

Getting a better picture: using video to improve the presentation skills of chemistry students

PAPER

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We have introduced video recording as a routine method to help all our chemistry undergraduates to improve aspects of their presentation skills within our 3rd-year group exercises, structured learning packages. The ten-minute talks given by all teams are recorded and each team receives a copy of their own talk for review. Teams are encouraged to reflect on their recorded talk by requiring them to complete a pro forma analysing the good and bad points of their presentation. Written feedback from students provides evidence that they recognise the benefit of this exercise. We now intend to use video recording routinely in the delivery of these exercises.

Introduction

We have previously described how the format of a *structured learning package* (SLP) encourages our 3rd-year students to improve their personal key skills, in a chemistry context, by giving them the opportunity to complete back-to-back tasks, involving teamwork, oral and written communication, problem solving and information management, over the two distinct stages of the exercise¹. This allows them to improve their skills after periods of reflection on their experience and in response to guidance from both tutors and peers.

Students participating in an SLP are each expected to devote some 40 hours of their time to the tasks and this is spread over a period of 3-4 weeks. The organisation and management of an SLP has been described previously¹. For the purpose of this paper the key organisational feature is that approximately halfway through this period, the class meets for the four, or five, teams involved to deliver their first 10-minute team presentations to the rest of the class. Each team presentation must involve all members of the team. The learning experience in this session is enhanced through the following measures:

- the talks are formal and assessed;
- the audience comprises the balance of the class (around 20 students) and two staff, making a more sizeable audience than many will have encountered before;
- the overlap between the technical content of each talk ensures that the audience and the speakers have a comparable level of expertise providing a more critical audience for the talk, and simulating some of the pressures of delivering a 'real world' presentation;
- teams in the audience take turns in leading the questioning of the presenting team at the conclusion of each talk; the four or five presentations are delivered sequentially with intervening periods for these questions;

- there are questions for each team from the tutors present;
- attentiveness in the audience is prompted by revealing, at the start of the talks session, that the second stage of the SLP builds on the information presented by *all* the other teams;
- when all complete, the talks are followed by a class-wide brainstorming session on the good and bad points of presentation style with the advantage of generating a sense of ownership within the class about what defines a good talk (and avoiding the tutor producing a *prescription* of good practice);
- the latter discussions are summarised by the introduction of a detailed marking scheme to be used to assess the second talks.

Our experience suggests that this procedure works well; individual written testimonies provided by students at the end of the SLP² suggest that improved presentation skills are already the major perceived benefit. However, some students suggested that they would benefit from seeing video replays of their presentations. This technique is widely used in other disciplines (e.g. medicine and dentistry³, teacher training etc.) and in company selection and training schemes. A search of the Internet and other databases quickly brings to light numerous cross-disciplinary examples of using video recording to enhance communication skills. Our view was that by responding positively to the students' suggestion we could encourage constructive reflection on the lessons brought out during the brainstorming session which concludes the first set of presentations.

This paper describes how we have introduced and supported the use of video, and how the students perceive the benefits.

Methods

Since the introduction of the video recording, the students are informed in the opening session of the SLP that their first talk will be video recorded. We are careful to stress that each team will have access only to a copy of their own talk and that staff will make no use of the recording other than to provide guidance for students when requested. In other words, we make it clear to teams that the use of video is for their benefit, not ours, and we emphasise the potential benefit of retrospective reflection and analysis of their performance in giving talks.

We introduce the first session of talks by reminding the class about the video and demonstrating the field of view of the camera to encourage speakers to remain within the frame. The

camera used is a tripod-mounted digital device which has the benefit of being small and unobtrusive. It is left running throughout the whole session to minimise any further distractions. After the completion of the talks, a class discussion is led by tutors to identify the learning points which have arisen with regard to giving presentations. The style of this is unchanged from the procedure used prior to the introduction of video to the exercise, as described above. Separate VHS tapes are prepared from the digital master so that each team can be given a copy of their own performance during the talk and post-talk questions. The teams receive email advice when their individual VHS tape is available for collection. At the same time they are provided with some feedback from the tutors on their team's performance and with a blank *pro forma* (reproduced as Table 1) to be completed by each team and submitted before the second presentation. The *pro forma* is designed to encourage students to review the tape constructively by reminding them that their first attempt is likely to have included several positive features which they will want to retain and build on in their second talk, and by asking them to concentrate objectively on identifying areas for improvement which they will address in

the second talk. We offer to arrange for teams to use a room and TV/video facilities in the department for purposes of viewing the video tape though some make their own arrangements.

