

CASE STUDY

Introduction of a video assignment: advantages and disadvantages from the students' perspective

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Abstract

We present a case study on the introduction of video assignments into Level 4 (year 1) and 6 (year 3) modules within a BSc Mathematics degree. The students were required to provide verbal explanations within a video about some written steps in their argument. We present the details of the assignments and assessment criteria. The introduction of the video assignments was evaluated through focus groups. We present a number of advantages and disadvantages from the students' perspective when they compared the methods of providing answers through videos, presentations and written work. In particular, we present information on confidence levels, the ability to spot mistakes, skills development and the usefulness for job applications. We provide some practical suggestions for anyone thinking about introducing their own video assignment.

Keywords: Video assessment, skills development, job applications, confidence, student perspective.

1. Introduction

The module 'Number and Structure' sits within Level 4 of a BSc Mathematics course. The course has an applied focus and there is a large emphasis on the development of employability skills throughout. The module 'Number and Structure' is one of the purer modules, but still has a reasonable amount of connections with the real-world and includes some skills development (Corner and Cornock, 2018). The assessment consists of several coursework tasks (50%) and an end of year examination (50%).

In 2016/17, when approximately 85 students were taking the module, a video assignment was introduced. The video assignment was one of many pieces of coursework assessment within the module, and was worth around 8% of the coursework mark in 2016/17. An appropriate question was selected, which was to either prove or disprove the following statements:

- 1) If an integer a is not divisible by 3 and an integer b is not divisible by 3, then the product ab is not divisible by 3.
- 2) If an integer a is not divisible by 4 and an integer b is not divisible by 4, then the product ab is not divisible by 4.
- 3) $3^{2n} + 11$ is divisible by 4 for all positive integers n .

The students had to present their answers via a video, which needed to be less than five minutes long. The students had to provide some written work, but had to give their explanations verbally. In preparation for the assignment, the students took part in a workshop where they were briefed on the

assignment, the technology and submission details, and also tried out the recommended technology (screencast-o-matic).

The subsequent Level 4 cohort in 2017/18 also did a video assignment, which contained different questions. They also had the option of presenting their next assignment via a video. Also, in 2017/18 some Level 6 students had the choice to present some of their answers via a video in a similar type of module, but did not have to do a compulsory video assignment.

Mark schemes were provided for the video assignments, which were marked using grades rather than marks. There were communication criteria surrounding descriptions, the focus on meaning behind results, why results can be used, whether statements follow in a logical order and are connected, if explanations provide details of how the work progresses from one step to the next, having sensible and appropriate presentation, having easy to follow arguments, and a balance between mathematical content and explanations. There were also criteria on the demonstration of knowledge, understanding and skills, the correctness of answers, and the overall approach. Within the mark scheme for the video assignments, the explanations were referred to as "verbal explanations" and there was the criteria that "verbal explanations add more insight than the written/typed work" to discourage the students from just reading out a written assignment.

2. Evaluation

Student views were gathered through focus groups, which took place with ethical approval. Comments made within them were recorded, but details about individuals (e.g. gender) were not collected. All the students taking the modules under consideration were invited to take part and all the volunteers were accommodated within the focus groups.

2.1 Focus groups in 2016/17

Focus groups were carried out following the Level 4 video assignment in 2016/17. There were two focus groups, which contained a total of 14 students. They were asked questions about how they found the assignment, similarities and differences between the methods and their preparation, and whether they had developed skills. They were also asked questions about the practicalities and what they would do if they had the option of a video in the future. The last part of the focus group involved them looking at cards that were provided. These included 'talking out loud', 'confidence', 'video interviews', 'use of technology', 'presentation skills', 'length of descriptions' and 'verbal explanations'.

2.2 Focus groups in 2017/18 following choices

There were focus groups that took place in 2017/18 when students had the option of submitting work through a video. The students were separated into the four groups depending on their level of study (Level 4 or Level 6), and whether they had opted to present answers via a video. They were asked about the reasons for their choices and experiences.

