

## **Can Big Brother watch? The challenges of Interactive Video teaching.**

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### **Abstract**

The authors of this paper present their perspectives on the effectiveness of interactive video teaching (IVT) as an educational tool. This method has been used to teach science and technology and educational psychology at Charles Sturt University, Bathurst. New technological advancements constantly challenge academics in their quest to provide quality educational programs. This is particularly overwhelming for early career academics still adapting to the higher education environment. The School of Teacher Education has been using interactive video teaching for the past few years to deliver subjects to the Dubbo campus with varying success. This hybrid mode of delivery presents many challenges. Due to the practical elements embedded in the subjects taught, the instructors felt it necessary to implement alternative teaching and assessment strategies. Other challenges included the reliability of the system, interaction capabilities and the development of human relations.

The Interactive Video-Teaching (IVT) method used is "...a live two-way video and audio telecommunications connection between, in this instance, two sites (point-to-point) which allows 'real-time' teaching/learning interaction between lecturer and students." (CELT (n.d.)) This hybrid mode of content delivery creates a new arena of educational practice which is particularly daunting for new academics who are still grappling with subject content and adapting to the higher education environment. McKinney (2002b) cites the significance of "Research into IVT as an educational medium indicates that sessions are more intense than the normal lecture period (DEET 1993). This would suggest the need for a variety of presentation techniques to be employed during an IVT session to prevent students losing attentiveness and becoming less involved in their learning activity" (Parker 1984 cited in McKinney 2002 p. 13).

The instructor has limited control over the technologies at the remote site including lens span. The IVT camera at the remote site is controlled by the Dubbo students rather than by the instructor at Bathurst. This lack of control inhibits the view of the students sitting on the fringe of the classroom. Students therefore have the freedom to walk out of the classroom without the instructor knowing. A student even left the classroom on one occasion to check her email. Instructors are left to monitor the classroom, using deceptive means such as, detecting student's reflections on a nearby whiteboard while they are beyond camera range. Many students had the freedom to engage in the tutorial or sit uninvolved. This technology requires students to be very self directed learners and highly motivated.

*A critical eye often circulated the faces of the students in sight trying to decipher whether those out of view were instigating anything inappropriate. The expressions on those students at the centre of the classroom were relied upon. They became the mirror that was looked into when monitoring the students on the fringe.*

Interestingly, the voices of those students who sat beyond the main view of the camera were easily detected through the placement of microphones around the circumference of the classroom. In our opinion, the lecturer needs control over the classroom camera for a number of reasons; classroom management, better interaction with students, more balanced view of the class and to ensure students are on-task without having to disturb others.

Video conferencing seems to depersonalize teaching. The instructor is removed, detached and distant in terms of their relationship with the class. Initially, the students were despondent they whispered comments to each other during the instructor's explanations and peered through critical eyes. Pauline Jones (cited in Wilson 2002 p. 23) also experienced difficulty developing relationships with students "The relationships developed in IVT teaching are not as close as those with face-to-face students. I think it's partly because of the large size of the group and partly that you can see only half the total number of students on screen most of the time."

Classroom management and organisation was also problematic. Students would pan the lens around the room in an effort to be humorous. The lessons had to be particularly fast moving with little time for students to become restless. We recognised the fact that discipline problems could occur if the students did not find the

lessons stimulating. IVT restricted our use of non-verbal cues to control student behaviour. It was particularly difficult to regain student's attention if they were working on a task in groups. Unless a student was paying attention to the screen, they were largely unaware of their instructor. A method used was to 'count them down.' Students were reminded that they had two minutes or one minute to go. This was barely intrusive but gave students an opportunity to manage their group tasks. It was difficult being unable to use non-verbal cues for classroom management. It became apparent how often teachers rely on non-verbal cues to moderate student behaviour.

