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The Use of Teaching Video Clips in Multipoint Desktop Video Conferencing:
Recent Developments in the Singapore MDVC Project

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1. Introduction

The use of multipoint desktop video conferencing (MDVC) for adding value to teaching practice conferencing is the main focus of the research project that we describe in this paper. Adding value to the experiences that trainee teachers have during the seven or eight weeks that they are posted to schools means something other than doing what is currently done in a more cost effective or convenient way, important as such considerations might be. It means opening up to trainee teachers and their supervisors possibilities that are currently unavailable to them, and thereby re-defining, in important respects, conventional notions of the practicum. In this paper, we select one recent development in the project for special attention, namely the video streaming of short teaching video clips for discussion by trainee teachers during MDVC sessions.

The Teaching Practice Discourse and Computer Communications Technology Project was officially launched at the National Institute of Education (NIE) by the Director of Education, Singapore, in May 1999 and is funded by the Ministry of Education, Singapore. The project builds on the findings of an earlier research project, published in 1994 by members of the present research team, that ways and means needed to be found to improve the quantity and quality of discourse during supervision conferences while NIE trainees were posted to schools for teaching practice. There are two major aims of the current study. The first is technical/developmental and involves putting in place a working MDVC system that fully exploits existing technologies; the second is a pedagogic, research interest in establishing whether and, if so, how MDVC can add value to NIE's Practicum. Our intention, as it were, is to establish both what can be done and whether it is worth doing.

In our last AMIC paper, we provided background information and gave an account of the development of the project up to September 1999. That presentation also included a live MDVC link-up with NIE trainee teachers in partnership schools in school cluster North 2. The audience at the Orchard Hotel ballroom, was able to see and hear the conference, as it was projected onto a large screen and relayed through the public address system. The demonstration established the technical feasibility of conducting relatively inexpensive and good quality MDVC conferencing, using the White Pine CU-SeeMe system, Singapore ONE and ADSL telephone line connections provided by SingTel Magix.

In this presentation we concentrate on developments subsequent to our last presentation and outline plans for the next stage of the project, beginning in July. To accompany this paper, we
are showing a video of the project that was made for, and originally shown at, the recent 'Learning Metropolis Exhibition' in Singapore.

2. Background and Aims

The project is essentially exploring the use of MDVC for enhancing the professional preparation of NIE trainee teachers in the light of recent developments in teacher education in Singapore. Three developments seem particularly important. Firstly, during 1998 NIE began to restructure its practicum on a "partnership" model, whereby schools would be given more responsibility for supervising trainee teachers on teaching practice. Secondly, the Singapore Ministry of Education (MOE) began grouping schools into school Clusters under the overall direction of school superintendents. Thirdly, the building began of the new, relocated NIE campus at the Nanyang Technological University (NTU). These developments coincided with a substantial expansion of NIE's intake and extra demands on its staff. The researchers saw that each of these developments had far-reaching implications for the practicum and the part that video-conferencing could play within it.

The project has two parts: the 'Mentor Study' and the 'Pre-Service Study'.

2.1 The Mentor Project

The mentor project uses MDVC to link together the School Coordinating Mentors (SCMs) at the eight secondary schools in School Cluster N1. The SCMs are senior school staff who, under the new partnership model, have overall responsibility for the management of the practicum at their schools. The intention is that because this role is new, the SCMs will benefit from a regular sharing of ideas with each other and with the NIE staff (a member of the research team) in overall charge of mentor training.

MDVC provides the SCMs of N1 Cluster schools with an opportunity to:

- share information on school-based mentoring programmes, for example the provision made for NIE trainees, beginning teachers and older teachers;
- discuss issues and problems, especially those related to setting up the mentor programmes and the gaining of support from principals and colleagues;
- the sharing and discussion of real-life case-studies;
- the personal needs, frustrations and rewards of mentoring.
2.2 The Pre-Service Project

The Pre-Service project involves linking together trainees posted to N2 Cluster primary schools for teaching practice both with each other and with members of the research team. To date all nine of the Cluster schools have taken part in the project which has involved trainees from three Post Graduate Diploma in Education (PGDE) cohorts posted to the schools for teaching practice and two Diploma in Education (Dip Ed) trainees. Typically, trainees have been divided into conference groups, comprising up to six members and six different schools.

MDVC has been used to:

- enable the trainee teachers to hold private discussions on any matters relating to their teaching practice;
- enable trainee teachers to discuss teaching practice matters with members of the research team, who in some cases have been their NIE supervisor;
- draw up the basic pedagogic protocols for using MDVC as a vehicle for practicum conferencing;
- to collect basic quantitative and qualitative data relating to the technical and pedagogic aspects of conferencing.

3. Recent Developments

3.1 Technical Developments

Technically, it has been possible for us to hold conferences with up to six participants, with adequate frame rates of approximately 14 fps and relatively unchopped audio. Typical conferences have lasted for an hour or more. To achieve this quality, it has been necessary to agree on common settings for the CU-SeeMe software and to engage the support of the schools' technical assistants both in maintaining the school equipment and in providing assistance to conference users. Nevertheless, some conferences have experienced technical difficulties, for example where the group has been unable to hear one of the participants. It is hoped that the purchase of the latest version 4.02 CU-SeeMe MeetingPoint server and server software will help to overcome such problems.
3.2 Organisational Developments

Organisational, rather than technical matters, however, have proved to be the more important in ensuring successful conferences. Building on feedback from conference participants, it became clear that conferences needed to be structured. Our earlier belief that participants would be able to set up meetings at mutually convenient times and talk spontaneously about their experiences proved to be too optimistic. Accordingly, we negotiated with the schools that trainees' teaching workloads on teaching practice should be reduced by three lessons per week to enable trainees to be free at the same time for MDVC. Each conference group was allocated a one and a half hour slot each week and members were told to join their conference at the same time each week. Additionally, we drew up a conference programme with a clear agenda relating to aspects of teaching for each session. These two developments solved the earlier problems of arranging times for meetings and also vastly improved the quality of discussion.