3. Advantages and disadvantages

There were a number of advantages and disadvantages that were highlighted by the students.

3.1 Understanding

The video assignment was shown to have an impact on the required levels of understanding and thought, as well as the development and the ability to demonstrate understanding. Further details and analysis is presented in Cornock and Crombie (submitted).

3.2 Confidence

The video assignment in 2016/17 effected the confidence of some of the Level 4 students. As well as confidence with presenting, the video assignment affected their confidence with the material. One student pointed out that they *"feel a lot more confident for those topics where [they] had to explain if they did come up because [they have] actually had to talk about it and explain [their] answers whereas actual written assignments you just do the question and hand it in and don't really think about what you've done"*. One of the Level 6 students who chose to do their assignment on paper in 2017/18 said that if you are confident doing the video, then it *"reassures"* the marker, but if they do not sound confident *"they might come across as if they don't"*.

3.3 Spotting mistakes

When asked in the focus groups in 2016/17 what could be done through a video assignment that could not be done through other assignment, one student said that it was *"easier to spot mistakes"* when listening to the recording because *"if it's written it's harder to see where you've gone wrong"*. On the other hand, not all students agreed with this. Amongst the students who opted to do a written assignment in 2017/8, a Level 4 student said *"it's easier to check on paper"* and a Level 6 student said that *"with writing you can check what you've actually done"*. A Level 4 student mentioned that *"it's easier to fix on paper"* and a Level 6 student said they can *"proof read it and change it instantly"*. A Level 6 student who opted to do a video also highlighted that *"there is a problem as well when you are checking through your work 'cause no one likes to listen afterwards"*.

3.4 Comparison of video assignments and presentations

During the focus groups in 2016/17, the students made comparisons between the video assignments and presentations. One students said it *"might be easier to do it face to face rather than a video"* as they *"use [their] hands quite a lot to explain things and it would have been a lot easier to just talk to someone about it."* Another comment was that *"it would be easier to know if the staff knew what you were going on about if they were in front of you as well."* However, there was general agreement that a presentation would not be better. One student described the video assignment as a *"confidence booster"* as what *"scares [them] is having an audience"* and *"you haven't got anyone physically watching you while you're doing [the video] so [they] didn't feel like scared doing it."* It was felt that there is *"less pressure"* with doing the video assignment as *"you can do it in your own time sort of take it one step at a time rather than being put in front of somebody"*. It was also mentioned that in presentations, you do not necessarily get to say everything you want to say. A Level 6 student in a 2017/18 focus group who did the assignment on paper said that they could do a presentation through a video as they can re-do the recording and as with a presentation they are *"totally relying on remembering everything on the spot"*.

Comparisons of the video assignment and presentations in 2016/17 and 2017/18 showed that some students preferred presentations because of body language. Whereas others preferred taking their time, not having to remember everything, having the flexibility to edit and having the privacy of the video assignment. Further work looking into a choice between a presentation and video assignment would be an interesting study.

3.5 Skills development

The students in the focus groups in 2016/17 were asked whether they developed any new skills or improved existing ones through the video assignment. The responses included video editing and developing or improving communication. When asked about the impact on presentation skills, the responses were about talking clearly and concisely, thinking about what was being said more and bearing the listener in mind. It was noted by a Level 6 student in a 2017/18 focus group that *"you*

improve quite a lot doing videos", stating that they had taken 10 attempts at the first question and one attempt at the second. A Level 6 student who did a video said that they think that *"doing a video might actually help you to write things"*.

3.6 Videos in job applications and interviews

In addition to the awareness of how the video assignment helped them on the course, the students talked about the use of videos in job applications and interviews in the focus groups in 2016/17. One student said that they *"feel like video interviews would be more personal than in the assignment where [they] were explaining the maths"*. When asked directly about video interviews and the relevance of the video assignment, one response was that it would depend on what it was. They gave the example of a Skype interview being more like a presentation, but if they had to present an answer to a question in a video, then the video assignment *"would definitely help because it's just obviously a different question that would be relevant to what you're applying for."*

There was not common agreement that a video assignment helps in preparation for any video interviews. Some students thought that doing the video assignment helped them to prepare for future applications that involve video as it did not matter what they were talking about. However, others did not think it would help due to the questions being less mathematical in job applications.

