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Reconsidering study guides for distance education: a methodological framework for digitising study guides

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(Kress & Van Leeuwen, 2001) theory of multimodality identifies elements of discourse, design, production and distribution in multimodal texts. This study uses the above-described four elements to analyse the digitisation of study guide materials for a group of Singaporean students studying in off-campus mode for a Master of Education (Early Childhood). The study guide was presented on CD with digital videos, quotes from assigned readings and stimulus questions to which the students could type in their responses and save to a disk. Although some students had problems accessing the study guides in Singapore, this research highlights the strengths in using the four elements of multimodality as a methodological framework for transforming tertiary study guides from print to digital media. Understandings of Rogoff, Mistry, Göncü and Mosier's (1993) concept of guided participation and (Feenberg & Feenberg, 2002) critical approach to technology strengthened the methodological framework by providing a strong social justification for embarking on multimodal transformations of study guides for tertiary students.

Introduction

This paper explores the use of multimodal technologies to present study guide material in a distance education program. This paper presents a conceptual analysis. The study guide was constructed for a unit offered to Singaporean students enrolled in a Masters of Education (Early Childhood). Currently, lecturers from Monash University teach the students enrolled in the course that is administered by Asian Pacific Management Institute (APMI) in Singapore. One of the units in this course is Contexts for Early Childhood. The students study by Distance Eduction (DE) with an intensive four day face to face session with Monash lecturers in the middle of the semester.

Typically, students studying in DE mode receive a unit guide and set of readings when they commence the unit. Contact with the lecturer during the DE mode is through regular posting to a discussion forum on Monash University Studies Online (MUSO). Although there is the capacity to share images and even videos on MUSO, the pragmatics of uploading and downloading the multimedia content is slow and 'clunky'. An alternative way of engaging the students in media content related to the unit forms the basis for this study. In this study we provided the students with a set of provocations that would compliment their learning journey associated with the readings. Rather than replicating the capacity for MUSO to disseminate information we were searching for ways of students to access and respond to provocations that could be presented in multimedia texts.

Two main theoretical orientations informed our project: (Feenberg & Feenberg, 2002) critical approach to technology and Rogoff, Mistry, Göncü and Mosier's (1993) concept of guided participation. (Feenberg & Feenberg, 2002) has suggested that the 'degradation of labour, education and the environment is rooted not in technology per se but in the antidemocratic values that govern technological development'. A critical approach to technology highlights 'the social values placed on the design, not just use, of technological systems' (Feenberg & Feenberg, 2002). Feenberg's critical theory of technology establishes three principle points:

> technological design is socially relative, contrary to deterministic arguments or theories of technical neutrality; (2) the unequal distribution of social influence over technological design contributes to social injustice and (3) there are at least some instances in which public involvement in the design of devices and systems has made a difference (Feenberg, 1995)

One important educational implication of this approach to technology is to suggest that we consider alternative and multiple designs in educational materials, including study guides. By contrast, much of the existing software designed for educational use in tertiary settings, offers little design possibility beyond changing the content. In the context of teaching for social justice and active students engagement, this approach to technology urges educators to link the design of educational materials to effective pedagogy. Specifically, this project explicitly considered the social values embedded in the design of the study guide. For example, text-based study guides emphasizing text-based literacy in an increasingly multimedia world.

Elaborating on ideas about interpersonal learning from Vygotsky, (Rogoff, 1995, 2003) argued that concepts of *scaffolding* have relied too heavily on explicit instruction over other forms of learning. She has coined the concept guided participation as a more general from of learning from more skilled others to incorporate ideas of apprenticeship, observation, and overhearing, as well as formal instruction. Rogoff's guided participation focuses attention on two aspects of goal-directed activity in which learning takes place: communication about the meaning, which she calls *mutual bridging of meanings*, and coordination of activity, which she calls *mutual structuring of participation*. Importantly, she directs those interested in learning to remain aware of the active roles of both novice and expert in each of these dimensions of shared activity. Relative to distance education, guided participation is useful because it is a process that can take place in proximity or across a distance, with individuals who know each other well or relative strangers. For the purposes of this project, the concept of guided participation was used as a way of focusing the development of the instructional resources around the active roles of both instructors and students in distance learning in ongoing, dynamic interaction.

