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Paper No. 16
Connecting Learners: Singapore’s Multipoint Desktop Videoconferencing Practicum Project

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Connecting Learners: Singapore’s Multipoint Desktop Videoconferencing Practicum Project

1. Introduction

The potential of multipoint desktop video conferencing 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 student 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 students and their supervisors possibilities that are currently unavailable to them, and thereby re-defining, in important respects, conventional notions of the practicum. To date, our research project has been concerned mainly with putting in place an organisational and technical structure that will enable us to develop and research such possibilities. In this paper we set out to provide an overview of the project to date. Firstly, we provide a brief account of the project’s background, aims, history and the context in which it is being developed. Next we provide an account of the technical and organisational arrangements that have been put into place to support the project. We then present initial results of interviews and log journals from student teachers who have used MDVC on teaching practice, to test the adequacy of these arrangements for supporting the next, government funded, stage of the project. Finally, we present an outline of a conceptual framework that seeks to locate MDVC within a context of social change towards the globalised, knowledge-based society.

2. Background

The Teaching Practice Discourse and Computer Communications Technology Project builds on the findings of a funded National Institute of Education (NIE) research project completed in 1994 (Sharpe, et al., 1994). This research project studied the quantity and quality of supervisory discourse (Zeichner, 1988) between teaching practice students and NIE supervisors and school-based Co-operating Teachers (CTs). It found that there was a preponderance of low-level factual discourse and that conferences were relatively short. The researchers concluded that ways and means needed to be found to increase both the quantity and quality of discourse. In particular, there was a need to explore ways of increasing the level of justificatory and critical discourse and the frequency of joint meetings between student CTs, NIE supervisors and student teachers. In late 1997, when the first desktop internet telephone software became readily available, the researchers began to see in this technology a possible solution to the problems they had identified.
A number of other parallel developments were also important in moving the idea forward. Firstly, during 1998 NIE began to restructure its practicum on a “partnership” model (Benton, 1990), whereby schools would be given more responsibility for supervising student 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 (Sharpe, et al., 1999).

3. Development of the Project

Over 1998 members of the research team researched available video-conferencing systems, ranging from expensive studio-based systems to relatively inexpensive computer desk-top systems. Desktop video conferencing (DVC) allows users at different locations to see and hear each other using ordinary desktop computers fitted with cameras, microphones, speakers and necessary hardware and software. Probably the most misunderstood aspect is the difference between ‘point-to-point’ and ‘multi-point’ conferences. Point-to-point involves just two people, whereas multi-point involves three or more. It was found that systems which used multiple ISDN telephone lines produced excellent results, for example the Singapore Ministry of Defence (MINDEF) system, but their main drawback was cost. Inexpensive desktop systems, for example, Microsoft’s NetMeeting®, using ordinary telephone lines for standard Internet connections, produced poor video and audio, were generally unable to support multipoint conferences and lacked privacy because they operated for the most part in the public domain. Of the DVC systems evaluated, the White-Pine CU-SeeMe® system, used by NASA and adopted by the Global School House project, was the most promising. However, it too produced inferior results with ordinary telephone lines and it was not until the launch of the Singapore-ONE broadband ATM network and the ISP gateway provided by SingTel Magix® that it was possible to achieve multipoint connections. At this point, the researchers coined the term “multipoint desktop video conferencing” (MDVC) to distinguish the new platform from the erstwhile point-to-point DVC platform. A more detailed account of the technological requirements follows later in the paper.

Because the researchers at this point did not have their own resources, they instigated the first trial of MDVC at Singapore’s Raffles Girls’ School in October 1998. The researchers were able to link up with the offices of Information Management Resources (the sole distributor of
White Pine's® CU-SeeMe® software in Singapore) and with Montford secondary school, using the National Computer Board (NCB) public-access server. With start-up funds provided by NIE, the first schools trials began in January and February 1999, linking NIE to Xishan Primary School and Jiemin Primary School, both in School Cluster N2 in the north of the island. At this point, the researchers entered into a partnership with School Clusters N1 and N2 (see appendix 1) whose superintendents and school principals had shown a keen interest in the new technology. This partnership was crucial in the development of the research, especially because of the technical and human resources it made available. N1 Cluster schools, it was decided, would take part in an on-going “Mentor Project” and N2 Cluster schools in a “Pre-Service Project”.

