

CHALLENGE OUTLINE: NEW LITERACIES, NEW DEMOCRACIES

Dr Carey Jewitt
London Knowledge Lab, Institute of Education

1. INTRODUCTION

Contemporary societies are increasingly theorized as global, fluid (Bauman, 1998) and networked (Castells, 2001). The emerging knowledge economy is characterized by the accelerated trans national flows of people, information, ideology, and materials, and communicational contexts where knowledge is highly situated, visual and multimodal, rapidly changing, and more diverse than ever before. This has led to a need to attend to the specificity of how visual and other non-linguistic symbolic forms are configured and elaborated (Virilio, 1994; Jay, 2002; Mitchell, 2002; Kress and van Leeuwen, 1996). These conditions have significant implications for communication, what it means to be literate, and the design of social futures for the 21st century (New London Group, 1996; Gee, Hull and Lankshear, 1996; Gee, 2004; Luke and Carrington, 2002; Kress, 2003).

Against this backdrop, this outline identifies three thematic areas of the communicational landscape as central to future forms of literacy and democracy and education:

1. Reconfiguration of representational and communicational resources and shapes of knowledge;
2. Changing skills, and practices of production and dissemination;
3. New opportunities for identity formation and participation.

Research is required that engages critically with these themes to address the central question of:

What communicational resources, skills and practices, dispositions, identities, and forms of participation will be needed to fully participate in increasingly virtual, multimodal and complex information societies?¹

Each theme is discussed in section 2 and key associated questions are highlighted for investigation. How these will contribute to the development of the role, nature and organization of education and barriers to this contribution are outlined. An indication of the key disciplinary domains and educational research, practitioner communities that such research would need to include as well as suggestions of individuals, research centers and institutions with the potential to contribute to the research is offered in Section 3. A strategic approach and possible methods for the investigation of these thematic areas is briefly outlined in Section 4.

2. THE 'BIG ISSUES'

2.1. Reconfiguration of representational and communicational resources and shapes of knowledge

Rationale and scope

The central factors concerning the reconfiguration of the representational and communicational landscape that impact on literacy and democracy include:

- Access to a broader range of legitimated representational forms;

¹ I think the focus on skills in the original question is too narrow as it is the disposition of learners and their ability to acquire and transform skills and knowledge that in my opinion is (and will become) increasingly important.

- New multimodal configurations and genres;
- Changing sites of display;
- Re-shaping of knowledge
- Increased accessibility to means of production and dissemination;

2.1.1 Access to a broader range of multimodal representational forms

Access to a broader range of multimodal representational forms in the classroom has been facilitated by the multimodal facilities of digital technologies. Students and teachers (at home and in the contemporary classroom) can access and generate images, music, video clips, animations, and other non-linguistic materials through the use of a range of digital technologies (Kress, 2003; Jewitt, 2006; Marsh, 2006). Interactive Whiteboards (IWBs), for example, have the potential to act as a multimodal digital hub in the classroom (Moss et al, 2007). Innovative uses of multimodal representations with mobile technologies and GIS systems serve to connect representations to specific locations bringing visual and spatial resources into the educational domain in new ways (e.g. layering and overlay, movement between locations, visual and spatial connections between social and physical data). The body (virtual and real) and action are representational resources brought into the classroom through the use of game and online environments (Pelletier, 2005, 2006) as well as tangible 3-D digital objects and haptics. These make new forms of action possible, and new conditions for action available (e.g. suspended gravity). Quick and easy access to a broad range of representational forms challenges the educational foregrounding of the written word and establishes the need for educational research and practice to look beyond the linguistic.

Key questions:

- What new resources for literacy and democratic participation can multimodal digital technology make available?
- What pedagogic roles could audio and action be developed to realize in the teaching and learning of literacy and for democratic participation in schools?
- What benefits and challenges for literacy are presented by access to a broader range of multimodal representations and resources?
- What are the gains and losses for literacy realized through the representation of curriculum concepts in one mode as compared with another?
- What new demands do these place on students' imagination, representation, interpretation and participation?

2.1.2 New multimodal configurations and genres

New multimodal configurations and genres of knowledge are emerging in digital and print media learning (Kress, 2003; Jewitt, 2006; Marsh, 2006). Screen based texts are complex multimodal ensembles of image, sound, animated movement and other modes of representation and communication. Writing is one mode in this ensemble and its meaning therefore needs to be understood in relation to the other modes it is nestled alongside. Different modes offer specific resources for meaning making, and the ways in which modes contribute to people's meaning making vary. The representation of a concept is realized by the resources of writing in ways that differ from the resources of image, that is, different criterial aspects are included and excluded from a written or visual representation. Writing, for instance, is increasingly brought into new kinds of relationships with, or even exchanged for, visual and multimodal forms of representation (Bachmair, 2006; Jewitt, 2006; Kress and Bezemer, 2007). The amount of images in texts as well as the quality and function of images or animation in a text is in a state of change. Images are no longer primarily functioning to illustrate or duplicate what is written on the page or screen. Image and word attend to discrete aspects of meaning and increasingly concepts are introduced, established and analyzed visually. Image, action, sound and other modes (including the body) are entwined in new multimodal configurations – often in a struggle for meaning. Writing is not the dominant mode in many digital configurations and a focus on writing or speech alone cannot reveal their meanings (Leander, 2007; Pelletier, 2007). Hypertext and Layout (color, font, framing devices, bullets, boxes and margins) are emerging as new modes that are central to the interpretation and reading of such 'hypermodal' texts (Lemke, 2002; Zammit,