An important aspect of these provocations was how they provided the students with childhood contexts that exemplified the theory they were negotiating in the unit. Including provocations of everyday interactions between children and their caregivers that exemplify the learning processes might enhance the resources provided to the students. As well as providing the students with a visual provocation they were also asked a series of questions about the vignettes that further supported their synthesis of the theory encountered in the readings.

This paper first presents our analysis of the conceptual theoretical foundations for this work including the justifications for exploring multimodal study guide forms, drawing from writing about the evolution of literacies, modes of communication, and the role of multimodality in effective pedagogy. These theoretical justifications provide the analytic framework for the empirical research to be reported in future papers. The paper then describes the processes through which one particular multimedia study guide was developed, drawing on (Kress & Van Leeuwen, 2001) four elements of multimodal texts as an organizing framework. The paper ends with reflections about the process and conclusions.

Why strive toward multimodality?

Changing technological literacies

We begin this section by examining the changing nature of literacy. According to Bruce (1998), literacy in relation to technologies has developed over time in the following stages:

➔Primitive symbol systems
➔Complex oral language
➔Manuscript literacy
➔Print literacy
➔Video literacy
➔Digital/multimedia /hypertext literacy

➔Virtual reality

Bruce (1997, p.304) argues that literacy evolution is best considered as a series of sociotechnical changes. Our attempt to present the study guide material in a multimodal form should not be seen as something entirely new. As Bruce (1998) has outlined, sociotechnical transformations associated with different forms of texts have been evolving over a long time. We were just attempting to integrate literacies associated with multimodal digital texts into study guides. Importantly the students are expected to know these technological literacies when reading power points, posting to the discussion board and writing their assignments. The use of multimedia resources in the unit aligns with our expectations that the reading of multimedia texts will be a natural part of their social futures.

We were embarking on this project of providing interactive study guide material not just because we could do it. We were attempting to build on the social practices of reading and writing using multimodal texts that were familiar to the students. Bruce (1998, p.305) suggests that literacy is a sociotechnical practice that 'relates to fundamental epistemological and ontological issues, namely, we write ourselves with technologies.' We were not approaching the study guide material in order to determine students' use of the technology (i.e., what Feenberg [2002] describes as technological determinism). Instead, we were actively seeking to open spaces for students to determine their own positioning with the technology. Similarly, Rogoff's (1995) use of the concept individual 'appropriation' as part of the process of guided participation points to the active roles of individuals in using, refusing, transforming, and resisting the cultural tools to which they have access.

There were two writings happening in this project. The first was the writing of the study guide material by the lecturers. By creating an interactive text as part of the students' study guide, we were extending our ways of knowing and ways of being early childhood educators. We were using the opportunity to write ourselves in the world of changing literacies as part of our professional practice. A second writing comes from the students' response to the study guide material. Their responses to the multimodal texts should provide us with some insights about their willingness to embrace the changing social and technological contexts of early childhood education.

The modes of communication

The New London Group (1996) suggest multimodal meaning making systems incorporate elements of visual, linguistic, spatial, audio and gestural designs. In this study we were transforming study guides from paper texts using linguistic designs to electronic texts using all of the designs outlined by the New London Group (1996). As this unit was focusing on the complex contexts of childhood learning, use of new technologies that capture this complexity should be explored in the study guide for the unit in an attempt to make the learning more real for the students. We used video of some everyday learning contexts of early childhood settings in our study guide. These videos were using visual and audio designs along with the gestural and spatial designs. One of these videos, for example, captured the unpacking of groceries from the shopping bag in the home. The children were exposed to a range of multimodal meaning making systems while sorting out where to store the items in the home. In another example we used extracts of the academic readings in the study guide and brought linguistic designs into the study guide material. Paper based study guides are filled with linguistic designs of meaning.

