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A case for a l(IT)eracy approach to writing online educational materials

stephen relf
Charles Sturt University

The uncertainty of writing educational materials online as multimodal and hypertextual documents presents a challenge to academics whose expertise lies in writing print based distance educational materials, print based academic papers and face-to-face education. In this paper a literacy approach is explored, one that fits into distance education traditions, while simultaneously centring pedagogy and technology within literacy. The concept metaphor l(IT)eracy signifies this approach. Its three dimensions - operational, cultural and critical - will be explored as a viable model of literacy.

Introduction

In an early study of the writing space changed by the computer and hypertext, Bolter (1991) recalled a scene from Victor Hugo's *The hunchback of Notre-Dame*, in which the archdeacon laments as follows:

Opening the window of his cell, he pointed to the immense church Notre Dame, which, with its twin towers, stone walls, and monstrous cupola forming a black silhouette against the starry sky, resembled an enormous two headed sphinx seated in the middle of the city.

The archdeacon pondered the giant edifice for a few moments in silence, then with a sigh he stretched his right hand towards the printed book that lay open on his table and his left hand towards Notre Dame and turned a sad eye from the book to the church.


Bolter’s purpose in using this image was to emphasise the epistemological change associated with the change of communication technologies: "human thought... would change its mode of expression". Nonlinear reading and writing,
enabled through hypertext, would similarly change the traditional linear reading and writing associated with the book.

The epistemological changes associated with communication technologies have expanded since Bolter's identification of hypertext. The writing space online now enables multimodal reading and writing. The multiple modes of meaning making are the linguistic mode - in its linear and nonlinear, hypertextual, forms - as well as the visual, audio, gestural, spatial and multimodal meaning making. The multimodal is included in the list, as it is more than the addition of each of the other modes in being 'of a different order to the others as it represents the patterns of interconnection among the other modes' (The New London Group, 2000, p. 25).

In this paper I explore some aspects of the changing technologies of distance education from print to online. In doing this, I will first position some of the epistemological implications of the change of technology that enable multimodal and hypertextual writing online. In the process the skills approach to teaching technology will be critiqued and replaced by a model of l(IT)eracy that incorporates technologies as part of a social approach to literacy. The l(IT)eracy model will be applied to literacy approaches that have been taken in two case examples, drawn from my work in distance education. Finally will I analyse online writing situated within academic epistemologies, distance education and online technologies from the l(IT)eracy perspective to illustrate its usefulness for online writing.
**Locating technology**

I am using Hugo's archdeacon in the same way Bolter did, to signify an epistemological change of meaning making from the familiar to the unfamiliar. Hugo's change was from ritual, architecture and iconography, represented in the cathedral, to meaning made through logical argument presented in the book. The change Bolter refers to was from the familiar linear to nonlinear, hypertextual, writing. In this paper the change is from the familiar print based distance educational materials to the unfamiliar hypertextual and multimodal meaning making of online writing.

A characterisation of that change happening in print, enabled by digital technology, is a fundamental change from meaning making based on the word, to meaning made by the visual mode. It is a change from:

- the era of print,
- the medium of the page,
- the dominance of the word, and
- the logic of time that governs speech to
- the era of the digital,
- the medium of the screen,
- the dominance of the image, and
- the logic of space and simultaneity that governs images (Kress, 2003, pp. 1-2 & 20).

The change from word to image can be explained by recalling advice about using illustrations in the period of the domination of the word. Rowntree, for
example, advised writers of self-instructional material about the use of images: 'like most pictures used in teaching, all … need some form of introduction of commentary in words -- to help the learner get the most out of them' (Rowntree, 1986, p. 182, emphasis in original). Kress' argument is that the logic of communication, is now dominated by the image, which provides different ways of making meaning (2003, p. 65).

A similar distinction between visual and written meaning making is evident in Lemke's distinction between typological and topological meaning (1998a). Language principally operates as typological meaning 'by classifying things into mutually exclusive categories' while visual and spatial-gesturing operates as topological meaning differentiating things by 'degree (rather than kind)' (Lemke, 1998a, p. 290). Examples of typological meaning is the distinction in language between up and down, left and right, writing and drawing. Examples of topological meaning can be found in language, speech, illustrations and in gesture. In language there are fewer examples such as, higher and lower, faster and slower. In speech the tone of the voice makes it possible for example to say 'Yes' in such a way to mean 'No' or 'Wait and see' as in response to a child's repeated request for ice cream. In gesture the raising an eyebrow conveys meanings of degree. Visually, position, size, and centrality convey meanings of prominence.

