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E-learning in Nursing: The Context

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Introduction

The aim of this chapter is to examine e-learning within a policy context. Professional education is inevitably developed within a socio-political context, currently in particular, by government and institutional policies encouraging lifelong learning and widening participation (DFEE, 2003; DH, 2002; UKCC, 1995). These policy documents have identified information technology and learning as key drivers for socio-economic progress and professional development. They assume that the introduction of information technology in education will make learning more flexible and accessible.

Health professionals will need to develop the skills to use this technology in their clinical practice. Evidence suggests that consumers now have access to large amounts of unfiltered material via the Internet. Not only does this impact on the professional boundaries with consumers (Timmons, 2001), but adds further responsibility to the practitioner's role. Drucker (1994) argues that in the future anyone who wishes to be considered educated will be someone who has embraced the notion of lifelong learning. Nurses in the United Kingdom (UK) have a requirement to undertake educational activities to support their practice as part of the registration system. The ability to use a computer and effectively find and use the wealth of information that it enables access to, is a very useful tool in maintaining this lifelong commitment to education (cf. Chapter 6). Information and Technology (IT) skills being needed is becoming a universal truth for nurses working in many countries.

The National Health Service (NHS) was slow to develop IT as a strategic asset in the delivery of healthcare. However, national strategies have been developed since 1998 to address this situation. 'Information for Health' (DH, 1998) defined the strategic NHS approach when an information strategy was launched to improve use of information technology and provide staff with modern tools to improve treatment and care. It aims to improve management and delivery of services by provision of good quality data; support staff through effective electronic communications and support delivery of services designed around patients to be quicker, more convenient and seamless.

Many examples from the literature discuss the e-revolution and the impact computers have had or will have within educational and institutional environments and the continued response of policy development from government and educational institutions (Dearing, 1997; DEE, 1998; DEE, 2003), (cf. Chapter 5). Whatever the emerging shape of the nursing education system, it will be profoundly affected by changes in educational technology such as interactive video, the Internet, CD Rom and virtual reality technology. However, the word 'revolution' should be replaced by 'evolution', as the seeds have been sown as far back as the 1700s when the first correspondence course was developed. The following section outlines a brief historical overview of the evolution of e-learning.

Historical overview

Historically, the courses that have long been available were either open or distance learning courses. With the introduction of telecommunications the move was made to distance education, linking live educational broadcasts and correspondence between lecturer and student. These methods were criticised for poor standards and lack of quality control methods (Forman *et al.*, 2001). Early computer-based (CB) education programmes relied almost exclusively on the learner's ability to read information and to use that information to answer questions. The advantages of early computer-based instruction were self-pacing and instant feedback. While a textbook offered the same degree of self-pacing with the advantage of portability and usually much better visual presentation, a computer could tell students immediately whether they had answered a question correctly or not. A computer could also branch students to different parts of a programme, allowing them to skip sections of the programme that they had already mastered. Unsurprisingly,

students who performed well using these programmes were those with good reading skills and advanced educational levels. The ability to provide training to staff with low literacy levels is of critical concern. Whether computer-based training is an effective and feasible format for training workers who have a poor education background is a critical question (Walker and Harrington, 2004. cf. Chapter 6).

The Open University in the United Kingdom established in the 1960s has made high standard distance learning accessible to all. This was followed by the first web-based course being developed in the United States of America in 1995 (Bates, 2001). Thomas Edison surmised that with the invention of film, schooling would be revolutionalised (Simpson, 2003). The same may have been thought of e-learning, however in fact the application of information technology has started slowly. Initially this technology has been incorporated into classroom lectures with PowerPoint presentations and illustrations obtained from the World Wide Web and has therefore been used to supplement rather than replace either the classroom or the lecturer (Bates, 2001). In the late 1980s and 1990s many nurse lecturers set out to develop their own programs and started to market them. Since then there has been a proliferation of teaching material and information to students in a format that requires the use of a computer to access it (cf. Chapter 7). The new technologies impact may be more incremental than the pioneers expected, but its critics forget the difference it has already made to student and academic life. E-learning is however differentially defined.

Towards a definition of e-learning

When conducting a literature search the terminology in respect of web-based or e-learning education is not standard. Other key words include Internet education, distance education, IT learning, web-based education, web-based instruction and advanced distributed learning (Kahn, 2001).

