Reflecting on Teaching Practices using Digital Video Representation in Teacher Education

C. Paul Newhouse, Edith Cowan University
Jenny Lane, Edith Cowan University
Claire Brown, Edith Cowan University

Abstract: This paper reports on the perceptions of teacher education student of the value of using digital tools to analyse video-based information on the practice of teachers in classrooms. This strategy was employed to address a dilemma in providing sufficient exposure to real examples of good classroom teaching to link theory with practice. The use of video of teachers in action could augment their practicum experience in schools but this required efficient and effective access to appropriate video material. For this purpose, the use of digital tools in a system called LessonLab was successfully implemented in an introductory unit focussed on learning theories at Edith Cowan University. Data collected using a survey of students and focus group discussion indicated that for almost all the students the experience was valued and the system operated effectively.

Introduction

Recent reviews of teacher education in Australia suggest a failure of courses to link theory with practice and to provide sufficient practical teaching experience (Buckingham, 2005, p. 3). The theory-practice divide is a consistent theme in teacher education international literature (Schön, 1987; Smith, 2000; Stigler & Hiebert, 1999). Many educators such as Richert (2005), Schön (1987), Korthagen and Kessels (1999)and Loughran (2002) emphasize the critical role of learning through reflective practice in developing teaching capabilities. She points out that while learning from one's own practice is well understood, learning from the practice of others has had little recent attention. In her case, she has augmented physical observations of classrooms with the use of web-based materials.

Providing pre-service teachers with adequate opportunities to learn from practice, particularly the practice of others, is a difficult issue faced by the School of Education at Edith Cowan University in Perth, Western Australia, being one of the largest providers of pre-service teacher education in Australia. While it may be valuable to provide more opportunities for students to work in schools and observe more teachers in schools (Korthagen, 2001; Smedley, 2001) this was not possible in Western Australia. With over 4000 students, given the limited number of school practicum placements available, it has been difficult to even place all students in schools for the mandatory practicum periods let alone for additional experience. The limitations on access for pre-service teachers to real classrooms in schools meant that it was not possible to expose them to real examples of the range of particular types of teaching practices that would be desirable, as for example suggested by Louden and Wallace (1996) in their discussion

of case-based learning. Without providing enough such experience the pre-service teacher education programme risked becoming increasingly irrelevant as argued by Smith (2000).

The reflective use of digital video in teacher education programmes has been suggested as a way to bridge the perceived gap between theory and practice and augment the opportunities to observe and interact in 'real' classrooms (Bencze, Hewitt, Pedretti, Vaillancourt, & Yoon, 2003). Although not referring specifically to pre-service teachers, the argument for this strategy is made succinctly by Louden, Rohl, Barratt-Pugh, Caroline, Brown, Cairney, Elderfield, House, Meiers, Rivalland, and Rowe (2005).

> Our results suggest that it would be helpful to provide beginning
> and inservice teachers with the opportunity to carefully observe
> and reflect on the complexity of the work done by effective
> teachers in their classrooms. This might be done by reviewing
> videos of effective teachers and discussing their practices with
> collaborative partners or by videoing themselves as they teach
> and then reflecting on their teaching …. (p. 237-238)

The evolution of video-based case study analysis has its roots in the theory of reflective practice and case methodology. Schön (1987) referred to the use of video for reflective practice analysis and predicted the potential of computer-based systems to enhance reflective practice. Some years later Perry and Talley (2001) noted that case methodology had become,

> … a powerful tool for bringing the complexities of the
> classroom into focus and supporting preservice teachers in
> connecting knowledge and practice. In 1992, Shulman
> recommended case methodology as an effective tool to create a
> bridge between principle and practice in an "engaging, more
> demanding, more intellectually exciting and stimulating" way.
> (p. 26)

Case study methodology also draws on Situated Cognition theory with its focus on open-ended, ill-defined tasks that present no 'right' answers, but which require the student to view a case study from several perspectives over time and explore competing solutions (Herrington & Oliver, 1995). Perry and Talley (2001) note that,

> Drawing from situated cognition theory, the experts
> recommended situating the video case studies in real-world
> classroom experiences and events—authentic activities. This is
> in accordance with Lave and Wenger (1991), who believed that
> learning must be "situated in the lives of persons and in the
> culture that makes it possible". (p. 34)

