

## Sustaining Interest During Lectures with the use of Multimedia

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“A picture paints a thousand words”, goes the cliché. Indeed, pictures, in the form of photographs, charts and diagrams are *de rigueur* in our daily lives. Newspapers and magazines boast high-resolution colored images, as do respected medical journals.<sup>1</sup> How much more information, then, can be communicated by “moving pictures” or videos?

A truism is that the written word opens new vistas, which are limited only by the reader’s imagination. Purists boycott movie adaptations of their beloved novels, decrying the crass commercialization and lack of soul that cheapens the beauty and grandeur of the written word. Yet, one has only to watch the *Harry Potter* or *Lord of the Rings* films to realize that movies, in bringing prose to life, really are magic. Some medical journals have appreciated this phenomenon and have begun to include online or hard-copy videotape reports.

To quote 19<sup>th</sup> century American theologian Tryon Edwards, “to waken interest and kindle enthusiasm is the sure way to teach easily and successfully”. A colleague, inspired by this, gave a lecture replete with jokes, pictures and animations. He came away, satisfied that it had gone well, judging by how the students had participated fully, laughed in all the right bits and applauded him at the end. It was only when he administered a pop quiz the next day that he realized that the students had not absorbed the contents of the lecture at all!

Few would dispute that to be effective, the speaker has to engage his listener. No one listens to a bore who, though brilliant, will likely be ignored by or disenchant his somnolent audience and thus remain uncelebrated. A tongue-in-cheek article by Rockwood examined the incidence of physicians nodding off at scientific sessions, and concluded that certain characteristics predisposed one to nodding off. These include monotonous tone of voice, poor slide quality and a tendency to ramble.<sup>2</sup>

The Confucian dictum, “Tell me, and I will forget. Show me, and I may remember. Involve me, and I will understand”, is said to have influenced the

formulation of the experiential learning cycle of David Kolb.<sup>3</sup> The cycle basically refers to the process by which we attend to and understand our experiences in order to learn from them. Paired with the Kolb Learning Style Inventory (LSI), which measures preference for each of four learning orientations, viz abstract conceptualization (thinking), concrete experience (feeling), active experimentation (doing) and reflective observation (watching),<sup>4,5</sup> it has been argued that teaching and learning environments, if matched with the individual learning styles of students, could greatly enhance educational outcomes in medical schools.<sup>6,7</sup> The first two orientations describe modes of acquiring new information, whereas the latter two describe the preferred modes of incorporating new information.<sup>8</sup> The LSI defines four discrete learning styles: *convergers*, *assimilators*, *divergers* and *accommodators*, based on their combination of methods of acquiring and incorporating information. Judicious inclusion of videotaped vignettes (videos), it might be argued, would allow for an experiential element to the teaching process. For example, instead of describing choreiform movements in words alone, the inclusion of a videotape assessment of a patient with chorea, coupled with a text descriptor, would provide a “tie-in” to complete the experience for the student. We re-examined how lectures were given at our university, and felt that adding multimedia presentations in the form of videos would help our students understand the material better.

### The Neuroscience lecture series

At our university, the second-year neuroscience module consists of a series of didactic lectures given by anatomists, neurologists and neurosurgeons. Few, if any, incorporated video presentations, but all contained figures, charts and photographs. The teaching of neurology is particularly amenable to the use of videos, as a fair proportion of the neurological examination is visual as well as tactile. Even components such as motor power and tone, which require that the examiner “feel” the response of the patient, can be discerned by observation as well. Interestingly, some aspects of the clinical

**Table 1**

<b>A Personal Background</b>		<b>Male</b>		<b>Female</b>		
1	Gender (n=216)	124 (57.4%)		92 (42.6%)		
<b>B Do you think that inclusion of videos in the lecture help:</b>		<b>Male (N=124)</b>		<b>Female (N=92)</b>		<b>Significance *1</b>
		<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	
1	Sustain interest?	100% n=124	0	100% n=92	0	NA
2	Visualize concepts?	97.6% n=121	2.4% n=3	97.8% n=90	2.2% n=2	0.906
3	Remember facts better?	76.6% n=95	23.4% n=29	87.0% n=80	13.0% n=12	0.055
4	Understand better?	95.2% n=118	4.8% n=6	100% n=92	0	*0.032
5	Apply knowledge?	91.9% n=114	7.3% n=9	93.5% n=86	6.5% n=6	0.671
6	Pass tests/exams?	55.6% n=69	37.1% n=46	65.2% n=60	33.7% n=31	0.147
<b>C</b>	<b>Would you like to see more videos in your lectures?</b>	100% n=124	0	98.9% n=91	1.1% n=1	0.245
<b>D</b>	<b>A good lecture would consist of components in the following proportions (total 100%)</b>	<b>Male (N=124) Mean (SD)</b>		<b>Female (N=92) Mean (SD)</b>		<b>Significance *2</b>
1	Text	37.30 (14.826)		41.09 (14.896)		0.065
2	Diagrams/Figures	28.99 (11.348)		26.74 (9.677)		0.127
3	Video	33.63 (14.026)		32.17 (14.512)		0.458

\*1 Pearson chi-square test ; \*2 T-test for equality of means for independent samples

examination (e.g. phenomenology of movement disorders or the phases of a patient's gait), are best assessed "at a distance" i.e. on screen as well as at the bedside.

