

# Teaching bioethics via the production of student-generated videos

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## Summary

This case study focuses on a novel assessed activity conducted with second year Medical Biochemistry undergraduates at the University of Leicester (n= 25 to 45 per year). The students work in teams of four or five to produce a five-minute video about the science and ethics of an emerging development in biomedicine. Over a six-week period, the teams research, shoot and edit their films on an allocated topic. This task is an example of my broader commitment to bioethics education and integrates well with other teaching activities, including the BioethicsBytes website (see Sections 4 and 5 of original application form).

## Background

**Bioethics:** The Quality Assurance Agency benchmark statements for the Biosciences (2007) set out expectations regarding the likely content of degree-level programmes in biological disciplines. These include exposure to thinking about the ethical and moral implications of developments in their field, with good students able to enunciate arguments for their own views on such innovations. The influence of these expectations, and similar developments in secondary education, has prompted increased interest in bioethics within the curriculum (Willmott and Willis, 2008).

**Digital video:** Digital video (DV) has rapidly become an integral part of many people's lives; it is sometime hard to believe that YouTube is only eight years old. The availability of affordable video cameras, combined with the development of non-linear editing software, has facilitated film-making for everyone, not just media specialists (Hofer and Swan, 2005; Shewbridge and Berge, 2004). DV production incorporates several dimensions considered advantageous for meaningful learning since it offers students the opportunity to participate in learning that is authentic (Schuck and Kearney, 2004), active (Greene and Crespi, 2012), experiential (Greene and Crespi, 2012) and collaborative (Lee *et al.*, 2008). Furthermore, DV production is an excellent example of constructionist learning, since the task centres around the generation of a tangible object (Kafai and Resnick, 1996).

## Reason for introducing this teaching method

Schuck and Kearney (2004) have identified a number of reasons for introducing DV production into education. These include development of understanding, increasing student motivation, enhancing student autonomy, promotion of active learning, opportunities for group learning, and development of interest in movie making. Along with this, I believe that, wherever appropriate, contemporary education ought to embrace "real-world" assignments, that is to say assessed activities which have an overt connection to life beyond the confines of the course, in a way that traditional assessment formats such as essay-writing rarely achieve.

I also recognise the value of students engaging in assignments which generate a product of genuine utility to the broader community. Making examples of the best films (or sections thereof) available online identifies the students as bona fide producers of resources.

### Students' perspective

Over the first five years that this exercise has been running, matched (before and after) surveys have been gathered from 138 students. Students were asked to evaluate their knowledge and interest in both bioethics and digital video production. Table 1 summarises the scores (out of 10) as well as the differences for each question before and after producing their film.

<b>Table 1. Self-evaluation by participants in bioethics video production task 2008-2012</b>						
Questions	Students	Mean	SD	95% CI		p value (paired t test)
<b>Q1 Bioethics knowledge</b>						
Before	136	2.98	1.81	2.67 to 3.29		
After	136	6.80	1.25	6.59	7.01	
<b>Difference</b>	<b>136</b>	<b>3.82</b>	<b>1.87</b>	<b>3.50</b>	<b>4.14</b>	<b>&lt;0.001</b>
<b>Q2 Bioethics interest</b>						
Before	137	6.34	2.19	5.97	6.71	
After	137	7.18	1.64	6.90	7.46	
<b>Difference</b>	<b>137</b>	<b>0.84</b>	<b>2.07</b>	<b>0.49</b>	<b>1.19</b>	<b>&lt;0.001</b>
<b>Q3 Video-making knowledge</b>						
Before	138	2.84	2.48	2.42	3.25	
After	138	6.49	2.18	6.12	6.86	
<b>Difference</b>	<b>138</b>	<b>3.65</b>	<b>2.53</b>	<b>3.23</b>	<b>4.08</b>	<b>&lt;0.001</b>
<b>Q4 Video-making interest</b>						
Before	138	5.94	2.73	5.48	6.40	
After	138	6.51	2.66	6.06	6.95	
<b>Difference</b>	<b>138</b>	<b>0.57</b>	<b>2.91</b>	<b>0.08</b>	<b>1.05</b>	<b>0.02</b>

Participants generally felt that their knowledge of both bioethics and video production had risen during the exercise. The rise in interest in bioethics and in video production showed only marginal increases, but their *a priori* scores were already relatively high. Nevertheless, for all four criteria, the increase in scores after the activity is statistically significant (paired t test).