Zammit and Downes (2002, p.28) suggest texts can be communicated through paper-based, electronic or live media. Although there was a possibility of using live texts in an electronic medium, we were focusing on providing the study guide material in a digital form so that the students could access on demand. For this reason, we decided to present the study guide as a CD. This way the students had the flexibility to access the information in their study guide at a time convenient to them, which aligns with the whole notion of DE. We were motivated by the

pedagogies made possible by multimodal texts in undertaking the project of digitising the study guide.

The role of multimodality in effective pedagogy

An important feature of the CD was providing the students with questions about the videos and printed material they were viewing and reading. The CD was designed to enable the students to answer these provocations in text boxes provided on the same screen as the provocation. These answers could be stored on a computer or a removable storage device. Each time the CD began the program imported the answers to the provocations the students had previously saved. The students' previous answers to the provocations on the CD become a part of a new provocation as they read these previous answers.

Embedded in the learning opportunities associated with the content of the CD is the students' capacity to access and use intertextual features of digital texts. Intertextuality is characterised by different discourse types that are merged and difficult to separate (Fairclough 1992). An example of this would be the discourses associated with video as the changing scenes contained a range of semiotic systems, cultural ways of knowing and ontological understandings. The students were asked to unpack the ways of knowing and ways of being from children's perspectives in their everyday contexts for learning. The use of multimodal provocations on a CD presents the students with complex discourses that are more representative of the everyday learning contexts than printed accounts attempting to describe the same phenomena.

The students were also developing their intertextual understandings as they responded to the provocations on the CD. Recording their responses to these provocations in a digital form promotes a capacity of these students to read and respond to digital texts using understandings of intertextuality. Students could change their responses in future readings of the CD. When the students changed their previous responses to the provocations on the CD they were also developing their feel for the softness of the medium as part of their intertextual learning.

The use of multimodal study guides provided opportunities for the students to link their understandings of theory with the practices of learning in early childhood contexts. The links the students made between their theory and practice was another intertextuality that is presented in the study guide. As part of the students' intertextual learning, they developed their discursive perspective on contexts for early childhood learning. The multimodal features of the study guide played a central role in facilitating their learning.

Bleed (2005) suggests learning with multimedia projects motivates the students to participate, integrate multiple skills, creates practical reasons for reading, supports analysis of data, requires higher order thinking skills, addresses multiple intelligences and leads the faculty to think about students classes and learning. The CD we developed had understandings of these ideas of multimedia projects were exemplified throughout the CD. The students needed to internalise the theory that they were reading to analyse the vignettes we presented on the CD.

Developing the CD – Four Elements of Multimodality

So far we have discussed the development of a multimodal study guide in relation to the changing nature of literacy, the different modes of communication and effective pedagogy supported by multimodal texts. To guide the development of the CD we found Kress and Van Leeuwen's (2001) four elements of multimodality particularly useful: discourse, design, production and distribution. For the purposes of this study, the four elements provide a useful basis for approaching the development of the CD, and are described below.

These elements of discourse, design, production and distribution are not mutually exclusive. Aspects of design of a text, for example, will impact on the way the text is distributed. Texts designed as video are difficult to distribute on paper. Although we were aware of the relationship between the above elements we used them separately as a heuristic to describe the development of the CD.

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Comment: Some academics don't like 'while' in non-time related contexts.

D/discourse

Gee distinguishes between the terms 'Discourse' and 'discourse'. There is a 'discourse' of 'connected stretches of language that make sense' (Gee 1996, p.127) and a 'Discourse' of 'ways of displaying membership in a particular social group' (Gee 1996, p.128). Much of the academic material studied in the unit was based on published literature outside a Singaporean early childhood context. There was a risk in this sense that the students would present assignments which had the appropriate 'discourse' (i.e., reflected understanding of the assigned readings) but lacked their internalisation or critique of the 'Discourse' that was embedded in the theory (i.e., not reflecting understanding of their own potential 'outsider' status relative to the published literature). One of the aims of developing the multimodal provocation was to develop the students' understandings on the 'Discourse' that was embedded in the examples of the theory that was provided.

We were able to have access to videos to use on the CD that represented everyday social practices of interactions between adults and children. These videos were recorded for a previous study in Melbourne where the parents had given consent for the material to be used for other educational purposes. While these included a range of cultural contexts, the videos did not include examples of everyday childhood learning in Singapore.