The benefits of video in a teaching context are numerous and have been well documented. Video provides a natural medium for enhancing the sense of context and realism in case studies. It can capture the complexity of classroom interactions and allow students to replay events and thus see important features that escaped them on first viewing. It provides vast amounts of rich detail using images and sound that capture the immediacy of a real classroom that all students can draw upon as common examples of authentic learning experiences (Jacobs, Kawanaka, & Stigler, 1999; LeFevre, 2004; Perry & Talley, 2001; Stigler & Hiebert, 1999). However, as LeFevre (2004) cautions,

> The problem that is often overlooked is that video of itself is not
> a curriculum….Video is rather a medium which can be

> developed into a resource and used in specific ways to enhance
> learning. Video can become a part of a curriculum for learning if
> it is designed to be used in intentional ways towards intentional
> learning goals. (p. 235)

Pre-service teacher educators have long used video examples of authentic classrooms and teaching to supplement lectures and provide more exposure to 'real' teachers in the act teaching (Fuller & Manning, 1973). One of the authors was required to analyse videos of his teaching as part of pre-service teacher education in 1978. However, the expense and complexities of the technologies required to use analogue video (e.g. multiple microphones, two cameras and operators and wires stretching across the room) meant that it was not feasible to provide all students with adequate access. Therefore, the author was only required to analyse two videotapes with only one in a real classroom. Digital (computer) tools should now provide more cost effective and ready access to video analysis as explained by Jacobs, Kawanaka and Stigler (1999).

> However new computer software … allows users to
> instantaneously access any part of the video simply by clicking
> on the appropriate part of the videotape or transcript. Certainly,
> at the present time many of the technical limitations of
> videotapes have been overcome and video data is easier to store
> and analyze than ever before. (p. 720)

It is unlikely that merely viewing a video of a teacher and class in action will lead to significant impact on teaching capability. The video needs to be embedded within a process of inquiry about practice based on sound instructional approaches (Richert, 2005). In Richert's case students used a browser to access video, text and graphics associated with the practice of two teachers that included the teachers' own reflections on practice. These materials were referred to as "multi-layered records of practice" (p.301) with students guided through an inquiry of them using a process based on the work of McDonald (1992). This approach supported students in linking the case studies of practice with theory of teaching and learning and ultimately influencing their own teaching capability. Clearly students need appropriate scaffolding and tools to adequately analyse rich digital media based case studies to become valuable learning experiences.

The *Third International Mathematics and Science Study* (TIMSS), now referred to as *Trends in International Mathematics and Science Study*, provided the impetus to develop the use of teacher video case studies to greater sophistication because "for the first time, we could see what teaching actually looks like on a national scale" (Stigler & Hiebert, 1999, pp. ix-x). It also led to the development of an Information and Communication Technologies (ICT) platform, called *LessonLab*, that allows online video analysis of classroom teaching activities. *Lessonlab* has evolved into a full learning management system but at its heart lies a tool that allows both the lecturer and the student to digitally mark the video to time signatures to identify significant moments. This sets it apart from other learning management systems. The use of such a tool may enrich students' learning experiences by supporting a redistribution of power away from the lecturer in making choices about which part of videos to view and analyse. In the traditional model that power has rested with the lecturer, but *LessonLab* redistributes that power to the students thereby making the learning opportunities for them far richer. Unlike the more traditional use of video where a lecturer simply shows

a video excerpt, this platform features an inbuilt tool that allows both the lecturer and the student to mark the video to identify significant moments of teaching practice.

Using Digital Video to Reconceptualise Teacher Education

From 2003 the *LessonLab* platform has been increasingly used to support teacher education courses at Edith Cowan University in Perth, Western Australia. The aim has been to incorporate the use of the platform in reconceptualising teacher education courses towards more learner-centred pedagogies that support students in relating theory to practice through analysing authentic teaching examples. This paper reports on research conducted in 2005 with one first year education unit of study that incorporated the use of the *LessonLab* platform. The research addressed the question of whether incorporating the analysis of digital video of teachers in classrooms would assist students in linking theory to practice.