The purpose of focusing on the meaning making enabled through technologies is not intended to treat technology as separate, as either being a neutral carrier or in a causal determinist relationship. It is to focus on the place of technology
and modes, in shaping meaning, to recognise that technology is part of the making meaning.

The sociocultural approach taken here accepts that human communication has always involved a technology of some sort (Green, 1993a). That technology is not neutral. It impacts on the meaning made in amplifying some aspects of human meaning and reducing others (Green, 1993b, pp. 22&23). The examples of Kress and Lemke show how the technologies that enable textual and visual meaning-making impact of the meaning made as a result.

Academics adopting online communication, and writing online distance educational materials, face new skills, not just in learning how to use technology, but new skills in meaning-making practices with the new technologies. One such approach, integrating technology as part of meaning-making, is a model of literacy that centres information technology within literacy. The approach is itself a written, visual, concept metaphor -- L(IT)eracy (Durrant & Green, 2000). It is one of the new approaches to literacy that have attempted to accommodate technology within meaning making practices.

**L(IT)eracy: centring the social and the technological**

L(IT)eracy is a sociocultural approach starting from the position that literacy has 'always involved some kind of technology or other' (Lankshear & Snyder with Green, 2000, p. 25). It is a holistic three dimensional (3D) model of literacy that incorporates technology within literacy as a social literacy and not separate from it.
The model of l(IT)eracy, built on Green's (1988) three dimensional (3D) model of literacy across the curriculum, compromises three dimensions: operational, cultural and critical. The operational dimension applies equally to literacy as it does to IT. It focuses on how to make the system work: the language system (spelling, grammar, genre) and the technology system of writing (by hand, pencil, biro or keyboard), and in knowing how to set up the hardware, and to use the software. The cultural dimension focuses on how to use the texts and technologies to make meaning in authentic social contexts. In this study the social context is the discipline and distance education converging to online distance education (Smith, 2005). The critical dimension situates the practice within a context, history and power as a 'complex socio-historic construction' that includes how to 'assess and evaluate software and other technology resources … in a spirit of informed scepticism' (Durrant & Green, 2000, pp. 99-100).

The 3D model of l(IT)eracy is 'a holistic, cultural-critical view off literacy-technology learning' (Durrant & Green, 2000, p. 97) in which no one dimension has priority over the others and in which all operate simultaneously.

In being a holistic model, it is critical of the technological, skills or code-cracking approach to literacy in which the operational dimension precedes the cultural and critical dimensions. On a personal level, the reason I sought and adopted the l(IT)eracy approach to writing online was informed by Riley's critique of print
based distance educational materials. A commonly recognised example of such an approach is Rowntree’s *Teaching through self-instruction* (1986).

**L(IT)eracy practices in distance education**

Rowntree employed a literacy approach in order to redirect the alienation of the behaviourist, 'telling', technology to a more student-focused, though still a behaviourist, pedagogy (Thorpe, 2002, p. 133). The literacy approach recommended was a conversational writing style, based on the social pedagogic scenario of an individual tutor-student coaching session Rowntree called 'tutorial-in-print':

> Imaging instead that you are tutoring one individual learner... Everything you might want to say to this individual will need to be written down - forming what I have called a *tutorial-in-print*. *(Rowntree, 1986, p. 82, emphasis in original).*

The literacy Rowntree advocated as a conversation between academic and student, was a significant departure from academic practices at the time. This represented writing as a social issue that reduced the power difference between the author and the reader at a time when such a social change was considered radical (Kress, 2003, p. 10). The reduction of the power difference between the academic and the student was a double shock for academics (Harris, 1987, p. 116). It was, firstly, a challenge to academic authority, requiring a changed identity from expert teacher toward a more facilitative teacher identity. Secondly, it introduced the tutorial-in-print genre of academic writing as an informal style of writing. However, Rowntree’s introduction of this form of literacy was traditionally skills-based. Rowntree treated the change at Durrant & Green’s operational dimension, by describing in detail how to approach writing
for tutorial-in-print. This was despite his conception of the task being framed by a social scenario that worked with Durant & Green's critical and cultural dimensions.