There is an active debate around what is being aimed for when teaching nursing students IT skills. It is variously described as computer literacy (Saranto and Leipo-Kilpi, 1997; Patrikas, 1999); information literacy (Shorten *et al.*, 2001); electronic literacy (Topping and McKenna, 1999) and even technical literacy (Charp, 1999). All of these terms are used as different descriptions for a very similar concept, that of having the skills to use information and technology to support professional practice. This is brought together by Johnson and Eisenberg (1996) who discuss

the need to combine concepts of computer literacy and information literacy. Johnson and Eisenberg (1996) identify that teaching and learning programmes designed to develop both should focus on computer skills for information problem solving.

Bates (2001) has posed a continuum of e-learning applications. Commencing with face-to-face teaching, advancing along the continuum to technologically advanced face-to-face teaching in the classroom using PowerPoint and web sites to aid interactive learning. Applications continue through to a mixed mode delivery whereby a mixture of classroom and online learning at a distance is used with the aid of e-mail discussion boards (distributed learning). Kahn (2001) also sees e-learning as synonymous with web-based learning (UBL), Internet-based training (IBT), advanced distributed learning (ADL), web-based instruction (WBI), online learning (OL) and open/flexible learning (OFL).

This volume has no desire to become mired in discussing the terminology. Many of the chapters will discuss various definitions and terminology.

Societal changes

We are living in an era of profound and widespread social and cultural change:

- Changes in social, political and cultural institutions (for example, family, politics, consumption)
- Restructuring of work, employment and industry
- Shifts in personal and group identities and aspirations.
- A growing tendency for 'choice'
- The knowledge revolution
- Changing technologies
- Globalisation.
- Social fragmentation and discussion
- New forms and expressions of citizenship

Social commentators note the shift from an industrial to a knowledge economy and the growth of a self-reflexive culture in an uncertain society (Giddens, 1991). A massive communications evolution (paradigm shift) is underway, one that will have profound effects upon the art and science of nursing.

In industrialised countries the demand for education arises from two drivers. The first being the combination of the expansion of the workforce and technological advances within the workplace, and secondly structural unemployment which has increased the demand for retraining and re-skilling to meet occupational demands (Harry, 1999). It is anticipated that, by the end of the decade, 1.7 million jobs will require graduate employees and this requirement has a direct impact on the structure and process of higher education and how education is delivered (DFEE, 2003), including nursing education.

The Government has an agenda that the nation will prosper in a knowledge-based global economy (Whitsted, 2003). Within industry where high-tech areas such as biotechnology, computing, science, engineering and increasingly healthcare have a rapidly changing environment there is an expectation of both employees and education institutions to keep flexible and adaptable to current trends and developments and needs of society. The change has involved a shift from a focus on land, capital and markets to individual development (King, 2004). To create a wealthy and healthy economy the future will depend on the creativity and the innovation deployed by the workforce. This has a direct impact on education and it could be argued that universities should be given the freedom and resources to compete globally (DFEE, 2003). In order to respond to this agenda, traditional models of education may no longer be relevant (Whitsted, 2003). The percentage of school leavers who are accessing higher education is 2.5 per cent of the population. The other 97.5 per cent of the population are potentials learners in society. These individuals may well have full time jobs, a family life and a hectic social and personal life. To meet their educational needs and that of the workforce and business expectations, the delivery of education must be flexible enough to suit their particular circumstances (Bates, 2001).

In today's free market where the government encourages the power of market forces, there are individuals who may well have disposable income or are involved in industries willing to develop their staff, and thus the opportunities are there both within the private and public educational sectors to be exploited (Bates, 2001). This appropriately includes the healthcare employee population; many are mature individuals who now have an expectation from their employers to keep up to date with knowledge, skills and technology (2004).

Higher education context

A major impetus of policy and education reform was the Dearing report (1997). This strategy was a vision for the next 20 years of education, based on the philosophy of a lifelong-learning society to ensure the economical success of the nation. The expectation now is not only to strengthen international but also global links. The need is for higher education institutions to adapt to a changing world with the development of distance learning and the application and integration of modern technology to suit the needs of a changing economic market and labour workforce (DFEE, 2003). The strategy identifies the development of skills for the nation of communication, numeracy, information technology and learning; these skills should be developed throughout an individual's life, and have now been integrated into the curriculum from primary school through to higher education institutions. It is envisaged that to follow the philosophy of lifelong learning, educational institutions will collaborate on the 'production and transmission' of educational programmes and learning materials to reach a more global market.