We entered this study knowing that the video examples used might not be representative of the children's everyday learning contexts in Singapore. The risk with using videos from Melbourne in the study guide was the students would not have any real membership or identity with the everyday learning environments in the videos. On the other hand we were not certain about the Discourses embedded in the previous paper bound study guides and the students' Discursive understandings of such texts. In developing the CD, questions urged students to consider the Discourses of the readings by focusing attention (i.e., to facilitate mutual bridging of meanings) on the identities recorded in the vignettes.

The CD provided another important role in relation to the 'discourse' of the study guide. The multimodality of the CD provided students with opportunities to move beyond highlighting and repeating text in the study guide. The students were not just electronically cutting and pasting connected stretches of language ('discourse') that made sense to them but rather encouraged to develop their critique of real examples of early childhood contexts represented on video ('Discourse'). These videos provided opportunities to unpack the taken for granted memberships and identities represented in these early childhood learning contexts. One goal of the project was to facilitate student engagement by providing opportunities for students to write about their understandings of the 'Discourses' rather than repeating the 'discourses' encountered in the unit. Such opportunities are consistent with Bleed's (2005) understandings of higher order thinking made possible in multimedia learning environments. By the very nature of the CD the students could not cut parts of the video and paste it into a text box on the CD. The students had to develop ways of analysing the Discourses embedded on the video and describing these using 'discourses' in the text box.

The unit drew from a variety of academic D/discourses such as sociology, history, cultural studies and psychology. Links to these D/discourses could be made more realistic by referring to the video and the student reflections that were constructed as part of their learning. Making the intertextual connections between the theory of this unit and the theories of other units was sound pedagogy in

our minds. The multimodality of the study guide supported these intertextual discursive links for the students.

Design

Although we had originally hoped to make the design of the materials flexible for ourselves and for the students, we quickly encountered barriers in terms of our understanding of the new technology (i.e., software) and time to learn about it. As a result, we turned to the Centre for Learning and Teaching Support (CeLTS, now Centre for the Advancement of Learning and Teaching, CALT) at Monash University to use their expertise in multimedia software to design the CD. Although design is ideally about the best means of employing 'available resources in a complex ensemble' (Kress 2000, p.157), the design of this CD was much more pragmatic. The CeLTS team had previously produced a CD with a similar design that we could modify for our purposes.

From our perspective the design of this CD appeared to satisfy all of our requirements. It had the capacity to use digital video, images and texts as provocations. It presented these provocations with a series of questions on the same screen. It was able to store student responses on their hard drive or on a portable device (e.g., USB drive, floppy disk) for the students to access at a later date or in multiple locations. On consequent readings of the CD the previous responses by the student were part of the viewed text to which they could modify or add. This design appeared workable, given our limited knowledge of multimedia programming. All that was required of us was to collect the data for the CD. This was in the form of text, videos, questions, and some graphics for background.

Zammitt and Downes (2000, p.28) suggest that students learn how to locate, comprehend and use texts as well as being able to critique and create the texts as part of their learning. The CD was designed with the understandings of location of information in mind. Each screen had a provocation for the students to view or read, a set of questions for them to answer and a text box for their answers to be recorded. Although the students were not critiquing the design on the text nor creating their own multimedia text, they were critiquing the information presented on the CD and they were creating a text as a set of responses to these provocations.

The lecturer responsible for teaching the unit selected the appropriate provocations, including selected quotations from assigned readings as well as videos and then constructed questions to unpack the learning in these provocations. So while we borrowed a design for the CD from another project the content was selected to match the learning outcomes of the unit. Our choices about the content to include were informed by our knowledge of the unit of study as well as Rogoff's (2003; 1993; in press) ideas of guided participation. The questions were therefore written to encourage students to think about the selected provocations relative to their own experiences and contexts (i.e., bridging of meanings) and to highlight key aspects of the assigned readings and illustrate key ideas from the readings (i.e., structuring of participation). This form of guided participation across a distance was hoped to facilitate more informed discussion in guided participation during the limited face-to-face interaction. More about this aspect of design and pedagogy can be found in Tonyan and Auld (2006).