Student feedback about the exercise has been overwhelmingly positive, for example: *“enjoyable doing video project as it was quite a novel, creative form of assessment”*; *“the video project was a good learning experience”*; *“video gave good and varied experience of working in teams”*; *“video project allowed us to research areas and topics of science that were different, new, and exciting, and also challenged us to using new equipment and computer software”*; *“I was wary about making a video as I never had before but ended up enjoying and learning lots from the experience”*; *“video project was ace”*.

It is particularly gratifying that many of the students' comments closely align with the original vision for the exercise (novel and engaging assessment; expression of creativity; genuine team working;

new skill acquisition). Furthermore, comments made elsewhere by many students confirm that the depth of their research to produce the film would have adequately equipped them to conduct more traditional assessment tasks (e.g. essay writing) on the same topic.

## **Issues**

The most frustrating aspect of this activity is the need to adapt to the constant changes in technology. Although the cameras in which I invested (using my National Teaching Fellowship award) are not yet obsolete, nevertheless much better equipment is now available. The biggest technology-based problems have actually come from changes to the University's computers, with the phasing out of FireWire ports and removal of video editing software as standard. Thus far, however, we have managed to successfully negotiate these challenges.

I elected to organise the students into teams rather than letting them choose with whom they work. For the most part, this has proven to be a valuable dimension to the project (working with a broader range of people than they might naturally have chosen). Inevitably, however, there have been a few occasions when teams have not automatically clicked and we have had to intervene to ensure issues have been ironed out. It is encouraging that not only have all of these teams gone on to produce films, but some of the very best work has been produced by teams who were slow to gel.

## **Benefits**

Asking students to engage in making a short film about a bioethically-significant topic has a number of major benefits: (1) Video production offers students the opportunity to demonstrate their creativity; (2) Successful completion of the task requires genuine teamwork; (3) It offers participants a chance to develop their argumentation and story-telling skills; and (4) It exposes them to software and other multimedia tools of generic value in the 21<sup>st</sup> century. All of these benefits, in a variety of ways, enhance the employability of the participants. Additionally, it gives students who may struggle with written tasks an alternative mechanism by which to demonstrate their learning.

## **Lecturer's perspective and reflections**

Although use of video in discipline-specific education is becoming more common, an assessed activity involving video production by non-media students remains an unusual innovation. By several measures, this task has proven to be highly successful. In addition to the students' own positive evaluation of the exercise, we have concrete evidence in the form of the videos themselves. Students with little or no previous experience of film-making have consistently managed to produce engaging videos which demonstrate significant understanding of the ethical issues associated with developments in bioscience and biomedicine.

In 2012, my video-production activity was adopted by the Nuffield Council on Bioethics as the basis for their *Box Office Bioethics* competition. To my knowledge other institutions including Nottingham

Veterinary School and the interdisciplinary science programme at Leeds University are also considering adapting the exercise to use with their students.

## Dissemination

A paper describing and evaluating this project is currently in preparation. Aspects of the work have been presented at the 3<sup>rd</sup> Science Learning and Teaching Conference (Edinburgh, 2009), Teaching Ethics to Bioscience Students (Cardiff, 2009) and the Higher Education Academy Annual Conference (Hatfield, 2010). Several of the student films have been made available via the BioethicsBytes YouTube channel, with links from my bioethicsbytes.wordpress.com website.

## References

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A video accompanying this case study is available at <http://youtu.be/vzfcqI0ITqs>