The completed *pro formas* provide useful information about the students' perceptions of the lessons they have learned. Further feedback was obtained from the individual testimonies which are an integral part of the SLP² and are written in response to the instruction:

'Describe how you have contributed to this team exercise and how the experience has allowed you to use, and develop, your key skills.'

'You should use this as an opportunity to practise writing about your achievements and also as a reflection on the exercise to identify where, and how, you have improved and where you perhaps need to concentrate on further improvement in the future.'

A final form of feedback is available from the voluntary response questionnaire handed out at the end of the SLP which includes one question specifically about the use of video and another about the development of communication skills.

Table 1: *Pro forma* for completion alongside the review of the team presentation video

Structured Learning Package: Review of presentation video

You are supplied with a video of your team presentation and question session. Please view the video and reflect on your performance by answering the questions below. You should compare your performance with the general points of good and bad practice which were discussed after the talks, and with additional points raised in the handout supplied. Can you identify any specific issues? The object of this exercise is to enable you to identify areas where you personally can improve your presentation technique. The areas for improvement that you identify should be incorporated into your next presentation.

Team number: SLP Topic:	
After viewing your video, identify aspects of your presentation that were <i>effective</i> in getting your message across to the audience. (If necessary, please use the back of this sheet)	
Identify specific aspects of your presentation that are examples of not effectively getting your message across to the audience. Do any other issues arise as a result of viewing your video that were not apparent at the time?	
Hence, decide on the four main aspects that your team will target for improvement in the second presentation.	Action point 1: Action point 2: Action point 3: Action point 4:

Results

After an initial and understandable reticence, the students display a general stoicism towards facing the video camera. We take this as an encouraging sign that the benefits are self-evident to the majority. One or two of the comments discussed below show that some students find the process of watching themselves more excruciating than others, which is only to be expected.

The written responses provided on the *pro forma* provide reassuring evidence that the students do more than simply regurgitate a few standard presentation tips and are actually responding to the opportunity to review their performance. This evidence is of two kinds. First, the actual number of recorded comments strongly suggests that something more than a cursory run through of the video had taken place: for example, in response to the second section, addressing aspects of ineffective presentation, an average of four points was raised by the 19 responding teams. The second type of evidence comes from the nature of the comments; these often referred to aspects which had not been raised in the class review of presentation skills, and, where more standard faults were highlighted, they were supported by actual evidence from the video recording. This convinces us that the students were not simply reproducing views and comments previously aired in discussion, but were viewing the videos constructively for their own benefit. Selected comments are shown in Table 2. The video seemed to be particularly effective in highlighting deficiencies in visual aids, from crowded overheads to the issue of no overhead at all, where students observed themselves talking alongside a large, blank square of light!

Despite this being a team response to viewing the video,

Table 2: Some 'good' and 'bad' points drawn from student *pro forma* responses.

Good

- "Displaying 'method of attack' – showing the order we presented our sections in"
- "Andrew linking together the different sections"
- "Everyone knew what the other team members were doing"
- "Presentation structure was logical and well-ordered, meaning that the talk was easy to follow"
- "Paul pointed out certain points on the diagram making sure that everyone followed"
- "Joint question answering – everyone in the team was well informed on all aspects"

Bad

- "Other group members standing behind draws attention from the speaker"
- "Too much information, likely to lead to people switching off"
- "Sometimes there was nothing for the audience to look at"
- "We had a tendency to look away from the audience and speech was often lacking enthusiasm"
- "Not taking an interest when the rest of the team is talking"
- "Some of us fiddled with our jumpers, hair etc., spoke into the OHP screen, and fidgeted"

some teams were occasionally prepared to single out their members in order to praise particular aspects of their contribution (an example is given in Table 2). Understandably, no blame was apportioned to specific individuals for detracting from the overall team performance. However, within the privacy of their own reflections on the exercise (in their individual testimonies), several individuals do recognise that their own below-average presentation skills have reduced the impact of the team's efforts. Consequently, we have evidence that whilst we currently ask for a team response to reviewing the video, the process does provoke individual ruminations about performance levels within the peer group. The value of this, of course, lies not in exposing the poorer performers but in revealing to them *how much* they can improve and, indeed, *how* they can improve. Other comments on the video review *pro forma*, and in the individual testimonies, suggest that an important aspect of the exercise is the way the poorer performers improve by virtue of learning directly from observing their more successful peers in action. We feel that this aspect is enhanced by the structured review of the video which the teams now undertake.