The theme of collaboration was reiterated within the strategy for The Future of Higher Education (DFEE, 2003) with the need for universities to work together. The Higher Education Funding Council for England (HEFC) developed a UK e-universities project to encourage higher education institutions develop affordable e-learning materials to ensure that the e-learning market economy was viable taking into account the cost of development and the need to ensure a global availability. The idea was first put forward by the UK government in early 2000, which committed £6 million to the project between 2001 and 2004. The aim was to safeguard current overseas markets, and to exploit what is thought to be massive unmet demand for higher education that campus universities are unable to meet.

The UK e-university was an example of government support for a profit venture in a commercial environment; rather than learning institutions to fend for themselves. If was perhaps indicative of the seriousness with which the government views the threats and opportunities of borderless provision (Ryan, 2002). It was also envisaged that this would also ensure that the country's interest to expand education to meet the needs of the workforce and individuals would be flexible in the provision of courses ensuring widened participation, with individuals returning to education throughout the duration of their working and social life.

Ironically, the e-university at www.ukeuniversitiesworldwide.com had signed up only 900 students by the time HEFCE finally closed it down in June 2004, and it never attracted any private money. The Funding Council said that universities were more interested in 'blended' learning involving a mixture of IT, traditional, work-based and distance learning, to meet the diverse needs of students, rather than concentrating on wholly electronic learning (MacLeod, 2004).

Virtual networks of colleges and universities have however become a marker of the new economy. The term borderless developments applied to the education sector involves a number of components: students learning at a distance from the lecturer or tutorial support; students having access to Internet technology and the confidence to use it interactively and students from different pedagogical cultures and mother tongues studying the same material. There is no doubt that such global online education has a higher chance of success at the present time with provision of high levels of postgraduate and professional updating. Competition will come not only from within the United Kingdom, but in joining the European Union students will potentially have even greater access to e-learning and other educational institutions.

The government also has a strong agenda in the formation of a virtual university, the National Health Service University (NHSu) (DH, 2003). Traditionally, universities have had a single mode of delivery, for example, classroom and face to face instruction. With increased competition and a widening market, universities offering a dual mode of delivery incorporating e-learning may have an advantage. The implementation of technology and e-learning will have cost implications in the recruitment of experts within this field and also the infrastructure to support it. If universities had dual modes of delivery a wider national if not international or global market might be captured (Harry, 1999; King, 2004). This possibility may have an impact within the health service which at present recruits students from overseas. There are undoubtedly some developments within e-learning such as a nursing registration that could be gained from an online programme. This may allow overseas students in the future to remain in their country of origin.

Healthcare context

As previously suggested, initially the NHS was slow to develop IT as a strategic asset in the delivery of healthcare. However, since 1996 strategies

have been developed to address this situation. 'Information for Health' (DH, 1996) defined the strategic NHS approach when an information strategy was launched to improve use of information technology and provide staff with modern tools to improve treatment and care in the context of the government's modernisation programme. The UK-NHS has identified the ability to work effectively with information as a high priority for all staff, including clinicians, having published its information strategy, 'Information for Health', in 1996 (NHS Executive, 1998). In 2001 the Department of Health published further advice on the implementation of the strategy to compliment their other plans for developing the NHS, in Building the Information Core (DH, 2001).

The NHS is aiming to promote working with information technologies to improve care for patients in several ways, including

- ensuring that professional staff have access to up to date information on which to base their practice,
- speeding up, and easing, access to services for patients,
- improving communication flows of essential patient information,
- ensuring that patients and carers are informed about the NHS and best practice in relation to their condition.

Nurses need to be able to understand the role of information within the organisations they work in, as well as its role in supporting their professional practice. Additionally, with more care taking place at locations other than hospitals, nurses need to be able to communicate electronically within their own organisation and across professional and organisational boundaries (NHS Executive, 1998).