2007; van Leeuwen, 2005). Multimodal configurations serve to interrupt, fragment and unsettle given textual genres and forms. The textbook form is changing, for instance, with information re-organized into bite size chunks – a modularization genre - that is a pervasive pedagogic response to the management of information and attention across the curriculum (Moss et al, 2007; Jewitt, Moss and Cardini, 2007).

Key questions:

- What new multimodal configurations and genres are likely to emerge that will be significant for literacy and democracy?
- What productive roles can textual fragmentation and coherence be used to achieve in education?
- How do technologies reconfigure the visual and written in society and what are the implications for the purposes and potentials for literacy and democratic participation?
- How can teachers engage with the effective design of multimodal digital teaching and learning resources to support literacy and democracy?

2.1.3 Shapes of knowledge

Knowledge is reshaped by the multimodal forms of new technologies: what can be easily represented as well as how it is represented has been transformed (Kress et al, 2001, 2005; O'Halloran, 2005). This has unsettled traditional shapes of knowledge and what these demands of learners. Once discreet texts (e.g. Novels, poems etc.) for study have been made digitally available online. In the process printed text is repackaged with image, animation and sound, digitally annotated, fragmented, and connected via hyperlinks to author biographies, and other historically and socially relevant knowledge – to become part of a larger web of texts. This remakes the authority of texts, unsettles the boundaries and forms of knowledge, and creates connects across previously distinct boundaries. It repositions the learner in relation to knowledge, making different demands on them, concerning how to authenticate and evaluate, how to select, and reduce and foregrounds the active and ideological work of making meaning (as opposed to 'receiving' it).

Key questions:

- What new shapes of knowledge does the contemporary landscape provide and the future demand?
- What new processes for the generation of knowledge do the contemporary and emerging technologies and communities provide and what are the implications for knowledge?
- What boundaries between knowledge are required for the future to support literacy and democratic participation within education?
- To what extent does the future demand of reconfiguration of the authority of school knowledge and curriculum?
- What processes for the authentication and validation of information and knowledge are required for literacy and democratic participation?

2.1.4 Changing sites of display

There is a gradual move away from a reliance on print as the primary medium of dissemination and instruction towards digital media can be seen in contemporary education (Boulter, 1999; Kress, 2003). Sites of display are always socially shaped and located: the "new" always connects with, slips and slides over the "old". The ways in which modes of representation and communication appear on the screen are therefore still connected with the page, present and past. Similarly, the page is increasingly shaped and re-made by the notion of screen. There are screens that look page-like and pages that look screen-like (e.g. Dorling Kingsley books). Print media has not been discarded by any means but it is in a new relationship to digital media – with specific roles and sometimes absent. Currently – although this will change - the tasks of assessment continue in the domain of print and writing. The work of students in the classroom continues primarily through non-digital means - although course work and homework is regularly in digital form (e.g. PowerPoint presentations and digital montage). Increasingly, classroom teaching relies on multimodal

digital media. IWBs, visualizers and scanners provide digital spaces of display that enable new objects to be seen, and familiar objects (including student texts) to be viewed and manipulated in new ways. This provides new possibilities for collaboration and sharing. Such potentials present new challenges for the pedagogic design of modality, pace and time and interactivity (Jewitt et al, 2007). In the case of IWBs, however, the move to a large digital screen at the front of the class also maintains a pedagogic logic focused on whole class transmission.

Key questions:

- How best can physical and digital materials and actions be connected in contemporary and future learning environments to support literacy and participation?
- What types of individual sites of display are required for the emerging and future communicational landscape?
- What connections between sites of display are required for collaborative environments and democratic participation?
- How can sites of display be designed to realize the necessary pedagogic relations, collaboration, dialogues and interaction are needed for participation in the 21st century?

2.1.5 Increased access to means of production, dissemination, and broadcasting

Increased access to means of production, dissemination, and broadcasting for children and young people is made possible in new ways through the internet, digital photography and video equipment and editing software (Sefton-Green, 2006; Lam, 2006; Bachmair, 2006). Increasingly the communicational landscapes occupied by young people originate outside of the school, enabling new ways for children to be the producers and disseminators of information (Carrington, 2005). Access to production is not evenly spread, with access to technology in the home and school – an issue that is tied to the social construction of gender. Technologies create new spaces for publication and dissemination and new networks and practices of production and consumption. A key aspect of production and dissemination is the new forms of network focused communications media that are available to a broad range of people. Technology has transformed how information can be stored, shared and distributed between people and across learning situations (e.g. inexpensive portable devices such as USB vaults and memory cards), and sites that provide online spaces for sharing, storing and distributing information (e.g. flickr, Bebo, You Tube, Facebook and MySpace, Blogs, Wikis).