The voluntary-response questionnaire was issued to 76 of the students engaged on SLPs, with 46 (61%) of these responding. The questions covered several aspects of the SLP exercise with two relevant to the use of video in improving communication skills. The wording of these questions was:

Qu.9 With respect to oral presentation skills, did you find the use of video recording helped you to identify areas for personal improvement?

No A little A lot

Qu.4 Did the exercise result in improvement to your knowledge and skills in the area of oral communication skills?

No A little A lot

The 46 student responses to these questions are shown in Figure 1. Only one student answered 'No' to question 9. 21 (46%) chose 'A little', and 24 (52%) 'A lot' (Figure 1). 22 respondents volunteered an additional comment about the use of video. Two of these were critical of the way we had used video (one wanted better playback facilities, the other urged us to "make it clear that it [video] is for our benefit"), and a further three were comments from students who found the procedure particularly embarrassing! The rest provided some typical examples of how the respondents felt they had benefited from the process.

In response to question 4, 18 (39%) of the 46 responded 'A little', and 28 (61%) 'A lot'. Of this latter 28 respondents, 10 (36%) responded with 'A little' to Qu.9, and 18 (64%) with 'A lot'. This provides some evidence that the students who felt they had improved most in oral presentation skills did so by benefiting most from the video recording (Figure 1).

The third approach to assessing the impact of using video was to look at the 'individual testimonies' written by students as part of their reflective review of the completed SLP. We received 98 such testimonies. Of these, some 32 (33%) made specific mention of the role of the video in improving their presentation skills; a remarkably high proportion when the range of possible topics is considered.

Figure 1: Breakdown of student questionnaire responses to oral presentation and video questions. (Horizontal bars show the number of respondents who felt the exercise had improved their oral presentation, either 'a little' or 'a lot', and the shading indicates the extent to which the use of video was perceived to have helped)



Discussion

We are encouraged to find that 98% of respondents recognised the positive contribution of video to improving oral communication skills when questioned specifically about it. We regard it as equally striking that as many as a third of all participants single out this particular innovation for comment when asked to reflect on the impact of the *whole* exercise. The detail of some of the comments in the individual testimonies is also revealing about the ways in which some individuals benefit from reviewing their performance in this way. It is far too subjective to venture any opinion on whether or not we noticed any improvement in the actual standard of second presentations compared with the previous years when the video was not used. However, we are confident that the evidence presented above confirms that we have achieved our aim of making the learning of presentation skills a more reflective and involving process for the students. In achieving this, we would draw attention to the role of the *pro forma* in encouraging a reflective approach to learning from the video recording.

Set against the perception of improved learning is the extra workload involved in managing the video process for students and staff. For staff using our mode of operation, this comes principally in transcribing the digital master tape onto individual VHS tapes for each team, in distributing and recovering these with the *pro forma*, and in arranging the departmental facilities for some of the teams to view their video. This additional effort cannot be dismissed in a course which is already quite intensive in its demands on staff time.

However, these additional tasks could all be devolved to technical staff where such support exists.

The feedback we have received has convinced us that a significant number of students are helped by the introduction of video recording of their talks. In our view this benefit more than offsets the small increase in workload and we intend to make it a permanent feature of the course. We hope the positive experiences described here will be helpful to others considering the introduction of similar technology

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References

1. Duckett SB Lowe ND and Taylor PC 1998 Addressing key skills in the chemistry curriculum: structured learning packages *U.Chem.Ed.* 2 45–50
2. Lowe ND 1999 Reflecting on learning *U.Chem.Ed.* 3 76
3. Feather A and Fry H 1999 in: *A Handbook for Teaching and Learning in Higher Education: Enhancing Academic Practice* (eds. H Fry S Ketteridge and S Marshall) (Kogan Page, London)