Production

Although we were using a design for the CD that had been used for a different unit and we were using already existing video, we ran into some issues that delayed the production of the CD. The selecting of the video required a fair amount of work. This required viewing much more video than was needed and selecting the most relevant segments from which the students could make strong links to the theory they were reading. Some videos were used to twice but with a different set of questions for the students to contemplate.

Once the videos were selected, we encountered technical issues associated with the quality of the video. To make the CD readable on older computers and to improve the quality of the video we removed the pixelation that was evident in the video. This required collaborating with experts from the team in CeLTS to work out the optimal file format of the video considering the limitations of file size, speed of playback and quality of the video image.

With the video prepared we thought the team at CeLTS would simply substitute the video graphics and text in their older design to make our CD. Our delay in creating the most workable video had meant that the scheduling of our CD production had been put back. We were up against issues of HR management that were beyond our control given a relatively small production support team (i.e., the authors plus two multimedia specialists and the duplication unit).

The production of the CD was different to that for a study guide on paper. During the production phase of the CD, we were establishing a network of multimedia production. In contrast, when we go to make a study guide on paper, this network already exists. If the photocopier or printer runs out of paper as part of paper-based production, there is usually more paper. The technology behind the production of paper unit materials has been well established so that lecturers and support staff encounter issues of *maintenance*, whereas we encountered issues of *development*. During this study, there was not a critical mass of lecturers using multimedia to enhance their unit materials. If there had been, solutions to the problems we encountered might have been presented by others in the same process as they were arising. For example, in our Faculty at Monash University, lecturers need not think about the design of unit guides because they fill relevant information into a proforma with standard fonts, page layouts and structure – a process of maintenance rather than development. The proformas reflect the traditions of the many lecturers who have designed and maintained unit guides in the past, with current lecturers benefiting from past mistakes others have made. Such learning from mistakes in the paper-based tradition relates to policies and procedures around not just the product appearance, but the impact on learning as well (e.g., requesting extensions, handing in assignments, etc). This was not case when we were collecting and modifying the multimedia data required for the CD. Although CeLTS uses multimedia regularly and has a critical mass to deal with issues around quality control and client satisfaction, their 'core business', we found their protocols to focus on the product rather than the learning opportunities (for ourselves and for the student 'consumers') that were passed over as the CD was made.

If the concept of multimedia text production is a real alternative for lecturers attempting to engage their students, there needs to be some form of systemic support so the authors of such material are not working from first principles like we appeared to be doing. Lecturers who may wish to do something similar but do not have access to a multimedia design team and already captured digital video face a huge workload. Establishing networks of support for these multimedia literacies would not be a waste of time considering these are the next set of literacies in the evolution described by Bruce (1998).

Distribution

Once the CD had been produced, the distribution seemed a relatively simple task. However, as we prepared to distribute the CD, we realised there were some limitations in the design. For example, the CD only supported PC platforms. Students operating in a MAC environment were not able to use the CD. We were faced with the option of going back to the design or just distributing what we had. We chose the later because of time constraints and soon found that some students were using a MAC operating system. Looking from a critical approach to technology, we can now see that we did not know enough about or value the ways in which the students use the technology in their everyday lives, and this impacted upon the usability of the technology we created.

The distribution of the CD was also limited by the incompatibility of software to view the videos. The videos were all saved as QuickTime movies, not AVI. Students needed an older version of QuickTime than was currently the latest available. When students inadvertently click to upgrade the software they ran into some issues of incompatibility. Snyder (2002) would refer to such problems as exemplifying the instability of the current time in relation to the social practices associated with technology.

The understanding of distribution is a useful focus to have when developing multimedia resources, highlighting the iterative nature of designing technology. Focusing on the distribution of the CD raises issues of access and use rather than a narrow view of the product or content of the CD. This is not to denigrate the impact that the content can have but without a focus on the social learning with the material, the product is at the risk of being viewed as the important end point. As Oblinger (2005, p.74) suggests, 'it is not the technology that is most important but the activity it enables; the activity, not the technology, is what advances learning'. Without a focus on how the technology is being distributed as part of the learning activity, there are risks associated with distribution that may limit students' access to new learning spaces.