Key questions:

- How can technologies of production and dissemination assist in the design of learning environments that undo the current pedagogic fit and logic of the classroom as a place of transmission?
- What conditions, virtual and institutional spaces are required to enable the effective use of new forms of network focused communications media within education?
- What forms of production and dissemination is it useful for education to enable to promote?
- How can production and dissemination technologies be used to support student interaction, knowledge generation, skill development and increase dialogue?

2.2. Changing skills, and practices of production and dissemination;

Rationale and scope

The central factors relevant to the changing skills, and practices of production and dissemination that impact on literacy and democracy include:

- Changing practices of production and authorship
- New skills that might be required in a changed and changing media landscape;
- Networks and new connections across out of school and in-school practices

2.2.1 Practices of production and dissemination

Practices of production and dissemination have been transformed by new technologies (also see section 2.1) in ways that remake the conditions and functions of authorship and audience (Adkins, 2005; Lury, 1993). The creation of user-generated content is a central aspect of technologized production practices for pedagogy (Luckin, 2003). New forms of production are required that draw on the capacity for students to generate and produce their own responses to support their own expression of understanding. Children can collect photographs, drawings, writing and audio commentaries as well as museum and gallery objects and these can be manipulated, organized and annotated to produce personalized 'galleries' of a museum or gallery exhibition, multimedia diaries, documentaries, narratives and so on. This works to create connections across time and space (as well as experiences) and enable narratives to be circulated, shared, reused, and further transformed. In this way new technologies can offer ways of manipulating information in ways that significantly re-shape knowledge – what is to be learnt as well as how it is to be learnt (Price and Rogers, 2003; Walker, 2007). Students in the classroom (as elsewhere) are engaged in making complex decisions about what mode to use, and how best to design multimodal configurations. Even very young children are engaged in both the consumption and the production of photography and film in the home (Marsh, 2006). Digital artifacts are key to the production of the family through, the mediation of family activities and events, the recording of the family, as well as the construction of young people as literate (Buckingham and Sefton- Green, 2004; Pahl and Rowsel, 2006). Ways of describing and theorizing the broader set of practices of remaking, "mashing" and "remixing" in the digital multimodal mediascape are required. Children and young people have limited access to forms of production and dissemination in educational contexts, however, and when such technologies are co-opted by school they are often used in reductive ways by students and adapted to fit with existing school practices (Owen et al, 2006; Lankshear and Knobel, 2003, 2006; Sefton-Green and Sinker, 2000).

Key questions:

- What new conditions and functions for authorship does the new communicational landscape provide that are relevant for literacy and democratic participation?
- How can production and dissemination be used to provoke children to interact with aspects of the physical environment and to discover, hypothesize, and experiment (rather than reproduce or naively pastiche it) ?
- How can we better theorize, understand and describe children's broader set of practices of production and in their digital multimodal mediascape?
- How can the technologies that students routinely carry and use in schools in non-legitimated ways (e.g. mobile phones with cameras, MP3 players, game consoles) be used productively to support learning through the generation and dissemination of content?
- In what ways can we ensure that technologies avoid a focus on the production of presentation and display communication rather than hypothesis building, reflection and thinking?

2.2.2 New skills

New skills are emerging and will be required to navigate, negotiate and interpret the changing media landscape. Recognizing the multimodal character of texts, whether print-based or digital, impacts on conventional understandings of reading (Jewitt, 2006). It has become increasingly important to be able to 'read' images in 'a media-text, and symbol saturated environment' and to be able to 'construct, control, and manipulate visual texts and symbols' (Luke, 1996). The development of skills in spatial thinking, and the making of inferences using location data is a key area for development. Skills of linking, decomposing, and reorganizing elements in a text are evolving (Bolter, 1999; Lemke, 1998b; Beavis, 2006) and the ability to work fluently across many modes and 'historically discrete domains' are skills required by digital multimodal technologies (Sefton-Green and Reiss, 1999:2). New practices are likely to centre on: interpretation of multiple, multimodal configurations (Kress, 2003; Ainsworth, 2006); navigating pathways for the changing structure of texts; the manipulation of texts (e.g. annotation and tagging); searching and authenticating

information; information management and reduction; and linking and recontextualising (Luke, 1996; Kress, 2003; Leander, 2007; Beavis, 2006). This will place new demands on imagination and interpretation and foreground the agentive work of the learner.

Key questions:

- What are the implications of inequities across students' mediascapes and patterns of use for the development of literacy and democracy?
- What new skills and practices of interpretation and reading does the multimodal digital landscape require?
- What new skills and practices of manipulation, personalization and remaking does the multimodal digital landscape require?
- What new skills and practices of information handling, management and analysis does the multimodal digital landscape require?
- What are the positive and negative implications of the new information society (immense amounts of information, widely dispersed, unauthenticated etc.) for literacy and the democratization of participation?