The constraints created by the technology prevented our use of a highly interactive teaching approach. Instead of negotiating the direction of discussions during class, the instructor instead, fell into the role of commentator and moderator. Interestingly McKinney (2002b p. 12) also notes "... as lecturer:  
You're also the commentator: announce everything;  
You're also the presenter: enunciate clearly and take responsibility;  
You're also the moderator: provoke interaction, explain the rules, and be explicitly in charge; and  
You're also the director: use camera movements and changers to best advantage."  
This is a very dictative teaching style. McKinney's (2002b) suggestions render the instructor as the controller of student interactions. When the instructor is talking, students are taught to sit and listen. By and large IVT just facilitates verbal communication. However, this didactic method is a far cry from the negotiation strategies also advocated by McKinney (2002a p.1) who states "... Fully interactive video-teaching allows student participation during an instructional session just as in any other learning situation. Listening actively, taking notes, participating in tutorial exercises and asking questions are all active learning strategies for students to adopt." In theory this would be ideal. However, in reality it is not always the case.

The educator as controller is the instructional style we could identify with most when using the IVT method. We were caught between providing students with interactive, negotiating roles to controlling their interactions and ensuring that things did not get out of hand. Bob Dengate (2002 p. 9) reiterates this dichotomy commenting "I have found the IVT medium a little off-putting in that my material is very much of an instructional nature and therefore transmissive. When the students want to talk more about and issues, while I don't discourage that, I occasionally find that I have to be fairly autocratic in getting them back on task, and that's not my teaching style at all."

Do instructors tend to dismiss the interactive approach when using IVT because they find it difficult to get students back on task after discussions? In our experience, once students started a whole class discussion it was often difficult determining who was speaking. If the students talked over the top of each other, following their line of thought was absolutely impossible. Once discussions became out of hand it was very difficult to regain attention. Students had to be very clear when articulating themselves and patiently wait until another student had finished speaking before coming in on the conversation. In face-to-face situations students have the freedom to interrupt each other with the instructor being aware of exactly what was going on. To overcome this problem, a colleague began to ask the students to position themselves at the front microphone whenever they responded to a question. However, this approach restricted spontaneity and student participation levels decreased, as they couldn't be bothered to move out of their seats.

When placed in the classroom instructors can focus on one student and disregard the other. Non-verbal signals such as attending to and maintaining eye contact with one student easily silences the interrupting peer. During face-to-face sessions the discussion proceeds more like a conversation rather than each student delivering a speech for five minutes. However, these simple non-verbal behaviours are impossible to endorse when using IVT methods. "In such environments the staff and students are on different campuses and the technology does not support the same level of easy facilitation of turn-taking and coordination as face to face contexts" (Sellen 1995; O'Conaill, Whittaker & Wilbur 1993 cited in Tuovinen 2002 p. 1).

These constraints must be very frustrating for students too because they cannot debate a point as it arises, instead they must wait until the original person has expressed all of their opinions.. Students often had difficulty hearing the instructor during whole class discussions. These constraints meant that class debates did not last long. One student was able to summarise all the points before another could interrupt the conversation and offer their thoughts. Tuovine (2002 p. 1) reiterates this downfall "... Some of the problems identified in research on lectures (Mathews 1998), such as students being reluctant to ask lecturers questions about poorly understood content, are likely to be even worse in Interactive Video Teaching (IVT) contexts, especially in large classes." This was evident in our own experiences as students rarely spoke up during IVT sessions. Instead students preferred to email questions after the tutorial session.

During these discussion sessions it was also hard for the student cameraman to keep up with who was talking. Often the instructor would receive a frame of the student speaking approximately five seconds before they finished on site. These frustrations often led to discussion sessions being discouraged during IVT sessions. We also deliberated over how much attention the student camera operator could pay to what was being said during class while concentrating on controlling the camera?

Apparently "The University's video-teaching link allows 'real-time' teaching/learning interaction between lecturer and students through two-way audio and video communication. Both the teaching studio site and the student learning site are equipped with microphones and cameras to provide the two-way audio and video interactivity." (McKinney 2002a p. 1). However, interaction is not simultaneous, there is a slight time delay.