An important feature of these learning spaces is the transparency of the technology. Transparency is the condition in which the user forgets or is unaware of the presence of the medium (Warnick 2002, p.10). The CD we developed either worked transparently on a computer with exactly the right configuration or did not work at all. In our view, this highlights a tension in current uses of technology in tertiary education. For example, universities must make choices about the kinds of technology they require for their software applications. Some choose to require particular platforms driven by university needs over flexibility to accommodate the wide variety of students' computing facilities across locations (i.e., home versus school). For example, Monash has faced this dilemma by setting system requirements for staff and all on-campus computing facilities, including a 'browser check' for use of the online learning environment. However, these facilities are often not compatible with home computing or home internet access. A focus on the distribution and use of the technology (including our CD) would have brought the issues of non-transparency of our tool to the surface earlier so they could be tackled in the design stage of the CD creation.

Conceptualising the Multimodal Study Guide - Conclusions

Kress and Van Leeuwen's (2001) theory of multimodality provided a useful framework for exploring some of the issues associated with developing multimedia texts to support tertiary students learning. The elements of discourse, design, production and distribution can be used as a basis of a methodological approach to developing multimedia texts to support unit guides and readings at a tertiary level. As mentioned above, these elements can bring into focus some practices that are often implicit with older, well-established technologies that are maintained by explicit networks.

For the most part multimedia requires a whole new set of literacies that many lecturers do not have the time to learn. The social practices associated with the production of digital texts were not well supported in the university environment in which we were working. Even though one of us had limited background in programming, the concept of providing unit readings in a multimedia form would not have happened if it were not for external support from CeLTS. One of the ironies of this project is that as we were struggling to integrate these literacies into the support materials for our students in a unit about contexts of childhood, children are beginning to acquire these literacies as part of their *lived* contexts for early childhood. Prenksy (2001) suggests many children of today are digital natives in that they are native speakers of the language of video games, internet and computers. Any support to move lecturers from digital immigrants of multimedia literacy should gain support at a systemic level. The concentration of multimedia programmers in one location at the university problematises the dissemination of literacies amongst lecturers exploring pedagogical

spaces with digital texts. Each of these tensions reflects what Feenberg and Feenberg (2002) describes as the social values embedded in technology.

When lecturers prepare study guides in a printed form they are not facing problems of design and distribution. These elements of the text production process are invisible. There is often support for services to design and distribute the study guides. Table 1 highlights how this is a different story when it comes to developing a multimodal digital study guide. The social support for the design and distribution of digital study guides has not yet been institutionalised in a way that supports everyday social practices in the faculty.

Technological Literacy	Discourse	Design	Production	Distribution
Print			Current Study guides	
Digital Literacies	Digital study guides	Digital study guides	Digital study guides	Digital study guides

Table 1: The changing focus of digital study guides.

When comparing the two forms of the study guides, the difference between technology as an artefact and technology as a practice becomes clear. Franklin (1990) has suggested that the concept of technology as a practice rather than a set of artefacts should be used to make sense of innovation. When looking at the paper based study guide, there is a set of social practices associated with formatting, printing, binding and distributing the final text. The fact that there are timelines within the faculty for each process legitimises the practices of text production.

The timelines for the CD production on the other hand was negotiable and often unknown. We were not sure of the practices of developing the CD as few people had embarked on such a project in the past. Technology was being viewed as an artefact rather than a set of practices. We did not have the technological practices associated with the use of the CD acculturated in our use of the media. Had we repeatedly used these practices in making multimedia CD's we would have focused more on the distribution and use of the final product and the risks and opportunities to learning such resources provide.

We began this project inspired by Rogoff's concept of guided participation hoping to use technology to create more spaces in which students could actively structure their participation and share their own personal meanings with us across a distance. We had hoped that students would be able to contribute to the design in a process of mutual structuring of participation, but found that we ourselves were struggling to remain involved in the design of the technology. We believe that the CD did open up possibilities for students to critically reflect on readings and content that might otherwise have been inaccessible or difficult to comprehend (i.e., mutual bridging of meanings) and to open up new spaces for them to share their ideas with us (e.g., by sharing the reports generated by the CD with their responses to questions and prompts; i.e., mutual structuring of participation). Nonetheless, we regret that the limitations described above in using the technology available to us remained cumbersome relative to the dynamic, interactive process of guided participation as described by Rogoff.