2.2.3 Connections between out of school and school literacy practices

The connection between out of school literacy practices and those in-school is a focus for a new democracies agenda. Pedagogic understanding of students' mediascapes demands the adoption of strategies for engaging with the literacy worlds of students, their interests and desires. The theoretical and pedagogic focus on a broad communicational landscape can support teachers in engaging with the resources that students bring into the classroom. This includes understanding students as sign makers, the texts they make as designs of meaning, as well as the meaning making processes that they are engaged in. These can give insights into the kinds of resources that students have access to (as well as those that they do not). Rethinking the role of the learner in literacy in this way raises the question of how to design the relationship between literacy spaces in-school and out-of-school (Kerawalla and Crook, 2002). These are regulated by curriculum and educational policy in different ways: with an increasing acknowledgement in early childhood literacy curriculum of the centrality of students' background knowledge and home practice, but little explicit acknowledgement of their multimodal resources. The failure to connect with students' out of school digital practices (e.g. games, film, online spaces) has become a discourse of anxiety for education as well as a driver for change. The trajectories of students, teachers, and knowledge across and between these spaces are not only physical they are also social, emotional and cognitive (Nespor, 1994). An interest in children's media culture opens up a wider notion of learning (Sefton-Green, 2006). How technologies can be used to remake the boundaries between sites such as home and school and create new spaces for learning is an intensive focus of current research and policy (Lankshear, Peters & Knobel, 2002; Lam, 2006; Leander, 2001, 2007; Pahl, 1999; Marsh, 2003; Sefton-Green, 2006). Technology is increasingly used to provide platforms and devices to create spaces that connect school and home, through homework, as well as building connections with school, fieldwork, laboratories and museums in new ways (Walker, 2007; Kerawalla, 2007). The extent to which the school and home can be usefully connected needs to be established (and balanced with the total pedagogic-ization of society). The social practices of literacy in schools are key to understanding the change in the uses and effects of literacy in education and new democracies (Luke and Carrington, 2002). As a consequence, there is a need to expand conceptions of literacy to accommodate more complex multimodal literacy repertoires (Snyder, 2002; Street, 1998).

Key questions:

- How does the classroom feature as a node in the complex inter-textual web of the communicational landscape of young people?
- What kind of artifacts, technologies, forms of communication and literacy are legitimated in the different literacy and communication spaces that children occupy, and what is enabled to flow, and move across these spaces?
- To what extent does education need to stretch forms of literacy beyond the

constraint of official linguistic standard forms of literacy and what are the implications of where this line is drawn?

- In what ways can effective connections across the boundaries of different spaces of learning be established for literacy and democratic participation?
- What new roles for learners might the future demand?

2.3. New opportunities for identity formation and participation

The central factors relevant to the identity formation and participation that impact on literacy and democracy include:

- Learner dispositions and identity management
- New forms and patterns of participation

2.3.1 Learner dispositions and identity management

Learner dispositions and identity management are central to literacy and democracy and education more broadly. New practices of production and dissemination (see section 2.2) offer the possibility for new identity formations. Learning is increasingly discussed in terms of the creation of particular dispositions and orientations to the world, rather than people who are in command of a body of knowledge. Accordingly, success at multimodal learning can be coupled with the ability to be autonomous and self-directed designers of learning experiences (Gee, 2004), to possess problem-solving skills with multiple strategies for tackling a task, and to have a flexible solutions-orientation to knowledge (Cope and Kalantzis, 2000). The increasing recognition of literacy as a social practice that evolves around the situated interests of people suggests the need to “acknowledge the ways in which we position children within these social practices and landscapes” (Carrington, 2005).

Technologies open up new spaces for identity play and for reflecting on audience and process that are important for both literacy and the potentials for democratic participation. Technologies place emergent demands on the performativity of self in face-to-face, local and virtual contexts (Butler, 1990; Bauman, 1998; Beck, 1992; Leander & Wells Rowe, 2006). Technological spaces are constantly personalized, appropriated and remade in local communities and institutions. MSN and online virtual communities (e.g. bebo, Facebook, Myspace) offer new potentials for collaboration, connection and participation that connect the digital and the physical and foreground new communicative repertoires centered on forms of identity production and identity management. Interaction with online forums, u-tube and social software sites enables multiple identity categories to be occupied (e.g. writer, reviewer, editor, mentor, summary writer, illustrator, and critic) and created. The production and maintenance of multiple identities is key to participation in a range of online learning environments that use avatars (games, second life, some simulations), which require the design of image, movement, sound and speech to create a bodily presence on screen. Often players have multiple avatars, switching between identities and playing with the notion of identity itself. The negotiation of tasks and relations is an aspect of the creation of identities through action. The design of the self involves the complex rendering of a range of modes into a multimodal sign. Identity formation and the construction of the literate-self are endlessly played out over sites and media, adopting specialist languages, leaving one world of experiences for another. This can be expressed as both the loss and a gain of new possibilities and new identities. Whether digital or physical, the design of learning needs to make clear both the gains and how these identities are to be offset against what is to be lost (Gee, 2003; Kress, 2003; Kress and Bezemer, 2007). The empirical description of children’s and adolescent’s new mediascapes is therefore essential to understanding how they negotiate social identity in relation to the economies and cultures of late modernity. (Pahl, 1999; Leander, 2007; Alverman et al, 2001).