### Student feedback after incorporating videos

Soon after incorporating videos in our PowerPoint lectures, we noticed that students talked less amongst themselves and appeared to pay better attention during the lectures. We were heartened, as well, when students provided positive verbal feedback. Realizing that we should enlist the opinions of our "consumers", who could provide feedback to help us improve as lecturers and educationists, we performed a simple survey of 216 medical students after an hour-long lecture on movement disorders. Our questionnaire consisted of 11 questions. In it, we asked if they felt that inclusion of videos in lectures helped sustain interest, visualize concepts, remember facts, understand the lecture, apply knowledge and pass tests/exams. Finally, we asked if they would like to see more videos in lectures and what proportion of

an ideal lecture should consist of text, figures and diagrams and videos. We were aware of the limitations of the survey, in that it was limited to one class, one field of study and one lecture, but felt that the feedback would be useful to our performances as educators.

All of our students (124 males, 92 females) completed the questionnaire. The results are summarized in Table 1. Students ranged in age from 19 to 23. All felt that inclusion of videos helped to sustain interest in the lecture. 97.7% (211/216) agreed that the videos helped them to visualize concepts better, whereas only 81% (175/216) felt that videos would help them remember facts better. 97.2% (210/216) were of the opinion that the videos helped in their understanding of the lecture, and 93% (200/215) saw benefit in terms of application of knowledge. Interestingly, only 62.6% (129/216) envisaged that videos in lectures would help them pass tests or examinations better, yet all except one female student felt that they would like to see more videos in their lectures. Approximately a third each

of text, figures & diagrams and text should, according to the results of our survey, make up the ideal lecture. We further analyzed the results by gender using Pearson's chi-square test. There was no statistically significant gender difference, except that 100% of female students interviewed felt that videos helped them to understand lectures better, but only 95.2% of males (118/124) felt the same way ( $p=0.032$ ).

### **What is the role for videos in medical education?**

The use of videotape presentations in medicine is becoming increasingly popular, although use is largely in distance learning,<sup>9</sup> such as video-conferencing or viewing taped lectures or informational materials. Time and logistical constraints limit the provision of live patients for medical education, yet the honing of the doctors' skills requires live patient contact, or at least the demonstration of physical signs or examination techniques. Simulation-based medical education (using mannequins, actors posing as patients and videotape presentations) offers a viable alternative to, but not a replacement for, live patient contact.<sup>10</sup> Procedurists (endoscopists and angiographers, for example) have long used real-time video transmission for mass education. Conn has reported how physicians are increasingly using simulators to hone their skills. Interestingly, surgeons who play video games are purported to work 27% faster and make 37% fewer mistakes than their colleagues who do not.<sup>11</sup> Ernst et al reported the successful publication, both on the Internet and in CD-ROM form, of video and digitized images of procedures such as angiography and colonoscopy, for a first-year gross anatomy course.<sup>12</sup> A novel video feedback technique has been found to be effective in enhancing medical communications skills,<sup>13</sup> and the use of patient examination vignettes has been found to be invaluable for demonstrating signs in various fields in medicine.<sup>14</sup> This is especially useful for signs which are rare or ephemeral. Recently, video technology has been harnessed for assessment purposes. Lieberman reported the successful introduction of video clips into computer-based testing for a neurology module, in which examinees were asked to interpret videotaped examination findings.<sup>15</sup> The Royal College of General Practitioners has introduced a video component in the membership examination, in which candidates' consulting skills are assessed via a series of videotaped doctor-patient interactions.<sup>16</sup> The role of multimedia technology in education is being increasingly recognized.<sup>17</sup>

### **What did we learn from our survey?**

We sought to assess student perceptions of the utility of videos in lectures. More than 95% of the 216 students felt that videos were useful in sustaining interest, helping them to visualize concepts, understand better and apply knowledge, while fewer felt that videos would help them remember facts or pass assessments. Almost all, however, indicated a preference for some proportion of videos in their lectures.

In addition to the limitations described above, our survey only indicates the attitudes of the students to video presentations, not the efficacy of lectures incorporating videos as an educational tool. To do this, we would have to perform a study in which 2 cohorts of students are exposed to the same lecture content, each delivered by the same lecturer, one with and the other without accompanying complementary videos. Following this, an assessment can be administered to both cohorts, testing their understanding and application of the material taught. Obviously, our survey was not a true representation of student attitudes to the incorporation of videotaped material in lectures, as it was carried out after a movement disorders lecture, a field in which the complicated phenomenology is greatly aided by videos. Certainly, large-scale studies on the utility of videos in medical education, in different fields, both pre-clinical and clinical, is indicated.

Intriguingly, female students seemed to feel that videos helped them understand material better. Gender differences in pedagogy have been described.<sup>18</sup> Intuitively, learning styles might dictate preference for video inclusion, and it is unfortunate that we could not administer the Kolb LSI to our students prior to the survey.

### **Conclusions**

We concluded that videos have a place in medical education, and have increasingly incorporated videos, where suitable, in our lectures. We feel that the effectiveness of video and other multimedia aids would have to be assessed formally. Our survey indicates that students find that videos enliven lectures, and they expect to benefit from videos in lectures. Certainly, however, there is no substitute for good pedagogic techniques and one must not go overboard and include multimedia such as animations and video vignettes purely for their entertainment value. As educators, it behooves us to embrace technology, especially when it makes us better teachers and communicators. At the same time, we have to seek the counsel of our students. To quote Kierkegaard, "Instruction begins when you, the

teacher, learn from the learner, put yourself in his place so that you may understand what he learns and the way he understands it”.

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