Information for patients is as important as information management and communications. Historically nurses have had a role as information gatekeepers, with most detailed health information only available in journals and health libraries, limiting access to professionals. With the widening availability of the Internet much more information is available not only to nurses but also to their patients. Patients can now access this information within going to a professional gatekeeper; however, the quality of information available through the Internet is very variable (Impicciatore *et al.*, 1997). This has given nurses a new role; that of facilitator, helping patients to evaluate the information they have found.

Nursing education context

Traditionally, schools of Nursing and Midwifery have developed and delivered highly structured programmes of study with a lecturer-centred approach, which is extremely costly. One of the challenges nursing education now faces is to devise alternative ways to deliver the programmes which will reduce class contact time without reducing the quality of the programme.

The ability to use IT effectively is an increasingly important skill for nursing students. It is essential to support their student experience and also to give them the basis of the information skills that they will need in practice once they are qualified nurses (Bond, 2004). The Nursing and Midwifery Council (NMC), which registers all practicing nursing in the United Kingdom, requires all nurses entering the register to demonstrate the skills needed to record, store, retrieve and organise data essential for care delivery.

The Quality Assurance Agency for Higher Education in the United Kingdom (QAA) has introduced benchmarks, which

> Describe the attributes, skills and capabilities that a graduate with an honours degree in a specific subject might be expected to have. (QAA, 2003)

The benchmarks for nursing identify that not only should nurses be competent in using common software packages including word processing, email, spreadsheets and databases, but that they should be able to access healthcare research and literature database; use the Internet as an information source; and use computerised patient information systems. They should also understand the associated issues of data integrity and security and patient confidentiality.

There has also been rapid growth in the provision of distance-learning courses worldwide across a range of disciplines (Ayer and Smith, 1998; Bradford, 1999; Cody, 1999; Evans and Smith, 1999; Ryan, 1998; Potempa, 2001; Stommel and Simmons, 2001). In nurse education in the United Kingdom, a number of factors have helped generate the emphasis that is currently placed on distance-learning courses as a key form of education, in particular post-qualifying education. These include a national shortage of qualified nursing staff, which has made it difficult for employers to release nurses from their work for study, a recognition of the value of developing knowledge through facilitated work-based learning

(Boud *et al.*, 2001; Chalmers *et al.*, 2001; Rolfe, 1998) and the need for continual learning to enable professionals to maintain and develop their knowledge and skills to function effectively (Wallace, 1999).

The former United Kingdom Council for Nursing and Midwifery (UKCC) (1999) and the Department of Health (1999, 2000) have promoted diversification of teaching methodologies, particularly those methods requiring less teacher contact and less classroom activity without compromising the quality of the educational experience (Burt, 1998). As a result NHS trusts and higher education institutions in the United Kingdom turned to distance learning as a cost effective solution to the increasing demand for flexible post-qualifying nursing programmes (Ayer and Smith, 1998; Kenworthy and Dearnley, 2001). Growth in media and technologies, such as live chats, video and audio-conferencing, asynchronous discussion boards, and email have broadened the scope for supporting both distance and face-to-face learning opportunities. However, to engage practitioners in their real work contexts work-based e-learning must do more than provide accessible content (Chapter 6). Information Technology could be one tool to facilitate active negotiation of students' needs in the context of their practice (cf. Chapter 2).

Rapid developments in Information and Communication Technology (ICT) over the last few years has led to an increasing demand for healthcare students to access net-based support mechanisms whilst away from university campuses on clinical placements. This demand appears to be a national trend. The former UKCC 'Fitness for Practice' (1999) document (recommendation 18.4.48–4.52 and recommendation 19.5.53–4.58) highlights the need for ICT facilities in practice settings. Such a move would however require rethinking the whole concept of 'infrastructure' to support learning in practice (Smørdal and Gregory, 2003).

The lecturer

Initially the technology has been incorporated into classroom lectures with PowerPoint presentations and illustrations obtained from the World Wide Web. The technology has therefore, as previously suggested, been used to supplement rather than replace either the classroom or the lecturer (Bates, 2001). However, the transition from classroom-based delivery to a facilitator of e-learning requires lecturers to adapt to different

working practices. Williams (1998) and Campbell (2001) asserted that this is a major role change for lecturers and they may need to engage in an active process of rethinking their teaching and reordering their academic priorities. The key challenges that lecturers confront include alteration to their workloads, coping with new technologies, online course management, online student support and the development of skills to function effectively (Stark and Warne, 1999 and Cravener, 1999). Whilst e-learning cannot replace a lecturer it can change the role (Washer, 2001).