A conversational style of writing, rather than formal writing style of textbooks, lecture notes or journal articles (Rowntree, 1986, p. 81), required the use of personal pronouns, contractions and rhetorical questions within the reserved British academic 'friendly and informal' (1986, p. 207) tone: 'Write as if you are talking to a learner with whom you are not too well acquainted, and you will probably succeed in being conversational without sounding over-familiar.' (p. 211, emphasis in original). The writing should also be in plain English, using the active voice and simple sentence construction such as using 'many' rather than 'a large number of' (Rowntree, 1986, pp. 211-229).

Such approaches were criticised for the technological focus, although the critique was not described in those terms. It was a criticism of the failure to support groups of staff 'embarking on this new kind of teaching for the first time' (Riley, 1984, p. 3). The advice emphasised the importance of 'starting with clear objectives … break the content into small steps … include exercises … (through) a one-to-one "tutorial" style' (Riley, 1984, p. 4). In other words the advice was 'about "techniques"' (Riley, 1984, p. 8). Riley's advice, after the critique, was that a focus on the process both individually and institutionally was needed, using the experiences of accomplished writers of distance education materials and a focus on 'how teaching decisions are made, how creativity can be encouraged, how writing can be facilitated and how people can be helped to
work in together groups' (1984, p. 52). In other words, it was a broader focus on the operational-cultural level which Green described as the 'first order relationship' (1999, p. 43).

Rowntree’s approach was informed predominantly by a behaviourist pedagogy of pre-packaged and carefully constructed study material that students work through in pre-determined steps. He was also informed by Pask’s conversational model that accommodated a 'more student-initiated learning' (Harris, 1987, p. 64) thorough a focus on a ‘dialogue about knowledge’ (Thorpe, 2002, p. 147). His work represented the very first step on the pedagogical journey from the independent learning of the 1970s and 1980s to the collaborative learning approached at the turn of the century (Thorpe, 2002). This path included a dialogic model in which Thorpe cites Alistair Morgan (Thorpe, 2002, pp. 136, 137 &147) as the originator. I want to now turn to collaborators of Morgan, Terry Evans and Darryl Nation's (1989b) whose approach to dialogue provides another example of a literacy approach to writing study material, pedagogy and technology but with a focus on meaning-making.

Evans and Nation (1989a & 1989b) critiqued behaviourism and applied the ‘social turn’ paradigmatic shift in conceptualising learning as an active social process of meaning making. They advocated an approach to writing study materials that engaged students in multiple dialogues – amongst their peers, with the discipline and with the academic – as part of the active process of making meaning. The teacher’s responsibility was to ‘organise knowledge so
that … students can take connections from previous experience.' (Evans & Nation, 1989b, p. 38.)

They described an interrogative writing style in which the course team writers were 'watching vigilantly for any tendency to “tell” too much' (Reid, 1982, p. 146 cited in Evans & Nation, 1989b, p. 40). A conversational writing style, similar to Rowntree's 'tutorial-in-print', with the use of 'personal pronouns to draw the reader into the text' was to reduce the social and geographic distance between teachers and students. The difference between the mode of writing as lexically denser and more polished, and the mode of speech as lexically sparser 'giving evidence of the development of thoughts, hesitations and emphasis via pitch and tone' was the basis for a multimedia approach, with audiotapes for introductions, interviews and exercises, as well as telephone tutorials (Christie, 1987 cited in Evans & Nation, 1989b, p. 40). Nation's sociological position is that he articulates multiple voices in his writing, situating himself socially and intellectually as a writer and teacher and decentring the authority inherent in these roles (Evans & Nation, 1989b, p. 41).