3.7 Technical side of the assignment

The students in the 2016/17 focus groups recognised that they had developed technological skills whilst doing the assignment, but found the use of technology the difficult part of the assignment. When they were asked how they found the assignment, the responses included that they struggled with the time limit. However, when asked whether there were benefits of having a short time, one student said that *"you're more precise when you're explaining things"* and are *"not waffling as much"*. Another student mentioned that with a shorter time, they *"feel like you miss stuff out"* and there was general agreement with this. There were several comments that suggested the time limit contributed to the video taking a lot of time to create as the students did many attempts to get their video under five minutes. There was concern about how much work was involved. One student estimated that *"it was approximately 30% of [their] time [spent] on the maths and 70% on the video"*. A Level 6 student pointed out in 2017/18 that a video assignment is *"bad in a way for feedback"* as they could not remember what they said in the video they produced.

There were concerns about what they were being tested on in 2016/17, despite a detailed mark scheme and reassurance that they were not being tested on the video making skills. Comments included that they *"felt like that assignment was judging [them] more on how well [they] can make a film than on [their] maths skills"*.

There were also further comments in the 2016/17 focus groups about other technical problems, which included editing and uploading. However, most of the problems mentioned seemed to be linked with this being the first time they had done a video assignment. One student said that *"getting used to doing that style of assignment at the same time as doing it was the challenging aspect"*. There was general agreement that it would be easier next time.

As expected, the technical side of the assignment took up the most time. Providing a time limit of five minutes caused most of the issues with how long the assignment took to do, but there was some recognition that it meant they were more concise. There were other problems which included getting used to the software, editing and uploading. Despite these problems, there was a sense amongst the Level 4 students in 2016/17 that it would be better if they did another video assignment, however

there was little uptake when they had the option to do a second video assignment in 2017/18. This will be explored further in a separate paper.

4. Practical considerations

When introducing a video assignment into a module, the following are recommended:

- 1) Start with a small cohort or some student researchers as a trial to make sure the assignment brief cannot be misinterpreted;
- 2) Be very clear in the mark scheme about what is required – in particular, make sure the students are discouraged from just reading out what they would have done for a usual written assignment;
- 3) Specify what is not being assessed (e.g. editing skills) and what the requirements are (e.g. that they do not have to physically appear in the video, but their verbal explanations must be clear);
- 4) Set clear requirements – for example, you may want to specify the type of videos that will be accepted (e.g. mp4);
- 5) Make students aware of anything that may lead to accidental academic misconduct (e.g. reading out answers in a public place);
- 6) Have a training session to go through the assignment requirements, show the students how to use the technology and give them the chance to try;
- 7) Think about the point of submission and whether it will accept large files;
- 8) Consider how you will provide feedback to students – getting students to provide a print out of the written part of their work gives you something to annotate as you are watching their video;
- 9) Set a time limit for the video;
- 10) Give it a go yourself – this will bring up potential problems (e.g. if you are setting too much work to do within the time limit).

5. Conclusions

There are a number of advantages that can be gained from students doing a video assignment, particularly around the area of skills development and preparation for future job applications. There were also plenty of concerns about the technical aspects of the assignment, such as the time it takes to produce a video. There is a lot of room for difficulties within a video assignment, but a lot of these problems can be minimised by careful consideration when it is being set.

6. References

Corner, A.S. and Cornock, C., 2018. Applications and props: the impact on engagement and understanding, *MSOR Connections* 17(1) DOI: <https://doi.org/10.21100/msor.v17i1.908>

Cornock, C. and Crombie, A. (submitted) Development and assessment of mathematical understanding through video assignments

ScreenCast-o-matic. Available via <https://screencast-o-matic.com/> [last accessed 5 July 2020]