The limitations of our study suggest that when technology is viewed as an artifact (such as a multimedia text) we are not understanding the connectedness of the learning space such an artifact can facilitate, including the guided participation. We were challenged to think about how we can make spaces in our busy lives to integrate the changing technological practices and literacies associated with the development of more engaging texts than we are currently using. This in turn brings us to challenge the institutional structures that support our work to look for ways of enabling more engagement with new technologies. If we look into the future and see the digital natives filling up the future content of a CD about Contexts for Childhood, the ideological justification for such a change as teacher educators is very compelling.

References

Bleed, R. (2005) Visual Literacy in Higher Education ELI Explorations, Retrieved April 30, 2006, from http://www.educause.edu/librarydetailpage/666?id=ELI4001

Bruce, B. C. (1997). Critical Issues Literacy Technologies: What stance should we take? *Journal of literacy Research 29*(2), 289-309.

Bruce, B. C. (1998). New literacies, *Journal of Adult and Adolescent Literacy, 42*(1), 46-49.

Gee, J.P. (1996). *Social linguistics and literacies: Ideology in discourses,* 2nd edn, London: Falmer Press.

Fairclough, N. (1992). *Discourse and Social Change*. Cambridge: Polity Press.

Feenberg, A. (1995). *Alternative modernity : the technical turn in philosophy and social theory.* Berkeley: University of California Press.

Feenberg, A., & Feenberg, A. (2002). *Transforming technology : a critical theory revisited* (Rev. ed.). Oxford ; New York: Oxford University Press.

Franklin, U. (1990). *The real world of technology*. Montreal: CBC Enterprises.

Kress, G. (2000). Design and transformation. In B. Cope and M. Kalantzis (Eds.), *Multiliteracies: Literacy learning and designs of social futures* (pp. 153-161). London: Routledge.

Kress, G. & Van Leeuwen, T. (2001). *Multimodal Discourse, The modes and media of contemporary communication*. London: Arnold.

New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66,* 60-92.

Oblinger, D. (2005). *Learners, Learning and Technology:* The EDUCAUSE Learning Inititative, *Educause Review*, 40(5), 66-75.

Prenksy, M. (2001). Digital Natives Digital Immigrants. Retrieved April 30, 2006, from http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf.

Rogoff, B. (1995). Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In J. V. Wertsch, A. Alvarez & P. del Rio (Eds.), *Sociocultural studies of mind* (pp. 139-164). New York: Cambridge University Press.

Rogoff, B. (2003). *The cultural nature of human development*. New York: Oxford University Press,.

Rogoff, B., Mistry, J., Göncü, A., & Mosier, C. E. (1993). Guided participation in cultural activity by toddlers and caregivers. *Monographs of the Society for Research in Child Development, 58*(serial No. 236).

Rogoff, B., Moore, L., Najafi, B., Dexter, A., Correa-Chávez, M., & Solís, J. (in press). Children's development of cultural repertoires through participation in everyday routines and practices. In J. Grusec & P. Hastings (Eds.), *Handbook of Socialization*. NY: Guilford.

Snyder, I. (2002). Communication, imagination, critique – literacy education for the electronic age, In I. Snyder (Ed.), *Silicon literacies: Communication, innovation and education in the electronic age* (pp. 173-183). London: Routledge.

Tonyan, H. A., & Auld, G. (2006). Using sociocultural approaches to learning in university classrooms: transforming practice relative to texts and theories. Unpublished manuscript, Monash University, Melbourne.

Warnick, B. (2002). *Critical Literacy in a Digital Era*. Mahwah: New Jersey.

Zammit, K. and Downes, T. (2002). New learning environments and the multiliterate individual: a framework for educators. *Australian Journal of Language and Literacy,25*(2), 24-38.