*This time delay inhibited our ability to react immediately to situations as they arose. It was impossible to stop a phrase escaping from the students lips after the event. The fits of laughter always began before an appropriate response was formulated. By the time a response was given, students had already settled down. In some instances, this was then met with another uproar and the cycle began again. It was often best to ignore the sly comments and wait for the noise to dull naturally. We then considered whether the time delay and students' mumbled articulations were being misinterpreted by other instructors as misbehavior. Perhaps we had become accustomed to restricting loud muffled noise that was basically inconsequential. Could our fear of losing control be causing our desire for using transmissive teaching styles?*

McKinney (2002b p. 12) warns “The usual set of verbal and non-verbal cues evident in local face-to-face communication are not so apparent in educational delivery through videoteaching. IVT present an additional communication and interaction challenge ...” Not experiencing the subtleties of human communication, the sly comments, laughing eyes or troubled gaze prohibited our ability to relate to the students on a more personal level. It was even difficult to share their joke. Therefore, we could not become familiarized with their personalities and they not with ours. The usual ease with which we could read our audience and respond to their nonverbal behaviour was no longer part of our interpersonal repertoire. These subtle social cues impeded by technology communication caused us to alter our teaching styles and personality on many occasions. Pauline Jones (2002 p.21) reiterates this problem “In a face-to-face tutorial when the students are working over materials around a task, you can sense the way they are going, you can intervene much more delicately or strategically. But in an IVT session, it’s more difficult to do that.”

Students became very receptive after the initial face-to-face meeting and classroom control became much easier. Over the duration of the semester we made three visits in person to Dubbo. When we were physically with the students we had full awareness of their non-verbal behaviour and adapted ours accordingly. This helped the students recognise how similar our experiences were. There was also a lot of pressure on the instructor to try and learn all the student’s names during the initial meeting. By learning their names classroom management became easier and control over student participation simpler. The relationship development was a longer process than normally expected. However, at the final meeting one of the students suggested that; “You’re young with no commitments. Why don’t you move permanently to Dubbo and take our tutorials all the time?” This unexpected question was met with a chorus from the rest of the newfound two-dimensional friends.

IVT limited the types of activities provided for students as the programs which had been designed were very interactive. The subject content required a lot of group work activities. We often demonstrated to students the best approaches to use with primary aged students. However monitoring group work interactions during the lesson was very difficult. The instructor could not always hear individual groups unless a handheld microphone was used. We tended not to use the microphone and just provided feedback to individual groups as they reported their answers at the end of the tutorial. To not do any group work during tutorial sessions denies these students access to experiencing the teaching strategies we espouse. However, Dengate (2002 p. 7 cited in Wilson) preferred to “... not provide group work within the IVT sessions as it is difficult to build up closeness and to pick up the inter-human communication cues that exist in group work.” Alternatively, tutors desire to control the interactions might drive students into a world of passivity.

Students are encouraged to engage in the learning activities taking the perspective of primary aged students. For example, one of the science activities required students to investigate the outside environment. In this instance, the hybrid teaching mode necessitated considerate curriculum modification. Dubbo students would have been greatly disadvantaged if the original lesson was pursued. The students outside investigating the environment would not be privy to the instructor’s comments. Students need to experience correct question techniques as they engage in the

activities. Thus the students are learning through correct examples. Therefore, the teaching philosophy that we preach to students could not be demonstrated. Essentially the perspective of 'do what I say not what I do' was being endorsed.

Consequently, the outside science investigation was changed along with many other tutorial activities throughout the semester. A week before the science task, students were asked to bring in some samples of small creatures. If they forgot to collect the materials the whole activity would have been ruined. Equipment concerns were always present. The instructor needed to plan well ahead and consider what equipment would be needed for the following weeks. If the same materials were being used at Bathurst, we had to rely on Dubbo students to bring their own resources. Obviously equity issues had to be considered, ensuring that there were no additional expenses to the Dubbo students. We had to be creative at times and make do with things that most people could find at home.