The Students and the Unit

The twelve-week unit titled, *Becoming a More Effective Learner*, was taken by teacher education students at the beginning of a Bachelor of Education programme in Primary and Early Childhood education. The unit included a weekly face-to-face 1-hour lecture and 2-hour tutorial and was formally assessed. In 2005 there were 365 students of whom approximately 85% were female with about the same proportion falling into the 18-25 year old age range. This put them into Generation Y, the first generation to grow up with computers in their homes and schools and generally regarded as being accustomed to using technology for communication, information and recreation and being very visually orientated learners (Marsh, 2004). However, research has also suggested that some female students can lack confidence when using technology (Cassell, 1998) and thus the study had to be mindful of highly confident and under-confident students.

The intention was to provide an online learning resource designed to appeal to these learners as part of a blended pedagogical approach using face-to-face lectures and tutorials and independent online work. The overall brief was to take the traditional text-based face-to-face course and reconceptualize the pedagogy to include the social constructivist principles of learning and an increased use of technology (Dalgarno, 2001). It was assumed that most of these learners already interacted well with technology and would respond positively to a digital audio-visual interface incorporating graphics, web links, animated graphics, and digital video of 'real' teachers in action in 'real' classrooms. The latter is the focus of this paper with the use of the *LessonLab* platform to provide access to the video material and tools to analyse and reflect upon the content of this material.

LessonLab as a Learning Management System

Various web based learning management systems were considered such as Blackboard™ that has been used widely in the University. Blackboard offers very little to support the use of digital video and therefore alternatives were considered that included the modelling of a system to house the video on a separate server and have

links to the University's Blackboard system. However, this proved to be clumsy and inflexible. For the purposes of this course a more flexible system was needed, one that could easily be modified by the instructors in response to the students' learning needs.

LessonLab was chosen as the learning management system because it offered the required digital video tools as well as an appropriate look and feel and a full range of features typically found in a learning management system such as the uploading of documents, bulletin boards, email, student registration and tools to support assessment processes. *LessonLab* web pages are written in html coding that allows for the inclusions of graphics and animated GIFs. The platform includes "lessons" and "tasks", interactive activities the designer can build in various formats. They can be created with various options, one being to allow students to view other student's submissions once their work has been posted thus enriching the learning experiences for the students. Another feature is the collation of data from online surveys with the data displayed in graphical forms allowing comparisons between groups and analysis to be presented to the students to facilitate discussions. Critically, *LessonLab* contains a range of options for the incorporation of digital video footage.

Creating the Video Case Studies

Teachers in local schools - whose pedagogy was identified by specialist academic staff as including social constructivist practices relevant to the course - were filmed teaching a class. To provide examples of authentic classroom teaching more than 100 hours of unscripted entire lessons were filmed under normal school conditions. A professional filming crew was hired to ensure the high quality footage needed to adhere to good practice in developing video case studies, in particular the clarity and stability of the image, and a high quality of sound (LessonLab-Inc., 2000; Perry & Talley, 2001). This film was digitised using v-Prism Software that allows the viewing of both the video and the digitised text track, time linked to the video footage (Clarke, 2002). The videos were made available to the unit coordinator on CD-ROMs with about four lessons on each disc. Selections made by the unit coordinator were included as online video analysis tasks that showed how teachers were accommodating the learning styles and needs of the learners in a range of subject areas in a range of educational settings with early childhood, primary and special needs classes. This allowed the students a degree of choice with access to six hours of video on CD-ROM including some complete lessons and shorter exerts of approximately 10 to15 minutes from each class linked to the video analysis tasks.

The video case studies were designed around interactive activities that included "lessons" (the videos), "tasks" and "forums". The video was embedded within learning sequences requiring students to view input from the instructor, insert digital markers in the video (time-coded tags), attach text-based comments to those markers, and view the comments posted by other students. The comments resulted from their reflective analysis of the teaching at that specific part of the video extract with encouragement given to use academic references to support the analysis. The online survey tool was also used for students to communicate their judgements with the resulting data displayed in graphical form allowing students to analyse and discuss the results. The use of the *LessonLab* tools changed the learning activities from that of viewing the video to actively participating and demonstrating a transfer or application of theoretical constructs to the teaching scenario. Two weeks of face-to-face instruction were cancelled to allow students more time to work independently online on the video

analysis for assessment by tutors. The tutors assisted the students in familiarising themselves with the platform and were available online to give help and support when requested in addition to the online help desk.