Key questions:

- How do the dispositions and learner identities demanded by the new communicational landscape for literacy and participation compare and contrast those required by contemporary schooling?

- What new possibilities does the evolving multimodal digital landscape provide for the development of learner disposition and identities that are relevant to literacy and democratic participation?
- How can education draw on contemporary notions of identity in productive and innovative ways for literacy and democratic participation?
- What dispositions and identities (social futures) does education want to design for young people?
- What opportunities and challenges do forms of identity production and management raise for the educational use of online environments?

2.3.2 New forms/patterns of participation

New forms/patterns of participation are enabled by technology, the generation of new forms of multimodal and digital narratives, Blogging, and Culture Jamming and other emergent forms of literacy (e.g. Web 2.0) (e.g. Marsh, 2005; Alverman et al, 2001; Leander, 2007; Unsworth et al, 2005; Cope and Kalantis, 2000; Lankshear and Knobel, 2003, 2006; Sefton-Green and Sinker, 2000). The facility of technologies to connect people, spaces, time and practices in new ways serves to remake the potentials for participation. Laptops, internet, email, PDAs, video conferencing, wireless networks, and VLEs can distribute knowledge and learners in new ways, enable knowledge to circulate across time differently in online spaces, archive and store data, creating complex rhythms of asynchronous and synchronous tasks and new economies of rhythm (Leander, 2007). MSN and online virtual communities (e.g. Bebo, Facebook, Myspace) offer new potentials for collaboration, connection and participation. These transform notions of friendship and expand the space of connection for many young people – moving beyond the confines of local and national spaces in a virtual context and remaking the practices of friendship, and notions of knowing and being known. It also provides a wealth of information about young people to a broad range of people. Models of collaborative networking technologies offer schools (and business) the potential to gain information on student interests to inform curriculum, recruit students, facilitate peer-networks, connect with home, and to share information. These potentials for collaboration are, however, constrained by economic, social and political structures that impact on the potential for democratic participation and other forms of social exclusion – including those who do not attend school for a variety of complex reasons. This raises issues of ethics, safety, privacy and control over identity and participation. The new contexts and purposes for writing that these spaces provide remake the boundaries between private and public and the temporary and the permanent as information is difficult to remove, circulates widely, is recycled and collectively owned. The value of the knowledge that users generate depends on the specific context and there are concerns that in many cases there is a generation of non-knowledge.

Key questions:

- What new forms and patterns of collaboration can be enabled by new technologies?
- How might technologies be used to enhance participation by individuals and groups who are currently marginalized and socially excluded within educational contexts?
- In what ways do new forms of connection, collaboration and participation reshape what the authority of school knowledge and the curriculum?
- In what ways do social software sites re-make children's idea of what it means to learn and be a learner (e.g. the individualization of the student) and what it means to be literate?
- What ethical and safety issues do these technologies create for education and how can these be resolved in ways that do not over-regulate the environment?
- How can the potentials and models of new forms of participation and patterns of engagement be harnessed to support the re-organization of democratic participation and learning in education?

2.4 Contribution to education

Addressing the questions outlined in this section would inform the role, nature and organization of education through:

- Identification of the resources, trends, directions and potentials of the multimodal contemporary landscape and the demands this places on literacy and democratic participation;
- Provision of a research base from which to re-design an educational response to emergent technology that is grounded in pedagogic and social futures, whilst being flexible enough to account for the rapidly changing capacities of technologies;
- Informing the continued debate on the role of the school in a contemporary society and decisions on literacy policies, curriculum and forms of participation;
- Examination of the factors that impinge on and impede technological change in educational contexts and effective ways of driving change;
- Inform the development of when and how the multimodal and network resources of technologies can be harnessed to the purposes of education;
- Information to support the re-imagining of student identities and roles appropriate for the newly emerging knowledge economy;
- Provision of evidence to inform the re-thinking of the production and authority of school knowledge for the 21st century;
- Provision of evidence to inform technological innovations for establishing connections between school, home and other sites of learning;
- Provide of evidence and innovative models to inform the development of learners with the skills and dispositions appropriate for the 21st century.

3. DISCIPLINARY COLLABORATIONS

This research challenge would need to draw on the following disciplinary domains situated in relation to education:

- Psychology and cognition with a focus on external representation and technology as a mediating tool in learning;
- Human computer interaction and information design;
- Multimodality and semiotics;
- Literacy studies;
- Sociology with a focus on media and technology, citizenship and identity;
- Cultural and media studies with a focus on cultural forms and participation;
- Computer science with a focus on the development of innovative technologies for teaching and learning.