The instructor had to be very organised and ensure that all the readings, materials and complimentary written notes were prepared and sent to Dubbo well beforehand. McKinney (2002b p. 15) also stresses this point "Using IVT takes careful planning, and requires you to be highly organized ahead of time. Prior planning is essential so that supporting lesson materials are prepared and distributed well in advance of any scheduled session. Enough lead-time needs to be planned in order to allow for material reproduction at the Dubbo Campus in readiness for distribution to students."

If there was appropriate equipment available at Bathurst, it needed to be transported to Dubbo in time for the class. Often we were required to have multiple sets of science instruments because the Bathurst students would need them at the same time as the Dubbo students. Material requirements coordinated with the lecture and corresponding tutorial classes. Both sites followed the same program simultaneously. There was then a lot of pressure on the few staff at the Dubbo campus to distribute the correct materials to the correct tutorial class. Students were then responsible for assembling the resources, handing out sheets and coming to an agreement about who does what. These tasks helped develop student's communication and negotiation skills.

"The published literature indicates that the on-site facilitator role is very important, and that the person is not so much as administrator as someone who can deal with regular students queries." (McKinney 2002 p.28 cited in Wilson) The on-site facilitator played a fundamental role in ensuring that all the resources were ready and available for the students to use. Due to budget cuts, the on-site facilitator was not available during the second half of the semester. This created additional problems from an organizational perspective. At the beginning of each tutorial session we had to explain to students how the resources should be organized. This proved very time consuming and at times frustrating. Often students had to work with explanations consisting of "No each table gets a green sheet and the demonstrator has the blue one!" Often the mailing system was left a lot to be desired. Our colleagues became our couriers. They transported the equipment to Dubbo and often things went mysteriously missing. If items were sent via the courier, the material went from Bathurst to Sydney and then Sydney to Dubbo – definitely not the most direct route!

The hybrid mode gave students a lot of control over their own learning. Students were required to demonstrate many classroom teacher skills with varying levels of success. This demanded a lot from them, particularly if they were first year students still adapting to this mode of learning. Often students were left to follow the lesson notes or our explanations when giving a demonstration to their peers. During these times they were responsible for the teaching. We were able to sit back and observe their ability to fulfill this role. Students became peer tutors, group managers and collaborative partners. They were responsible for behaviour management, giving instructions, discerning meaning from written mediums and critiquing others' teaching practices. These students showed tremendous flexibility in being able to teach or demonstrate activities without the usual preparation.

The Dubbo cohort comprises many mature age students. Many found some aspects of this mode of learning overwhelming, such as the expectation of a certain degree of computer literacy and technological competence. The expectations of this mode of learning gave the students experiences with a variety of media including print material, forums, World Wide Web, CD Rom and video.

Reflecting on the IVT method challenged us to change our teaching style considerably. It was not realistic to conceptualise IVT teaching as being the same as the face-to-face mode. The technology restrictions did not make this possible. We had to continually consider what other methods we could use to teach the same material. It was also important to take advantage of the technology available. The document camera allowed the instructor to place information on the large screen. During this time, the students were able to hear and talk to the instructor but could not see what was going on at the Bathurst site. We could also see the students at the remote site. This allowed the instructor preparation time without disturbing the class. In the end we adopted such methods as icebreaking activities to encourage group work, advance organisers, enthusiasm for tasks, delegating student roles and highly structured lessons.

Charles Sturt University endorses many interactive methods when teaching content in the School of Teacher Education. We try to demonstrate to students methods we wish them to adopt in their own teaching practice but IVT technologies restrict our delivery methods. Through this paper we have attempted to critique our experiences using Interactive Video technology.

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