Research Methodology

A case study qualitative evaluation research design was employed to investigate the success in using video analysis through *LessonLab* in reconceptualising the unit of study and to investigate the perceptions of students in the use of the video materials. This paper reports on one aspect of the overall study related to the research question: To what extent can the video analysis tools in *LessonLab* be used to support pre-service teachers in relating theory to practice through reflecting on the practice of teachers?

The online materials were trialed with a cohort of students in Semester 1 and then fully implemented with a second cohort in Semester 2, 2005. There were 85 students in this second cohort with one of the authors as the coordinator and lead lecturer. Data were collected at the end of the semester from these students using a questionnaire to survey all students and a small focus group interview of 12 randomly selected students. The research question was addressed by evaluating the level of success in using the digital video delivered through *LessonLab* through analysis of some student survey items and gaining a more in depth insight into the use and impact of the learning strategy through analysis of a focus group discussion.

The questionnaire was developed by one of the authors with items validated through peer and expert review, including review by a University ethics committee. There were basic demographic items, four open-ended items associated with learning style and response to the unit, and 36 Likert scale response items. Items related to the research question reported here were six of these latter items associated with the use of technology to support learning and four items associated with the perceived learning value of the unit. These two sets of items were used to generate two scales, *Technology for Learning* and *Value of Unit* that were used to address the research question.

The *Technology for Learning* scale combined the following survey items.
Item 27: I enjoyed using technology for learning and research.
Item 28: The technology used required interaction and active participation.
Item 29: I currently own or use technology for recreation for a few hours a week.
Item 30: I avoid using technology where possible. (Reverse item)
Item 31: I am confidently able to use technology to support my learning.
Item 32: I prefer not to use technology to support my learning. (Reverse item)

The *Value of Unit* scale combined the following survey items.
Item 33: Knowledge of learning theories helped me to understand my own learning style and needs.
Item 34: This unit helped me understand the diverse learning needs of children that I teach or will teach in the future.
Item 35: This unit made me aware of a range of strategies to help me learn more effectively.
Item 36: I would recommend this unit to other students.

The items comprising these two scales were coded using integers from 1 to 5 to indicate a positive response towards the unit and using technology for learning. The data from these items were imported into SPSS to generate descriptive statistics and to calculate scale values. In addition to descriptive statistics for these two scales,

statistical tests for correlation were conducted against two other questionnaire items. Further analysis was conducted by considering responses to two other items.

Item 23: The use of authentic classroom video footage suited my learning style.

Item 24: The constant availability of a range of online learning resources supported my learning.

This included using t-tests for differences in means on the two scales between those who were negative and those who provided positive responses to each item. Finally analysis was conducted on the responses of a small group of students who indicated in Item 32 that they preferred not to use technology to support their learning, in particular looking for consistency of responses by these students to the other items.

An independent researcher conducted the focus group with three leading questions, constructed by the course coordinator, used to focus on the extent to which the learning outcomes of the course had been met. However, the discussion was encouraged to extend beyond these questions. The discussion was recorded using a digital audio recording device with the responses summarised onto a spreadsheet. The researcher then collated the responses around common themes that emerged. This process was then validated by the course coordinator who was not involved in the study. The data were then analysed further by the researchers with a focus on themes that related to the research question addressed in this paper.

Before presenting the results of the study the limitation of having one of the researchers as a lecturer in the course needs to be considered. This participatory role meant that care needed to be taken in collecting and analysing the data to ensure students were not influenced by the role of the researcher and that this researcher's desire for the success of the strategy did not bias the analysis. Firstly, this researcher was not the coordinator of the course and thus the course coordinator could be used to validate some of the interpretation of the results. Secondly, data integrity was maintained by using anonymous questionnaires and by another researcher, who was not involved in delivering the course, facilitating the focus group. Finally, the data analysis was conducted by the two researchers who were not involved in delivering the course. As a result of these measures the influence of the researcher as a participant was minimised.