4. Aims of the Mentor and Student Teacher Projects

4.1 The Mentor Project

The mentor project uses MDVC to link together the School Coordinating Mentors (SCMs) at the eight secondary schools and one junior college that make up 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.

Figure 1: MDVC Conference with Cluster N1 SCMs
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.

4.2 The Pre-Service Project

The Pre-Service project involves linking together students 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 students from two Post Graduate Diploma in Education (PGDE) cohorts posted to the schools for teaching practice. The project is continuing with Diploma in Education (Dip Ed) students who are just beginning their teaching practice at four of the Cluster schools. Students have typically been divided into conference groups, comprising up to six members and six different schools.

Figure 2: MDVC Conference with Cluster N2 PGDE (Pri) Student Teachers
MDVC has been used to:

- enable the students to hold private discussions on any matters relating to their teaching practice;
- enable students 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.

5. Organisational and Technical Aspects of the MDVC Project

By far the most important, and yet elusive, part of this project was to solve the numerous problems associated with the organisational and technical protocols of achieving MDVC in practice. As mentioned earlier, our MDVC solution adopted a cost-effective communications and Information Technology (C&IT) platform that made use of White Pine’s® CU-SeeMe® software over the new wideband Singapore-ONE (S-1) ATM network. We made use of the sole Internet Service Provider (ISP) gateway into S-1, which is Singapore Telecom’s Magix® service - see figure 1. In order to pioneer this project it was necessary to liaise and receive the support of all the following IT-related organisations in Singapore listed in Table 1.

![Figure 3: Access to Singapore ONE via the Magix ADSL gateway – by courtesy of Magix® a subsidiary of Singapore Telecommunications Pte. Ltd.](image)
Table 1: MDVC C&IT Support Agencies

<table>
<thead>
<tr>
<th>Support Agency</th>
<th>Specific C&amp;IT Services Provided</th>
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<tbody>
<tr>
<td>Information Management Resources</td>
<td>Sole distributors of the CU-SeeMe® MDVC software in Singapore.</td>
</tr>
<tr>
<td>Singapore's National Computer Board (NCB)</td>
<td>Sponsorship of our MDVC server gateway access into the S-1 network and temporary use of their own server to initially evaluate our MDVC system.</td>
</tr>
<tr>
<td>Singapore Telecommunications Private Limited (SingTel)</td>
<td>To obtain support and sponsorship of our project and make use of the resources and facilities associated with SingTel's Magix® service.</td>
</tr>
<tr>
<td>Kent Ridge Digital Lab's (KRDL)</td>
<td>C&amp;IT consultancy regarding the MDVC server and workstation IT technical performance and requirements specifications.</td>
</tr>
<tr>
<td>Educational Technology Division of the MOE</td>
<td>To provide over-arching support for implementing the necessary IT equipment and support services in the MDVC N1 and N2 Cluster schools.</td>
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</table>

In addition to liaising with the above IT organizations, there was a need for close coordination with all the schools located in Clusters N1 and N2, which meant close working with the two Cluster superintendents and the school principals.

From all this coordination we negotiated agreements to support and sponsor our MDVC project initiative in the N1 and N2 Cluster schools. In practice this meant linking up dedicated workstations in the schools to the S-1 network. Fortunately, under the Singapore MOE's IT MasterPlan, all the project schools had been provided with Asynchronous Digital Subscriber Line (ADSL) gateway access into S-1. We ensured that every school had the necessary software and peripherals to operate an MDVC workstation. However, in order for MDVC to operate properly, a central network server, which is often referred to as a "reflector", is also required. This MDVC server acts as a nerve centre and controls and connects all the various users together. For example, an ISDN multipoint videoconferencing system might have 10 users each using 2 ISDN channels. In total the ISDN reflector must
have 20 ISDN channels connected together. Considering the hire charges for each ISDN line one can see why an ISDN MDVC solution might be too expensive to implement within the school system. However, an ATM wideband Internet system offers cheaper user access into a system already designed to distribute video-on-demand (VOD) multimedia services and with sufficient bandwidth capable of hosting a multi-channel MDVC server. Singapore's NCB provided a support grant through its offshoot commercial agency 1-NET to connect our School's MDVC server into the S-1 network. We were then able to achieve the necessary MDVC C&IT infrastructure as shown in figure 2 below.

