made about their quality and content. The criteria for assessment are, therefore similar, if slightly modified to suit the medium.

The assessment and feedback task has been found, in reality, to be straightforward; two staff members watch each documentary at the same time and independently rate it against fixed criteria. Grades associated with the institutions' generic assessment descriptor policy using terms like 'outstanding, good and weak' were used to assign grades against each criteria. The grades are later computed to give an overall numeric score. Feedback is provided using the same table and the grades against each criterion serve to show the teams where they excelled and where they could improve. Assessing 24, 10-minute videos equated to one day's work for two people and, for once, it was quite enjoyable. At both institutions and in many others, live oral reports in groups are also part of the normal assessment process.

Post-workshop feedback included the following comments;

> I learnt *"a new idea to engage students"* and *"the ease of video making, lack of technical facilities required"*. I might *"integrate video assessment into my module(s) next year"*..... *"try this approach"*.

One delegate requested advance copies of the resources so that he could try out the ideas immediately.

Creativity

Enquiry Based Learning (EBL) is founded on sound pedagogic principles but the additional effect of introducing video-media to the project work is less well established. Nevertheless, there is no doubting that both institutions are left with a good feeling about this method and that the idea provokes much interest in the community. Of course, not all students are enthused, indeed, some are put off by the additional work involved, but the feedback data show that these are in the minority. Asked what was the best thing about the project, some typical year-1 comments were, *"Getting to do something more creative as a group."* and "The format of presenting our findings allowed us to be creative and imaginative." Perhaps we are sometimes guilty of failing to recognise the unexpressed creativity in engineering students that evidently can provide much needed motivation to learn.

4. Conclusions

There is a good feeling about this project; as though we had something right with the vast majority of students appearing 'on-side'. Furthermore the evidence from the online surveys and focus groups is encouraging. We speculate that few conventional coursework assignments would prompt a response from 8 in 10 students that they had enjoyed completing it and were consequently engaged in their studies. The quality of the work submitted has regularly exceeded expectations both in technical content and in the ingenuity and creativeness used in reporting it. The survey data also demonstrated considerable success in achieving the outcomes of improved knowledge and transferable skills; at least, this was the students' perception.

Modern Video equipment is relatively cheap and easy to use and 21st century learners appear to have little difficulty in adapting to it without extensive specialised instruction. There is no need to provide professional quality equipment here.

This adventure has proved interesting and instructive for both staff and students. The toolkit that has been constructed is the product of the combined experiences of a multidisciplinary team from two institutions, who have combined two separate approaches to develop, evaluate and disseminate good practice and provide a useful resource for others.

Further Development

There is an obvious potential to transfer or duplicate this training resource to the World Wide Web in order to extend its outreach. This however is beyond the scope of the present project. Any such extension should capture the wider experience that it promotes to further inform the method.

5. Acknowledgements

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