4. The Use of Video Clips of Trainees Teaching during MDVC Sessions

Being able to watch yourself and others teach and to be able to discuss real life examples with peers and mentors has long been recognised as an ideal in teacher training. In the past, however, this has been very difficult to do, given that trainee teachers are posted to different schools. Where videos have been used, they have usually been shown either before or after the trainees' teaching practice and have not included footage of the trainees themselves. In practice the only way of providing trainees with videos of their own teaching has been in micro-teaching sessions, where trainees act out a particular teaching skill in front of a small group of their peers. A major criticism, however, has always been that such sessions are too artificial. MDVC now promises to overcome these constraints.

Towards the end of April, as the last cohort of NIE trainees were coming to the end of their teaching practice, the NIE researchers were able to use video clips of trainees teaching as part of a regular MDVC conference. Two trainees at one of the N2 cluster schools were asked to take two three minute video clips each of the beginning and end of a lesson. One trainee taught while the other used an MPEG digital video camera for making recordings. The videos were then taken back to NIE where they were edited by a researcher, before they were posted on the project website in a password protected area. Trainees were asked to download the video clips and watch them before their next conference. In the event, some of the conference group had not received the notification in time. This unexpected development proved very helpful to the researchers, however, enabling them to gauge how long it would take for the
trainees to download and watch the videos. During the conference, trainees were asked to 
open up their web browsers, download and watch the file, and then return to the conference. 
Because all were using Magix ADSL telephone line connections, it took only just over one 
minute to download each three minute video. Understandably, given that this was the first 
time this had been tried, the MDVC discussion afterwards concentrated on technical matters, 
rather than on a discussion of the teaching. Trainees reported on the high quality of the video 
clips - comparable to television pictures, as one remarked - and the speed at which it had been 
possible to download and view them. The exercise clearly demonstrated the technical 
feasibility of using teaching video clips in MDVC conferences.

In order for this experiment to take place, a number of precautions were taken. The main 
concern was privacy which was dealt with in two main ways. Firstly, the video clips were 
embedded in the project web page and the password was only made available to conference 
participants. Immediately afterwards the clips were removed from the page. Secondly, 
trainees were requested to delete the video clips from the school computer hard disks as soon 
as they had watched them.

5. Video Streaming

The next phase of the project, beginning in July, aims to build on this achievement by using 
video streaming and file transfer as a way of disseminating lesson video clips. A newer 
version of the CU-SeeMe MeetingPoint server and client software makes this possible.

Trainee teachers posted to N2 cluster primary schools for their teaching practice, beginning in 
July 2000, will follow an MDVC conference programme, structured around a number of 
specific teaching competencies, such as lesson induction, communicating and classroom 
management. One competency will be chosen for each of the three weeks that we have set 
aside for the experiment. Each week, the trainees will be asked to prepare and present a short 
demonstration of the particular competency. As before, digital video clips will be made of 
these and will be used as part of MDVC conferences. For example, trainees might make their 
video clips on Wednesday or Thursday in time for an MDVC conference the following 
Monday.

To overcome the problem of collecting video clips from trainees in the different schools, 
we propose to use a file transfer facility which is provided on the latest version of CU-SeeMe. 
This allows participants in a password protected conference to transfer files between one 
another. School technical assistants will be asked to assist the trainees in this. Once the files
have been received at NIE, they will be edited by members of the research team so as best to illustrate aspects of the teaching competency under discussion.

To overcome the problem of downloading video materials, we propose to use video streaming technology. This will involve the use of two servers linked to SingaporeONE - one running the MeetingPoint server software and the other the video streaming software. We predict that this will have a number of advantages over our last experiment. It will overcome the need to erase the video clips from host PCs. Also it will enable the conference participants to view the video clips as pop-up windows in their CU-SeeMe screens.

6. Adding Value to the Practicum

In our view, MDVC is not just simply a technology. It should not, in our view, be seen only as an alternative and more cost-effective way of doing what is already done in a different way. Its value-added potential lies in the possibility of providing new and alternative experiences that have not been available in conventional forms of teaching practice. Being able to watch yourself and others practice key teaching skills and discuss these shortly afterwards with peers and NIE supervisors has clearly never been possible before. We hope also in the forthcoming teaching practice to share whiteboards and internet pages so that, for example, trainees can take each other to educational web pages that they have recently discovered, or share an art work that a pupil has just produced, or share good practice that they have discovered in their teaching practice school. Examples such as these are suggestive of the tremendous potential of the new information technologies. In subsequent papers we hope to be able to report positive findings to support these views.

7. Conclusion

Due largely to the support received from NIE, School Clusters N1 and N2, MOE and commercial organizations in Singapore, it has been possible to put in place a working MDVC system. In this paper we have described its main features as well as discussed our plans for the next phase of the project, which involves the use of teaching video clips during regular MDVC conferences. We have not discussed the data that we have collected to date, as this forms part of papers submitted for publication. Generally, however, we can report that feedback from participants has been very favourable especially views on the pedagogic value of MDVC. As might be expected, however, technical problems do occur from time to time and when they do they underscore the fundamental point that working with cutting edge technology requires adequate technical support. Inevitably, things have gone wrong from
time to time, for example when the server has gone down or when a conference participant could not be heard by other participants. What has been remarkable, however, when such things have happened has been the good spirit of participants. It seems that most, like ourselves, have been able to see through any current technical limitations to the underlying pedagogic possibilities.

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