![Diagram of Multipoint desktop videoconferencing over a Wideband Internet](image)

**Figure 4. Multipoint desktop videoconferencing over a Wideband Internet**

In addition to setting up the above infrastructure at both NIE and the Cluster schools we had to invest many hours in trialing and testing the system before we could get it to work properly. During the period from around February to July 1999 we established the MDVC technical protocols (Coombs, 1997) that optimized the quality and performance of each individual workstation. These technical protocols focused upon choosing the correct system settings for fine-tuning the audio and video operational requirements for using the CU-SeeMe® MDVC software platform. We also established during this time the necessity for having full time technical support staff available at all times to help troubleshoot the regular problems that arose. The Technical Assistants (TAs) that were already available in every school were specifically asked to look after the MDVC workstations and to troubleshoot any problems experienced by the users, i.e. the teacher trainees on practicum in N2 Cluster schools and the SCMs in the N1 Cluster schools. Because we were involved with many schools across each Cluster we found the need to appoint Cluster IT coordinators to manage the technical aspects of the MDVC project across all the TAs. Likewise, we discovered the need for an IT full-time technician to be attached to our project at NIE, so as to support the lecturers working on this project. It was from the evidences of these early valuable experiences that we were able to propose and qualify the appointment of a full-time IT project
officer as part of our wider research grant application to the MOE under the aegis of the newly introduced Educational Research Fund (EdRF).

Another important resource developed for this research project has been the MDVC Website, which can be found in the URL address listed at the end of this paper. The MDVC Website provides a rich menu of useful support resources for all the participants including:

- Student notices;
- MDVC participant lists and instructions;
- Overview of the research project with downloadable files;
- Academic resources to support the MDVC action research programme in the schools; and,
- Web-based video-clips of the practicum student’s lessons (this is projected for the future).

6. Initial Feedback from Student Teachers Using the MDVC System

Data has been collected to date from two cohorts of PGDE (Pri.) students posted to schools in Cluster N2 who have used the system. A third, Dip Ed cohort, has just been posted to N2 schools for teaching practice and is just learning to use the system. Because equipment was not installed in the schools until two weeks before the end of their teaching practice, the first PGDE cohort had little time to use the system. However, one group, which had agreed to participate in a demonstration at the official project launch on 8 June 1999, were able to conduct a number of lengthy conferences with one of the NIE researchers. A debriefing session was conducted with them, extracts of which are reported below. The second PGDE(Pri) cohort was posted to N2 Cluster schools for their teaching practice during July/August 1999. They formed conference groups comprising up to six members drawn from different N2 Cluster schools and were asked to hold one conference a week, to decide themselves on the topics they would discuss, and to fill out an “MDVC Session Report” (see appendix 2). Although this teaching practice has just ended, we have received to date a total of fourteen “MDVC Session Reports” which has enabled us to present some provisional findings on technical aspects of the system.
6.1 Qualitative Feedback

The debriefing session was an open-ended discussion between six of the PGDE (Pri.) student teachers who were involved in preparations for the project launch demonstration and one of the researchers. It covered five main areas: the technical strengths and weaknesses of MDVC; the arranging of conferences; the pedagogic strengths and weaknesses of MDVC as a practicum tool; and the differences between MDVC and face-to-face conferences. The first area is discussed later, using data from the second PGDE cohort.

(a) How easy was it to arrange conferences?

The students felt that although it should have been easier to arrange MDVC conferences, given that it was only necessary to arrange a time and not a place as well (a very perceptive comment), in practice this was not the case. The main problem encountered was that all the student teachers had different timetables and were only free as a group either at break time or at the beginning and end of the school session. Though the project Website allowed for the posting of conference times, typically they had found it easier to rely on conventional communications, such as e-mail, pagers or the telephone, to mutually arrange conferences at their convenience.