**Use of (IT)eracy in online writing**

The usefulness of the (IT)eracy approach will now be explored through the examination of two cases of academics writing online study materials. Interviews were conducted with the two academics in question, who are from two different disciplines – science and communications – and the cases relate to their meaning making practices seen through the 3D model of (IT)eracy. They have not been selected as representative of discipline-based approaches.
to writing online, for the focus is on their l(IT)eracy practices. One of the three dimensions of l(IT)eracy is the cultural dimension, which includes the meaning-making practices of the discipline, as well as the practices of online distance education and broader Western academic practices of meaning-making.

Interviews were conducted some time after the academics originally wrote their study materials online. For the science academic, the period was four years, but, because of the annual revision of distance education materials, the meaning-making practices were revisited anew each year. The literature academic, teaching a communications subject, had just written the subject a year before the interview. The two case studies are not, as I said above, representative of their disciplines, nor are they necessarily model subjects. The subjects were written online as part of the normal review of subjects.

The interviews were conducted by me, as the educational designer in their school. They were conversational interviews, which focused on the context of writing, their online writing approaches compared to other academic writing practices, the subject as they wrote it and the meaning-making practices exercised in writing. There was no attempt, in the interviews, to separate the multiple roles and multiplicity of our relationships. So the interviews blurred across, but recognised, collegial, personal, professional and research relationship positioning (MacLure, 2003, pp. 149-162). In focusing on the study material, it was possible to focus on the academics meaning-making practices.
The science subject was in psychology, and was designed according to problem-based learning principles. A resource used within the subject provided a summary of the function and structures of the brain from a psychological perspective. As a print resource, the materials were inadequate because of the affordances, or potentials and limitations (Kress, 2003, p.35), of written text. The printed resource highlighted a linear and structural understanding of the brain. However the psychological understanding of the brain is principally functional, how it works, rather than structural. Learning how the brain functions across structures is required: 'The brain is sort of modularised … its structured more in a holistic way with interconnections between modes within a network' (Interview 2, 2004, p. 2). While a linear textual introduction was adequate for an initial understanding of the brain, the subject demanded that the modular structure and the functioning across structures also be understood. In traditional print based distance education, the materials used were the printed study guide, the textbook, a published atlas of the brain, and modelling was included in the residential school. The affordances of multimodality and hypertextuality were seen to be more appropriate media for teaching this subject.

Online delivery allowed for multimodal, hypertextual, meaning-making practices of science, as described by Lemke (1998b). As a scientist turned linguist, Lemke found that: 'The "concepts" of science are not solely verbal concepts' but are semiotic hybrids 'simultaneously and essentially verbal, mathematical, visual-graphical, and actional operational' (Lemke, 1998b, p. 87). In other words, scientific texts are multimodal texts in which the meanings lie in illustration, tables, equations, numbers as well as in written text. Further
meaning is not simply linear, as in verbal text, but exhibits 'a primitive form of hypertext through footnotes or endnotes and cross reference, such as: "as seen in the first table" (1998b, p. 95). In short meaning is made visually, mathematically, linguistically and multimodally.

There is a cultural dimension of l(IT)eracy involved here, as the newness is not detached from existing meaning-making practices. In other words, l(IT)eracy is a social and cultural practice. The scientist I worked with and Lemke both illustrate how 'computer technology make multimedia genres more convenient' (1998b, p. 111) The scientist I worked with was hoping that the multimedia materials would reduce the residential school by a third (33-107).

In the second case, a literature academic writing online materials exercised l(IT)eracy practices in drafting the material that were not aligned with my cultural meaning-making practices and understanding of hypertextual online writing. This misunderstanding outlined below is illustrative, once again, of the cultural dimension of l(IT)eracy, in which the meaning-making practices are situated within subject or discipline practices.

The topic was an introduction to Halliday's systemic functional linguistics (SFL). After providing the rationale for the approach, the academic exemplified how SFL structured language into experiential, interpersonal and textual metafunctions, through the analysis of an email message. The experiential metafunction explained how language constructs social reality; the interpersonal metafunction considered how language establishes and maintains identities and
social relations between the users of language within a context; and the textual metafunction explains the thematic structure, information and cohesion of the text (CSU, 2003, Study Guide, Topic 1).