Discussion of Results

This paper reports on the analysis of the data directly related to the research question concerning the use of *Lessonlab* to provide video analysis of teacher practices. From the unit coordinator's point of view, the *LessonLab* platform was successfully implemented with all students able to access all the online materials, in particular the digital video materials, and able to interact with the video to analyse teacher practices. There were only four requests for help logged with all being responded to within a few days.

Final Questionnaire Results

At the end of the semester students completed a voluntary questionnaire. There were 68 returns on the questionnaire that represented a return rate of 80%. Only 6% of these indicated being male, 60% indicated being between 17 and 24 years of age and only 4% indicated a non-English speaking background. Both scales were found to have

high reliability for these data with Alpha reliability coefficients of 0.91 and 0.94 respectively on the *Technology for Learning* and *Value of Unit* scales. The distributions of scores on these scales are shown in histograms in Figures 1 and 2. The means and standard deviations for the scales are provided in Table 1. The results clearly represent an overall positive attitude among these students towards both the unit and using technology for learning. In fact there were only three students with a *Value of Unit* scale ('unit') value below the midpoint of 3 and only five with a *Technology for Learning* scale ('techln') value below the midpoint. It was therefore not surprising that there was a significant, although only moderate, correlation between the scales ($r = 0.54$, $p<0.01$).

Scale	Items	Min.	Max.	Mean	SD	Alpha Reliability
Technology for Learning	6	1	5	3.9	0.7	0.91
Value of Unit	4	1	5	4.1	0.8	0.94

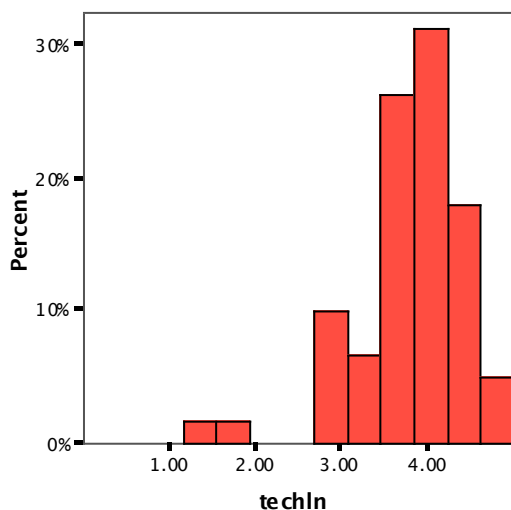**Table 1: Results for two scales constructed from items from the questionnaire.**

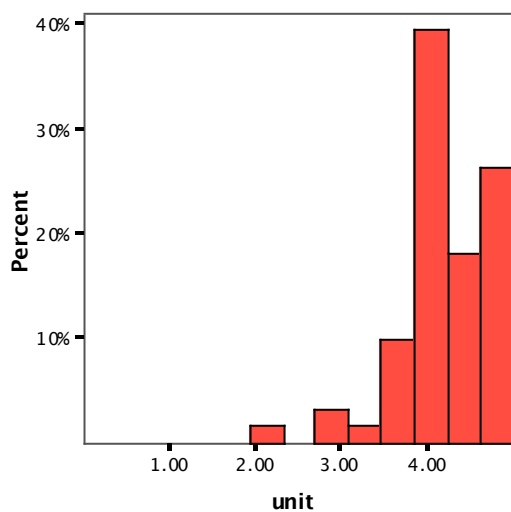**Figure 1: Histogram showing the distribution of scores for the 'Technology for Learning' scale.**

Figure 2: Histogram showing the distribution of scores for the 'Value of Unit' scale.

To further analyse the results for the two scales various groups of students were identified and then tests conducted to determine any differences in means for the groups on the two scales.

One item (23) asked students to indicate the extent to which they perceived that "the use of authentic classroom video footage suited" their "learning style". Overall 54% indicated agreement, 22% were neutral and 13% were negative. A t-test indicated no significant difference in mean for either scales between those who were positive and those who were negative.

Another item (24) asked students to indicate the extent to which they perceived that "the constant availability of a range of online learning resources supported" their "learning". Overall 59% indicated agreement, 18% were neutral and 12% were negative. A t-test indicated no significant difference in mean for either scale between those who were positive and those who were negative.