4. METHODS

The strategic approach would draw on a program of interdisciplinary projects that combines robust tested methods - desk research, science reviews, events and consultation/information gathering with more innovative activities to facilitate fresh and challenging thinking and new perspectives. In order to get a complete picture of this challenge area the data from these different methods would need to be integrated in intelligent ways to enable the data to identify information gaps, and aspects that need particular attention.

Three systematic and critical interpretive reviews each focused on one of the thematic areas outlined in the research challenge, reviewing the academic and grey literature from the research, and relating this to information gathered on commercial, educational practitioner and policy sectors. The literature reviews would assemble a comprehensive collection of electronic documents to address these key questions and also investigate the themes that connect across the areas.

Analytical reviews of media debates in educational magazines, online forums etc used by teachers – to identify barriers and motivators for change.

Review of the policy environment, and the role for ICT identified within this, using secondary sources.

Innovation audit of commercial/industry suppliers of ICT hardware and software for education, identifying current trends and developments – involving online research supplemented with interviews.

Secondary analysis of relevant survey quantitative data (e.g. on the spread and usage of technologies within the English education system).

Three Consultative seminars to bring together experts from research, educational practice, policy and where appropriate the commercial/industry sector to: explore selected themes and gaps in the literature; validate and interpret trends emerging from the review of literature; identify future uncertainties in the challenge area and the development of realizable visions for the future. The seminars could be recorded and edited highlights streamed online with a forum and additional information to enable focused debate – with international contributors as discussants.

In-depth interviews with key innovators in the field from policy, practitioners, research and industry could be conducted to identify future uncertainties in the challenge area.

Three online teacher debates on each of the areas outlined in the challenge – Hosted by TES or another education focused public site – with key innovators initiating a debate on specific issues with an open forum. Possibly supported by an online survey. This would help to identify areas of greatest potential interest and added value, and ensure credibility.

A series of small research data analysis workshops to bring together groups of cutting edge innovative research (not yet published) to gather and share data, discuss critical cases and engage with ideas for the future. This would help to identify areas of greatest potential interest and added value and contribute to a clearer understanding of the challenges in the area.

A series of imagined design and scenario development workshops with industry, educational practitioners, policy makers, and researchers could be conducted around specific themes outlined in the challenge to design uses for technologies.

A series of school based innovative student workshops – students working with computer scientists and designers and legitimated technologies of the classroom (IWB, laptop etc) and non-legitimated technologies that they have in their bag (MP3 players, Bluetooth/camera phones, DS and other portable game consoles) and some low cost equipment to design forms of content sharing and collaboration for the classroom. This would also help to identify future uncertainties in the challenge area – which would arise from the process.

In order to ensure the credibility of the work with key project stakeholders – ministers, policy makers, the wider academic community, the research would need to:

- Involve key stakeholders in informing the direction and focus of the research to ensure it addresses their concerns and interests;
- Ensure the research maintains a connection with the interests of stakeholders through regular communication with an advisory board throughout the project;
- Use robust methods and procedures for the sampling and analysis of literature and other data;
- Clearly delineate the areas of interest and define the research terms;
- Access, builds on and extend existing knowledge within these communities;
- Adopt a broad and critical stance to the issues outlined in the thematic area;
- Provides outputs that are written in such a way as to be of use to these stakeholders.

5. BARRIERS, PROBLEMS AND CHALLENGES

One of the challenges for the research will be that much of the research undertaken on in these areas is small scale, local, and innovative. Research tends to be descriptive and often uncritical of interventions. Small moments of success tend to become the focus of research and the sampling of data is often unclear making it difficult to interpret the findings.

Innovative research and interventions often happen in contexts out of the formal school environment (e.g. in after school clubs), in 'informal' learning environments (e.g. arts centres, youth projects) or are short-lived projects attached to research projects. The research findings can therefore not be generalized to mainstream school contexts that are highly regulated by the curriculum.

When a technology enters an educational context it tends to be quickly adapted to existing practice (Tynack and Cuban, 1995). Engagement with the social conditions of education and society more broadly needs to underpin a research challenge on new literacies and new democracies. In order to be effective and sustainable research initiatives need to understand and engage with the specificity of the grammar and regulation of an educational context. This includes: the compulsory character of schooling, curriculum and examination requirements and regulation of the school day, the competitive individualization of student identities, the purposeful activities that are legitimated by education, and how student interests and techno-literacy are socially constituted and regulated through adult control in classroom spaces.

The call for education to expand the notion of literacy to include more interactive and multimodal forms of communication fits with the experiences of children and young people out of school, the demands of the new knowledge economy, and the capacities of new technology. There is, however, a disjuncture between this call and current literacy policy, curriculum demands and assessment practices in education. This creates a limited and highly regulated space within the school for the exploitation of students' communicational resources and new uses of technology.