Operating within the cultural dimension of web writing (Kolb, 2004), where I saw it as appropriate, I broke the text into its lexical boundaries (Landow, 1997) or chunked the text into screen size bites (Nielsen, 1997). In transducting the text to the web, I used separate screens, opening a new web browser window on top of the main screen, one which did not cover the original screen. This would enable students to view the email at the same time as the analysis according to the metafunctions. (See Figure 1.)

![Figure 1: Topic 1 – Metafunctions in web design](image-url)
In adopting this approach, I was also operating within the critical dimension of I(IT)eracy that critiques the linear nature of print, as well as enacting a reader centred, non-linear feature of hypertext (Joyce, 2002; and Landow, 1997). My design was also informed by Bolter’s (1991) critique of print as a two dimensional text compared with three dimensional hypertextual writing spaces, which positioned the third dimension as a meta-commentary. Furthermore, I was functioning within the operational and cultural dimensions of I(IT)eracy, in being able to enact that choice by manually over-riding the hypertext mark-up language to open a separate web browser window.

However, the academic did not agreed with this choice. The material had been written deliberately 'in the order in which I thought it was helpful for the students to get the information' (Interview 1, 2004, p. 25), which was in an 'unfolding linear fashion' (Interview 1, 2004, p. 25). This deliberation was not a conservative reaction, but a critique of hypertext in this context, as empowering readers making textual choices 'reader-centred and … more interactive' (Interview 1, 2004, p. 26). The choice of linear text was not an exercise of disempowerment of the reader, and empowerment of the author, but centred on the author's responsibility to make coherence: 'I think authors should take the responsibility for making decisions about the order in which the material unfolds and not the reader, the student ... so that the author is making the hard decisions' (Interview 1, 2004, p. 26). That also saves confusion on the part of the reader/student (Interview 1, 2004, p. 26) and it was part of the academic's ethical approach to writing the subject.
The literature academic operating within the cultural dimension of the l(IT)eracy dimensions of the discipline, also included multimodal texts in the online subject. This was done to meet one of the aims of the subject of teaching students to become better writers by becoming better readers. In turn, becoming a better reader involved being aware of the purposes, uses and variety of texts and within texts. In discussing cohesion in texts, the academic used a Dr Suess children's book to convey the text-forming requirements which included situating the examples within the authentic multimodal text. In discussing genre and sub-genre, the academic similarly used authentic multimodal texts, this time a Kmart 'Kitchen week' advertising catalogue. It was possible for the academic to describe the catalogue in words, but, as in scientific texts, the catalogue was a multimodal text and more conveniently presently as a multimodal text. The academic operated within the cultural and critical dimensions of l(IT)eracy. The web designer worked within the operational dimension of l(IT)eracy in scanning the text, making the thumbnail images and locating them within the topic as hypertext links to full screen images opening in a separate screen. While the production was spread over two people, the exercise as a whole was an exercise of l(IT)eracy.

**Conclusion**

The l(IT)eracy approach enables the articulation of technology and mode of communication, of which text is but one, as meaning-making practices. It is a holistic and inclusive model that positions writing online distance education material within an act of meaning-making, which draws together knowledges and skills in the discipline area, in communication technologies and across
modes. The model positions meaning-making within a culture, or within an
academic tradition.

Scientific publications, as multimodal and hypertextual documents, have been
somewhat clumsily handled in print technologies, as illustrated in the example
of the scientist I interviewed. Such publications have also been clumsily handled
by a concept of literacy that focused only on the textual mode. At the same
time, the literature academic, informed by the l(IT)eracy culture of textually
dominated Western literature tradition, was critical of hypertext as it pertained to
some subject materials, despite examining literacy practices in multimodal texts.

Even if academic discourses prove to be slow to adopt multimodal discourses
(Lea, 2004, pp. 743-744), adoption may be possible in educational discourses.
It was within educational discourses that Rowntree and Evans & Nation
operated in exploring conversational approaches to writing. It may be in
education that multimodal and hypertextual approaches to writing emerge. The
l(IT)eracy approach has the advantages of:

- framing the use of technology, multimodality and hypertextually, as a part of
  meaning-making;
- encourage a wide analysis of the modal expressions within existing printed
  meaning-making practices;
- framing online writing within the culture of the academic tradition and
  education, as much as in the culture of information technology; and
- providing a critique of the skills approach to literacy.
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