Using digital video reporting to inspire and engage students

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Abstract

This case study describes the design and development of an attractive new resource to encourage STEM academics to incorporate video reporting into their student-centred learning activities. The resource, described as a 'toolkit', provides support for those who wish to pilot the idea, shows the benefits of the innovation through accessible examples and offers answers to typical questions likely to be asked by new adopters. The package shows examples of existing good practice and points the way to success. The innovation has been trialled in several different formats covering a variety of subjects at Loughborough and Sheffield Hallam universities and subsequently discussed and evaluated by the STEM community at specialist events.

Keywords: student-centred learning, project work, video reporting

Background

The gulf between the educational methods in UK secondary and tertiary education has never been wider. Students arrive at university with the expectation of 'teaching' not 'learning' and demand more than ever before. Lecturers frequently comment that some students expect their university experience to primarily facilitate fun and social interaction; they are increasingly driven by marks and seem to spend little time reading beyond their marked assignments. Clearly, this does not sit well with the STEM academic's need to convey large quantities of basic engineering science as the fundamental building blocks of an engineering degree. Furthermore, even a mild spell of disengagement can quickly lead to an unwelcome request for a course transfer.

It is known that "the adoption of teaching approaches that actively engage students from the outset" can enhance the student experience (Yorke and Longden, 2008). 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.

Themed student-centred team projects have been widely used in STEM subjects as a vehicle for promoting desirable transferable skills and can now be found in all years of many engineering degrees. The ENGAGE project (2008) found 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 by the students as simply a chore. Team projects, for example, where the individuals simply divide the task up into 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 poor basis for skills development.

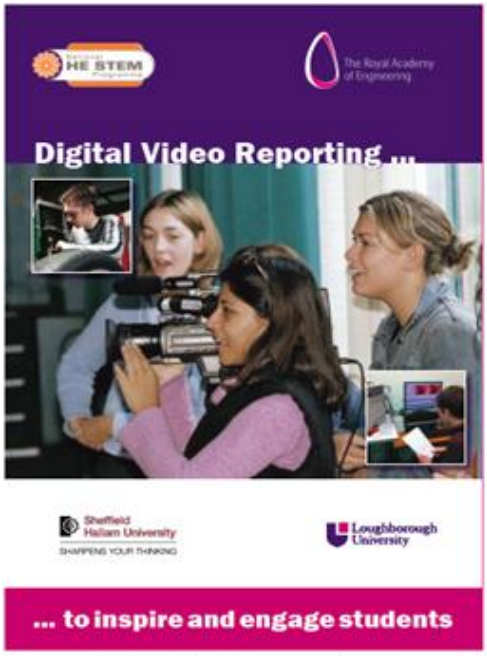

Figure 1. Toolkit folder

The video reporting method enhances a project and effectively addresses these deficiencies. Research projects normally require students to submit a substantial written report and possibly an oral presentation. However, assuming that these key skills are adequately addressed elsewhere in the programme, it is reasonable to think that the assessment method for one or more assignments might be different; an additional written report is hardly going to motivate students. The requirement here is to submit a report in the form of a digital video file, and owes its origins to a small team at Sheffield Hallam who provided the initial inspiration to trial and adapt this new reporting and assessment method at Loughborough. Bramhall and Radley (2008) 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, these claims remained largely unproven.

Rationale

There is already a large body of knowledge about student engagement but, according to Tinto (2006), most institutions have not yet been able to translate what we know into forms of actions that improve persistence and retention. In *When Teaching becomes Learning*, Sotto (2007) wrote that motivation is already present in learners but that educators need to create situations that enable learners to become actively engaged and to use these experiences to reinforce the necessary fundamental knowledge and skills to support the science. We have certainly discovered that students like to be challenged.

Assignments incorporating video reporting at Loughborough and Sheffield vary in length and have been set for both first and final year cohorts studying various engineering disciplines alongside materials science. The method has also been exported into other non-STEM areas such as nursing and history; the potential for transferability is vast. Various formats have been tried and these are described in three separate short case studies included in the toolkit.

Essentially, a research task is set in the familiar way 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 video filming equipment (pre and post-production) and are also encouraged to conduct research and seek out appropriate locations and props to support their reports. The creative opportunities open up and the need to work as a team becomes paramount. Video reports can be incorporated into new or existing modules to form part of the coursework

assessment. Existing examples have catered for student cohorts of up to 150 where the assignment typically accounts for 20-30% of the modular credit.