REFERENCES

- Adkins, L. (2005) The new economy, property and personhood, *Theory Culture Society* 22(1): 111-130.
- Alverman, D.E., Hagood, M.C. & Williams, K.B. (2001). Images, language, and sound: Making meaning with popular culture texts, *Reading online*.
- Appadurai, 1990;
- Bachmair, B. (2006) Media socialisation and the culturally dominant mode of representation, *Medien Padagogik*.
- Baumann, Z.(1998) *Globalization: The Human Consequences* Oxford: Polity Press.
- Beavis, C. (2006) English at a time of change: where do we go with text?, *English in Australia*, Vol 41, No 2, pp. 61-68.
- Beck, U. (1992) *Risk Society: Towards a New Modernity*, London: Sage.
- Boulter, D. (1999) *Writing Space: The Computer, Hypertext, and the History of Writing*. Hillsdale, N.J.: Lawrence Earlbaum.
- Buckingham, D. and Sefton-Green, J. (2004) Structure, agency and culture in children's media culture. In J.Tobin (ed.) *Pikachu's gloval adventure: the rise and fall of Pokemon*, Durham, NC: Duke University Press.
- Butler, Judith (1990) *Gender Trouble: Feminism and the Subversion of Identity*. London: Routledge
- Carrington, V. (2005) Txting: the end of civilization again, *Cambridge Journal of Education* 35-2: 161-175
- Castells, M. (2001) *The Internet Galaxy*. Oxford: Oxford University press.
- Cope, B. and Kalantzis, M. (ed.) *Multiliteracies*, London: Routledge.
- Cope, B. and Kalantzis, M. (eds.) (1993) *The Powers of Literacy: A Genre Approach to Teaching Writing*, Pittsburgh: University of Pittsburgh Press.

Gee J.P. Hull, G. and Lankshear, C (1996) *The new work order: behind the language of the new capitalism*, Sydney: Allen & Unwin.

Gee, J.P. (2003) *What video games have to teach us about learning and literacy*, New York: Palgrave/Macmillan, 2003.

Gee, J.P. (2004) *Situated Language and learning: a critique of traditional schooling*, London: Routledge.

Jay, M (2002) That visual turn: the advent of visual culture, *Visual Culture*, 1(1): 87-92.

Jewitt, C. (2006) *Technology, literacy and learning: a multimodal approach*, London: Routledge.

Jewitt, C., Moss, G. and Cardini, A. (2007) Pedagogic design of IWBS, *Learning, Media and Technology*.

Kerawalla, L., O'Connor, J., Underwood, J., du Boulay, B., Holmberg, J., Luckin, R., Smith, H. and Tunley, H. *The Homework system: using tablet PCs as tools to support continuity of numeracy learning between home and primary school*. (accepted for publication 2007) Educational Media International ([website](#))

Kerawalla L. and Crook C. (2002), Children's computer use at home and at school: context and continuity, *British Educational Research Journal*, 28 (6), pp 751-771.

Knobel, M. and Lankshear, C. (2006) in Pahl, K. and Rowsell, J. (eds) (2006) *Travel Notes from the New Literacy Studies: Instances of Practice*. Clevedon: Multilingual Matters Ltd.

Kress, G. (2003) *Literacy in the New Media Age*, London, Routledge.

Kress, G. and Bezemer, J. (2007) Gains and Losses, paper at the 14th International Conference of Learning, Witwatersrand University, Johannesburg, South Africa.

Kress, G., Jewitt, C., Ogborn, J, and Tsatsarelis, C (2001) *Multimodal teaching and learning* London: Continuum Press.

Kress, G. Jewitt, C. Jones, K, Bourne, J., Franks, A., Hardcastle, J. (2005) *English in Urban Classrooms*, London: Routledge.

Kress, G., and van Leeuwen, T. (1996) *Reading Images: The Grammar of Visual Design*. London: Routledge.

Lam, W. (2006) Culture and learning in the context of globalization: research directions, *Review of Research in Education* 30 (1): 213-237.

Lankshear and Knobel, 2006;

Lankshear, C. and Knobel, M. (2003) *New literacies: changing knowledge and classroom learning*, Buckingham: Open University Press.

Lankshear, C., Peters, M., and Knobel, M. (2002) 'Information, Knowledge and Learning: Some Issues Facing Epistemology and Education in a Digital Age', in M. Lea and K. Nicolls (eds.) *Distributed Learning*, pp. 16-37. London: RoutledgeFalmer.

Leander, K (2001) 'Producing and hybridizing space-time contexts in pedagogical discourse. *Journal of literacy research* 33(4): 637-679.

Leander, K. and Wells Rowe, D. (2006) Mapping literacy spaces in motion: A rhizomatic analysis of a classroom literacy performance, *Reading Research Quarterly* 41(4): 428- 460.

Leander, K. (2007) 'Youth Internet practices and pleasure: Media effects missed by the discourses of "reading" and "design"' (Keynote) ESRC Seminar Series: Final conference *Play, Creativity and Digital Cultures*, 9 June 2007, Institute of Education, London.

Lemke, J. (2002) 'Travels in Hypermodality', *Visual Communication* 1(3): 299-325.