There were 10 students who indicated that they did not want to use technology to support their learning. Surprisingly, it was not found that these students were also negative with the other items in *Technology for Learning* scale, however, five of them did respond negatively towards both items 23 (use of video) and 24 (availability of online resources). It is likely that this is the usual group of about 5% of students who are found to be opposed to using computers to support learning. Further, one student responded negatively towards Item 23 and five of the six items of the scale. This student wrote the following in one of the open-ended items.

> Lesson lab (sic) can hinder learning experience to a motivated & enthusiastic learner due to difficulties experienced with getting it to work. Enthusiastic lecturers.

This student liked the unit but mainly because of the enthusiasm of the lecturer and had technical difficulties with the *LessonLab* platform that had turned her off using technology to support learning. However, fortunately her experience was not that of the vast majority of the other students. Only five other students specifically wrote that they did not like using *LessonLab* and none of these indicated general negativity towards using technology to support learning.

Focus Group Results

One of the authors, not an instructor in the unit, conducted a focus group with 12 of the students. There was much positive affirmation for the course and no criticisms expressed. One mature age student said that,

> The course exceeded my expectations. I was amazed at the breadth of resources available.

Comments about ICT in general indicated that they had developed skills beyond their previous experience with comments such as the following.

> Would have preferred this unit in 1st Semester as I was computer illiterate!
> Learned a lot in this unit - very useful
> It was hard to do this unit, but I learned so much
> My computer skills improved a lot!
> Went from being computer illiterate to a computer nerd!

For the students who were confident with ICT, there was unanimous support for *LessonLab*. For students who had lacked computer skills the consensus was that the *Quicktime* video proxy authentication required to negotiate the University's firewall made it difficult to use. Support for being able to use the video in an interactive way was unanimous with comments such as

> I loved the video and found it to be a great learning advantage
> once I could use it.
> I like how you can stop and watch the video many times and go
> back and forward.
> You don't feel bad watching the video and making comments
> online rather than in front of teachers or others.
> I appreciated the more up-to-date content of these videos
> compared to other videos shown in other units.

The students overwhelmingly endorsed the continued use of the *LessonLab* platform and demonstrated through explanations in their responses that the use of the video had improved their ability to make links between theory and classroom practice.

Conclusions

This small-scale study demonstrated the potential of the *LessonLab* learning management system in providing a good platform for video-based case study analysis for teacher education students, overcoming the critical obstacles identified prior to the use of digital video. Technically, the video-based tools operated well while the other facilities of the platform were readily incorporated within a total learning experience for the students. Only a few students indicated either difficulty using the tools or negative attitudes towards their use despite the fact that most students indicated little previous use of computer systems to support their learning. It is likely that these students will continue to be negative towards the use of technology to support their learning irrespective of measures taken in a course. For almost all the students the experience was valued with the system providing easy access to the video material and opportunities to use digital tools to analyse and reflect on the content.

The use of digital video-based case study analysis clearly provides a good basis around which to reconceptualise teacher education courses and supports students in linking theory with practice. The *LessonLab* learning management system provides the tools with which this may be accomplished. The blended approach that embedded the use of the online resources and activities through *LessonLab* within a face-to-face instruction mode was successful and appreciated by most students. This approach is recommended for the inclusion of the *LessonLab* system for undergraduate teacher education. The system provides an environment within which appropriate scaffolding and tools can be provided for students to analyse the rich digital media within an inquiry-based approach to learning from the practice of others (Richert, 2005).

The aim of the reconceptualisation of the course was to support students in making more meaningful connections between pedagogic theory and practice. The *LessonLab* system provided an effective means of providing access to video of authentic teaching examples with tools to analyse and reflect upon the content. While the focus of this paper is not on whether this led to students making more meaningful connections between pedagogic theory and practice, the lecturer and tutors in the unit were convinced that, compared with cohorts in previous years, students demonstrated much better understanding of the pedagogic theory and related this more authentically

to their own practice and that of experienced teachers. Data were collected that directly addresses these questions and questions concerning the learning styles of the students that will be reported in later papers. The design and implementation of this digital strategy has been a learning experience for the authors that will continue as the potential for analysing and reflecting on video-based examples of authentic practice is further explored to build more dynamic and effective learning environments. For example, by developing online video based modules to showcase effective teaching practices this would assist preservice teachers make the conceptual link between theories of education, instructional methodologies and what it looks like in real classrooms. This study gives confidence in conducting further research to verify and extend upon the approach.