The approach

Reported outcomes for staff and students

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 and the results were reported at the World Engineering Education Flash week (Willmot et al., 2011). Aside from the expected improvements in key transferable skills, almost 90% of respondents claimed that they had improved their subject knowledge and typically 80% of participants reported that they had enjoyed the coursework.

Figure 2. Stakeholder video menu

As part of the research, which accompanied the preparation of the toolkit, a series of focus groups were captured on video. This has resulted in a selection of short video clips, organised in themes, to enable enquiring lecturers to experience the staff and student voice at first hand. The main identified outcomes 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).

Transferring innovations in the HE-STEM community

For many lecturers, the idea may sound attractive, but it is a leap into the unknown. The project's objective was to produce a high quality, accessible resource for staff that addresses the issues faced by a new adopter, based on the experience of the project team.

A colourful loose-leaf resource pack has been generated containing ***three 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 a ***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.

Much of the development of the educational method, which occurred separately at Loughborough and at Sheffield, predates this STEM project and throughout this developmental phase the team members had separately disseminated their emerging ideas at various conferences and seminars (Bramhall et al., 2008; Willmot and Bamforth, 2010).

Feedback from these events provided an initial guide to the needs of potential adopters and therefore identified the requirements of the toolkit.

The resource provides specific advice on:

- briefing students
- recommended equipment
- story-boarding
- audio and video editing
- good practice in camera use
- assessment methods and criteria
- copyright issues
- ethics and safety.

Evaluation

1. The video reporting method

Students were asked to complete an online survey immediately after completing the assignment. Data from this survey have been added to that which was already available from previous years. The survey provided much-needed qualitative feedback which has been used to develop the process. The main quantitative findings are presented in Table 1. The results are remarkably consistent over three separate cohorts and the small improvement over time suggests that 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.

Table 1. Online survey results over three years

Academic year		2009/10	2010/11	2011/12
Number of respondents		**76**	**57**	**58**
Did you enjoy the task?	Positive	77.3%	83.9%	85.7%
	Neutral	13.4%	5.4%	5.4%
	Negative	9.3%	10.7%	8.9%
Did you learn or consolidate knowledge of engineering by completing the task?	Positive	89.2%	85.7%	86.0%
	Neutral	8.1%	7.2%	8.8%
	Negative	2.7%	7.1%	5.2%
Was the project effective for improving researching, communication or IT skills?	Positive	82.4%	81.8%	89.5%
	Neutral	12.2%	14.7%	7.0%
	Negative	5.4%	3.5%	3.5%
Has this project made you more interested in Engineering?	Positive	45.3%	64.8%	65.0%
	Neutral	53.4%	29.6%	35.0%
	Negative	1.3%	5.6%	0.0%

2. The toolkit

An evaluation seminar, organised by the Engineering and Design Education Network (EDEN), took place at Loughborough and was attended by 25 delegates from the higher education (HE) community (Willmot et al., 2012). The concept was enthusiastically received.

Seminar 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"* and *"try this approach".*

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

The EDEN seminar offered an excellent opportunity to obtain feedback which would inform the final content of the DVD resource. 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 and 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).

Discussion, summary

Enquiry-based learning (EBL) is founded on sound pedagogic principles, but the additional effect of introducing video-media to 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. When asked what the best thing was about the project, some typical year one 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 STEM students that evidently can provide much-needed motivation to learn. The various surveys and focus group interviews described above add qualitative and quantitative evidence to support these statements. The results also suggest considerable success in achieving the outcomes of improved knowledge and transferable skills.

The toolkit that has been constructed through this project is the product of the combined experiences of a multidisciplinary team from two institutions that have been brought together and

have combined two separate approaches to develop, evaluate and disseminate good practice and provide a useful resource for others.

Further development

The final product will build on the evaluation event, addressing all concerns and providing the requested advice, based on the experiences of the authors. It is expected that, in general, STEM staff will lack significant 'media production' skills. The video format, in turn, provides a convenient and accessible means of instruction in the creation of short documentary films and the use of unfamiliar equipment. The final DVD will include short training clips as well as downloadable text documents to provide appropriate advice.

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

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