Lemke, J. (1998a) 'Multiplying Meaning: Visual and Verbal Semiotics in Scientific Text', in J.R. Martin and R.Veel (eds.) *Reading Science*, pp.87-113. London: Routledge.

Lury, C. (1993) *Cultural rights: technology, legality and personality* New York: Routledge.

Luke, A and Carrington, V. (2002) Globalisation, literacy curriculum practice. In R.Fisher, M. Lewis and G. Brooks (eds) *Raising standards in literacy* (231-50) London: Routledge.

Luke, A. (1996) 'Text and Discourse in Education: An Introduction to Critical Discourse Analysis', in M. Apple (ed.) *Review of Research in Education*. Washington DC: AERA.

Luke, C. (2003) Pedagogy, connectivity, multimodality, and interdisciplinarity *Reading Research Quarterly* 38(3).

Marsh, J. (ed) (2005) *Popular Culture, New Media and Digital Literacy in Early Childhood*. London: Routledge/Falmer.

Marsh, J. (2003) One-way traffic? Connections between literacy practices at home and in the nursery, *British Educational Research Journal* 29(3) 369-82.

Marsh, J. Global, local/public, private: young children's engagement in digital literacy practices in the home, (2006) in K. Pahl and J. Rowsell (eds.) *Travel Notes from the New Literacy Studies: Instances of Practice* (p.19-38). Clevedon: Multilingual Matters Ltd.

Mitchell, W.T.J (2002) Showing seeing: a critique of visual culture, *Visual Culture* 1(2):165-181

Moss, G., Jewitt, C., Levacic, R., Armstrong, V., Cardini, A., Castle, F. (2007) *The interactive whiteboards, pedagogy and pupil performance evaluation* (Research report 816), London: DfES.

Nespor, J. (1994) *Knowledge in Motion: space, time and curriculum in undergraduate Physics and management*, London: Routledge.

New London Group (1996) 'A Pedagogy of Multiliteracies: Designing Social Futures', *Harvard Educational Review* 66: 60-92.

O'Halloran, K. L. (2005) *Mathematical Discourse: Language, Symbolism and Visual Images*. London and New York: Continuum.

Owen, M., Grant, L., Sayers, S. and Facer, K. (2006) *Social software and learning*, Bristol: Future Lab.

Pahl, K. and Rowsell, J. (eds) (2006) *Travel Notes from the New Literacy Studies: Instances of Practice*. Clevedon: Multilingual Matters Ltd.

Pahl, K. (1999) *Transformations : Children's Meaning Making in Nursery Education*. Stoke on Trent: Trentham Books.

Pelletier, C. (2005) The uses of literacy in studying computer games: comparing students' oral and visual representations of games, *English teaching: Practice and critique*, 4(1): 40-59.

Pelletier, C. (2006) Reconfiguring Interactivity, Agency and Pleasure in the Education and Computer Games Debate – using Žižek's concept of interpassivity to analyse educational play, *E-learning*, vol 2 (4): 317-326.

Price, S. and Rogers, Y. (2003) Let's get physical: the learning benefits of interacting in digitally augmented physical spaces. In (eds) J.D.M. Underwood and J. Gardner, *Computers and Education: Special issue: 21st Century Learning*: 43, 137-151

Sefton-Green, J. (2006) Youth, Technology and Media Culture, *Review of Research in Education* 30 (1): 279-306.

Sefton-Green, J. and Reiss, V. (1999) 'Multimedia Literacies', in J. Sefton-Green (ed.) *Young People, Creativity, and New Technology: The Challenge of Digital Art*, pp. 1-11. London: Routledge.

Sefton-Green, J. and Sinker, R. (ed.) (2000) *Evaluating Creativity: Making and Learning by Young People*, London; Routledge.

Snyder, I (2002) *From Page to Screen*, London: Routledge.

Street, B. (1998) 'New Literacies in Theory and Practice: What are the Implications for Language in Education', *Linguistics and Education* 10 (1): 1-24.

Tyack, D. and Cuban, L. (1995) *Tinkering Towards Utopia: A Century of Public School Reform*, Cambridge, Mass: Harvard University Press.

Unsworth, L., Thomas, A., Simpson, A. and Asha, J. (2005) *Children's literature and computer based teaching*, Maidenhead: Open University Press.

van Leeuwen, (2005) *Introducing Social Semiotics*, London: Routledge.

Virilio, P (1994) *The Vision Machine*, Indianapolis: Indiana University Press.

Walker, K. (2007). Visitors' voices: Personal narrative trails (2007) At the UK Museums Assn. conferences Digital Dialogues: Using everyday technologies to personalize the visitor experience. V&A Museum, London, 15 June 2007.

Zammit, K (2007) *The construction of student pathways during information-seeking sessions using hypermedia programs: a social semiotic perspective*. Unpublished PhD, University of Western Sydney.

This document has been commissioned as part of the UK Department for Children, Schools and Families' Beyond Current Horizons project, led by Futurelab. The views expressed do not represent the policy of any Government or organisation.