References

Bencze, L., Hewitt, J., Pedretti, E., Vaillancourt, B. D., & Yoon, S. (2003). New applications for multimedia cases: promoting reflective practice in preservice teacher education. *Journal of Technology and Teacher Education, 11*.

Buckingham, J. (2005). Good teachers where they are needed. *Issue Analysis (No. 64)* Retrieved 11/06/2005, 2005, from http://www.cis.org.au/IssueAnalysis/ia64/IA64.pdf

Cassell, J. J., H. (Eds.). (1998). *From Barbie to Mortal Kombat*. Cambridge MA.: Massachusetts Institute of Technology.

Clarke, D. (2002). The Learners` Perspective Study: University of Melbourne.

Dalgarno, B. (2001). Interpretations of constructivism and consequences for computer assisted learning. *British Journal of Educational Technology, 32*(No.2), 183-194.

Fuller, F. F., & Manning, B. A. (1973). Self-confrontation reviewed: a conceptualization for video playback in teacher education. *Review of Educational Research, 43*(4), 469-528.

Herrington, J., & Oliver, R. (1995). *Critical characteristics of situated learning: Implications for the instructional design of multimedia.* Paper presented at the ASCILITE95 Conference, University of Melbourne.

Jacobs, J., K., Kawanaka, T., & Stigler, J. W. (1999). Integrating qualitative and quantitative approaches to the analysis of video data on classroom teaching. *International Journal of Educational Research, 31*, 717-724.

Korthagen, F. A. J. (2001, April 2001). *Linking practice and theory: the pedagogy of realistic teacher education.* Paper presented at the Paper presented at the Annual Meeting of the American Educational Research Association, Seattle.

Korthagen, F. A. J., & Kessels, J. P. A. M. (1999). Linking theory and practice: changing the pedagogy of teacher education. *Educational Researcher, 28*(4), 4-17.

LeFevre, D. M. (2004). Designing for teacher learning: video-based curriculum design. In J. Brophy (Ed.), *Using video in teacher education* (Vol. 10, pp. 235-258). Amsterdam: Elsevier.

LessonLab-Inc. (2000). TIMSS- R Video Study Manual.

Louden, W., Rohl, M., Barratt-Pugh, C., Brown, C., Cairney, T., Elderfield, J., et al. (2005). In teachers' hands: Effective Literacy Teaching Practices in the Early Years of Schooling. *Australian Journal of Language and Literacy, 28*(3), 177-247.

Louden, W., & Wallace, J. (1996). *Quality in the classroom: Learning about teaching through case studies.* Rydalmere, NSW: Hodder Education.

Loughran, J. J. (2002). Effective reflective practice: in search of meaning in learning about teaching. *Journal of Teacher Education, 53*(1), 33-43.

Marsh, C. J. (2004). *Becoming a teacher: Knowledge, skills and issues.* (3 ed.). Sydney: Pearson.

McDonald, J. (1992). *Teaching: Making Sense of an Uncertain Craft.* New York: Teachers College Press.

Perry, G., & Talley, S. (2001). Online Video Case Studies and Teacher Education. *Journal of Computing in Teacher Education, 17*(4), 26-31.

Richert, A. E. (2005). Inquiring about practice: using web-based materials to develop teacher inquiry. *Teaching Education, 16*(4), 297-310.

Schön, D. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. San Francisco, California: Jossey-Bass.

Smedley, L. (2001). Impediments to partnership: a literature review of school-university links. *Teachers and Teaching: theory and practice, 7*(2), 189-209.

Smith, R. (2000). The future of teacher education: principles and prospects. *Asia-Pacific Journal of Teacher Education, 28*(1), 7-28.

Stigler, J. W., & Hiebert, J. (1999). *The teaching gap: best ideas from the world's teachers for improving education in the classroom.* New York: The Free Press.