(b) Identify the pedagogic strengths and weaknesses of using MDVC

Generally, the students pointed to the strengths rather than the weaknesses of MDVC operating as a pedagogic tool and electronic social interaction (ESI) forum. A number of strengths were identified, particularly the opportunity to:

- meet with supervisors more often due to savings on travelling time;
- share classroom management issues, which are a “big concern to begin with”;
- share experiences and strategies with other students in other schools, this being particularly important where only one or two students had been posted to a school and did not have other students to talk to; (i.e. the ESI Protocol of overcoming“peer isolationism”).
- “share burdens” with other student teachers – “to know that you’re not alone out there and that others are having the same problems” – to “have your day brightened up”;

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• “feel comfortable among peers”, (i.e. safety of the ESI forum for expressing thoughts and feelings).

Only one weakness was identified, but the students emphasized that it was a major one:
• the lack of privacy due to the school computers being located in public areas, such as the staff room – “dare not to say anything nasty”.

(c) What are the main differences between using MDVC and regular face-to-face conferences?

The main difference in favour of MDVC were thought to be that it:
• reduces the “physical barriers” of a face-to-face conference;
• makes it easier “to bring up issues because you feel a safety in distance”;
• provides more time for thought than in a face-to-face conference.

The main differences in favour of face-to-face meetings were thought to be that they:
• conveyed emotions better, though MDVC did allow participants to see facial expressions which partially compensated;
• were safer, because you know exactly who is sitting in the room – the concern with MDVC is “who is sitting there”, (i.e. the perception of someone present “off-screen”).

Whatever the merits of MDVC, however, the students felt that it should not be allowed to totally replace school visits by supervisors. One student remarked that a camera can “look at a classroom but you need to be present to feel it too”.

6.2. Quantitative Feedback

Student teachers from the second PGDE (Pri.) cohort have to date submitted fourteen MDVC Session Reports. The reports are from individual group members of four groups and cover eight conferences. Typically, the conferences lasted around 45 minutes to an hour and, unlike with the first cohort, members of the research group did not log on to them. One of the sessions was “point-to-point, with the others on average involving four participants each. Although the participants were logged onto the same conference, technically their experience
varied considerably, due mainly to differences in the school equipment they were using, their own level of competence and variable access to support from the schools’ technical assistants.

Students were asked to answer questions on the frame rate and whether the system had “frozen”, and questions on the quality of the audio.

An average of 14 frames per second was recorded by the students, ranging from a low of 3 to a high of 40. Approximately half, however, reported some frame “freezing”. With regard to sound quality, almost three quarters of participants reported that they could hear all the participants in the group, though most encountered some degree of audio “chopping”. In only one case, however, was audio chopped all of the time, with nine students reporting chopping some of the time and four students none of the time. The majority of the students (11) encountered no echo. We overcame this problem of echo by using uni-directional, cardiode desktop microphones, which were screened away from the multimedia speakers that were located in the background. We were able to use the MDVC system with several parties via an open desktop rather than be confined by the solitary conventional arrangement of employing a single-user headset microphone only. When asked to provide an overall assessment of the MDVC equipment, seven students considered it to be ‘good’, a further six considered it to be ‘acceptable’ and only one though it was ‘poor’.

Although it would be unwise to draw any general conclusions from such a small sample, we believe that these results are consistent with our overall experience of MDVC to date. Technically, we would concur with the overall assessment of the student teachers that the quality of the sound and video is somewhere between good and acceptable. However, it is clear that problems do occur with the system from time to time and most certainly it is audio problems that are the most frustrating when they occur. Conference participants can tolerate low frame rates but poor audio disables the communication discourse process and can result in a great deal of time being spent by participants asking whether they can hear each other. The best conferences occur where the participants have learnt how to use the system and where technical assistance is on-hand to troubleshoot. Technically, then, the early experience that we have had with the MDVC system is encouraging.

The technical adequacy of the equipment is, of course, only a prerequisite. What is equally or more important is whether student teachers are able to fit its use into already over-crowded teaching schedules and can see a positive value in its use (Gawith, 1998). The initial feedback that we have reported in this paper suggests that our earlier hope of MDVC being used for spontaneous conferences might not be practicable. The student teachers report that
pre-arranged conferences held either before or after school teaching schedules, represent the best solution to overcoming the problems of arranging conferences. It could be, however, that spontaneous conferences – dealing with concerns quickly as they arise – might be best suited for smaller groups of two or three student teachers.

Pedagogically, students pointed to the advantages of meeting supervisors more frequently. Though this is an obvious advantage, it does beg the question of the kinds of economies that MDVC is likely to bring about. On the one hand, it is possible that savings will be found in reducing supervisors’ time and travelling costs. On the other hand, especially until technical reliability improves, this will most certainly be offset by increased costs relating to the maintenance of the organizational and technical infrastructure needed to support MDVC (Selinger, 1997). If our students are to be believed, however, the initial costs might be well worthwhile. In the current educational context in Singapore, where communication and reflectivity in the form of critical and creative thinking are being emphasized, the observation that MDVC helps to bring down communication barriers and makes it easier to identify and bring up issues, share burdens and experiences is highly significant. Interestingly, there was a definite feeling amongst this group that the participants had got to know each other, and the NIE lecturer, much better than they would have done in an ordinary face-to-face situation. This could be because MDVC offers a more informal medium compared to the formally arranged face-to-face supervisor visits. There was some amusement after teaching practice when the participants met each other face-to-face for the first time, particularly about the height of the participants: “You look so much taller on the computer”. Perhaps they had felt so much taller, too.

One major problem, however, is the lack of privacy that currently exists for conferencing and this is something that will have to be addressed urgently. It forms part of a much wider IT-communications concern, of course. The issue is one of privacy and the main concern is that “lurkers” are about. In a clinical supervision mode, the trainees must “trust” their peers and supervisors. Our early experience suggests that MDVC may actually enhance trust, perhaps, by a process of decontextualising conferencing by providing an alternative social frame. (Goffman, 1974). Although they are pressed for space, it seems likely that schools will have to consider providing private rooms for MDVC conferencing. This will do much to engender a climate of trust and thereby reassure participants who are already aware that they are conferencing in password-protected chatrooms on the schools’ private server.
7. Adding Value to the Practicum

One participant from the second batch commented that she would prefer to have a conference with her friends at the local Starbucks café! This, of course, is a wonderful idea prompted in her case by a number of technical problems she had been encountering. We have yet to ask her whether she did organize such a face-to-face conference. It seems highly unlikely. Her rather dry comment is, however, surprisingly helpful because it begins to draw attention to the main pedagogic promises of MDVC as a teaching and learning aid. This suggests the ultimate goal of providing a virtual learning environment (Winn & Jackson, 1999) that is socially conducive and acceptable to all the client users, much like Rogers' (1971) therapeutic and pedagogic concept of establishing total positive regard.

In his discussion of “modernity”, Giddens (1993) points to three social conditions that are necessary and constituent of the modern, globalised, information society: the separation of time and space; the “dissemmbedding” of social institutions; and the process of “reflexivity”. Modern IT and communications build on social processes that have been forming over the period of industrialization and which have been accelerating over the last ten to twenty years, especially with the arrival of the desktop computer and the Internet. Like other IT-communication devices, MDVC must be understood both technically and socially. Socially, it is crucially about the social manipulation of space and time. MDVC allows participants to be in six or more different places at the same time. It allows student teachers to hear and share views, experiences and materials across a number of different schools instantaneously. This has never been possible before and represents the pedagogic benefits of establishing MDVC as a virtual learning environment. MDVC is also a “dissemmbedding” process. Just as it is now possible to dissemmbed social institutions as diverse as banks, bookshops and fast-food chains from particular physical locations, so too it is possible to dissemmbed teaching practice from the confines of the single school. Student teachers need no longer to be “locked” in to and socially and physically isolated within a particular school: MDVC provides a way of unlocking the doors. Finally, just as big business and governments rely less on tradition and custom and constantly re-examine their practices reflexively, with both eyes set on the future, so the modern teacher can no longer rely on the expertise to be found in one single school. MDVC opens up a wider dialogue and range of experiences to the trainee teacher than has ever been possible in the past. It goes some way also towards meeting the criticism directed at school-based teacher education models that they rely too much on “sitting next to Nellie” (Gilroy, 1992).
MDVC, then, 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. One example that excites us in this respect is the making of video-clips of classroom teaching by the student teachers and the sharing of them using the pedagogic virtual learning environment of MDVC and the Web. If this can be done, and we believe that it ultimately can, it will mark a major step forward in the practicum. For the first time, student teachers will be able to record, share and discuss video-clips of their own lessons virtually in a real-time critical appraisal platform. Of course there are other advantage as well. We are looking forwards, for example, to the sharing of whiteboards, Internet pages, lesson plans and other materials using MDVC as a real-time virtual learning platform with IT multi-task capability.

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 and presented some initial findings on usage. Once additional funding is secured, we feel confident that it will be possible to improve on both the reliability of the system and the rigour of the research. We have argued that our motivation, as educators, lies less in the technology itself and more in its pedagogic potential. If we are correct, MDVC could genuinely add value to practicum experiences at NIE and thereby help improve the quality of the teaching profession (Sharpe & Gopinathan, 1993, Sharpe, et al. 1998 & 1999). Though we have limited our discussion to the practicum, there are numerous other educational and business applications. This is not surprising. In a globalised world the main mechanism and product of economic and social life is knowledge and communication. It is inconceivable that MDVC will not become a routine feature of life in the new millenium. Our particular interest is in whether and how it will make a significant difference, in reshaping the educational world.

References


Useful Website addresses that are related to our project

http://www.soe.ntu.edu.sg:8000/practicum/po_index.htm (MDVC research Website - password protected)

http://www.ncet.org.uk/info-sheets/videoconf.html#what (NCET, UK)

http://cu-seeme.cornell.edu (shareware)

http://www.wpine.com/ (commercial)

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Appendix 1: Acknowledgements

Cluster Schools N1 and N2 and Cluster IT Coordinators

**MDVC Project: Cluster IT Coordinators**

- Mr Suhardi B Saaban,  
  *Vice Principal, Xishan Primary School*
- Mr Charles Tong  
  *Head, IT, Xinmin Secondary School*

**Participating Primary Schools - Cluster N2**

Ahmad Ibrahim, Chongfu, Huamin, Jiemin, North View, Peixin, Peiying, Xishan, Yishun.

**Participating Secondary Schools/JC - Cluster N1**

Bartley, Bowen, Deyi, Holy Innocents’, Sembawang, Seng Kang, Serangoon Garden, Xinmin, Nanyang JC

Appendix 2: MDVC Session Report

Teaching Practice Discourse and Computer Communications Technology Project

**MDVC SESSION REPORT**

Each conference participant should complete this form for every session participated in.

It should be completed immediately after the conference and e-mailed as an attached Word file to A/P Leslie Sharpe not later than one week after the conference.

<table>
<thead>
<tr>
<th>Session Number:</th>
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<tbody>
<tr>
<td>Name:</td>
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<tr>
<td>School:</td>
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<tr>
<td>Conference date:</td>
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<td>Time commenced:</td>
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<tr>
<td>Time ended:</td>
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<td></td>
</tr>
<tr>
<td>Names of conference participants:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of conference:</td>
<td>Pre-scheduled; Ad hoc (please circle)</td>
<td></td>
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</tbody>
</table>

Now please answer the following questions:
1. How well did the equipment work?
   a. what was the frame rate? ____ per second
   b. could you hear every participant? All; one; two; three (please circle)
   c. was the audio chopped? All of the time; some of the time; none of the time (please circle)
   d. was there any echo? Yes, No (please circle)
   e. did you experience frame-freezing? Yes, No (please circle)
   f. overall, was the sound and video: good; acceptable; poor? (please circle)

2. Please elaborate on the technical problems encountered in 1. (for example, the frames froze etc.).

3. How did you deal with these technical problems? (identify the causes, if you know them; describe the solutions you tried and whether you were successful).

4. How was the conference arranged? (please tick one or more, as appropriate)
   a. project noticeboard
   b. e-mail
   c. telephone
   d. other

5. Who arranged the conference? Describe the process in setting it up.

6. How much time did you personally spend in setting up this conference? (please tick)
   a. a few minutes
b. more than half an hour

7. How was the conference managed? (describe the main rules that you used, for example, whether you had a chairperson; whether you put your hands up to speak)

8. List at least three main things that you talked about?

9. What did you learn from your colleagues in other schools that were useful to you?

10. In what ways was the conference worthwhile? (for example, did you gain confidence by being able to share problems that others are encountering; did you learn about lesson materials that other students are using; did you feel that you were engaging in a professional discussion that was helping you to develop professionally?)
11. Were there any key lessons that you have learnt from this session that might help the next session to be more successful?

Thank you very much for completing this MDVC session report.

Please submit by e-mail to the following address within one week of the conference:
Lsharpe@nie.edu.sg