Historically the lecturer may have had a pedagogical approach to their teaching which included working alone, preparing and presenting lectures; a shift must come with the introduction of e-learning. This will require new skills to be developed with the collaboration of other partnerships to develop suitable materials for students. Bates (2001) discusses not only having a technological structure to support e-learning but also a human infrastructure with individuals ranging from technicians, web administrators to lecturers who will support a virtual-learning environment. Whereas the educator may previously have worked in isolation now they will work across continents with other universities to develop e-learning materials, with the prospect of developing a worldwide e-learning electronic library.

Some lecturers are deeply rooted in their specialist subject and see little satisfaction in merely guiding students through material which may have been designed by other colleagues, or even by commercial learning resource producers (Johnson, 1997). This will also challenge universities within the context of intellectual property and programme ownership, especially when some universities are now choosing to put all their curricula online and accessible to all.

At a pedagogic level, online course designers and educators also advocate the use of communication technologies to promote flexible, learner-controlled, yet interactive collaboration and constructivist learning (Salmon, 2002, cf. chapter 2). In a typical online-learning scenario, educators design online tasks that often require participation in online discussions, with ready instructions and learning material, followed by instructions for online discussion. Interaction is encouraged by expecting students to reply to others' messages. Salmon (2002) identifies this as an important strategy to promote collaboration and problem solving. Online facilitators perceive this structured approach to online learning as enabling reflection and building a learning community (Conrad, 2002).

Incorporating such a constructivist approach to e-learning requires a greater level of preparation in both material and format. Indeed the greater the level of interaction online, the greater the preparation required (Harry, 1999). Traditional methods of teaching cannot be just transplanted online and be called e-learning (Washer, 2001 cf. chapter 2).

To develop an e-learning environment will not only increase academic workload but also require IT skills and time. One survey of university teachers' use of web-based technology found that the most significant barrier to use of web-based technology, was time needed to use the technology (Pajo and Wallace, 2001). But, another study of attrition from a course on online teaching found that the lowest ranked reason for leaving by lecturers was the technology (highest were personal issues and time), (Gold, 2001). Furthermore, whereas the use of e-learning may initially be seen as an opportunity to cut costs it is anticipated that this process will actually require an increase in universities' teaching budgets (Bates, 2001). Unless the costs of supporting students through the process are accounted for, and courses are adequately staffed, the increase in student numbers can increase the lecturer's workload. Cravener (1999) suggested that the tension between institutional pressures to cut costs whilst aiming to provide a high quality educational experience was a source of frustration for lecturers.

The student

With advances in communication technology and proliferation of distance-learning mediums, such as CD ROM, video-conferencing, computer-aided instruction, the Internet, virtual-learning platforms as well as the traditional paper-based courses, students have the opportunity to select the educational approach that best suits their learning style. They can learn at their own pace and at any time of the day, from anywhere in the world (Billings *et al.*, 2001). Educational technologists and online educators also advocate the use of the Internet as a learning interface that allows increased access and informality in education (Twigg, 2000).

Many students leaving further education are equipped with IT and computer skills. The aim is now for nurses on registration to have obtained a European Computer Driving Licence. However, many students may not be using the Internet to any great extent prior to starting a course and their ability to carry out a range of basic tasks is equally

low. Pertinently, given the high numbers of mature applicants to nursing, Bond (2004) questions a popular belief that older people have poorer computer skills than younger people.

As the UK government is seeking to increase the number of students entering nursing, changing the recruitment policy to only take students who already have good IT skills is not an option available as might be with some other university courses (cf. Chapter 7). The inclusion of a programme that develops students' skills and knowledge in the use of IT therefore needs to be an integral part of a pre-registration nursing programme.

It is important that student nurses learn not only how to keyboard, participate in virtual communities (cf. Chapter 7), or use important software applications appropriate to nursing knowledge, but that they also understand the underlying assumptions behind the technology. Students will need to learn how to be analytical of the wealth of knowledge available on the Internet, which at times can be overwhelming (Washer, 2001).

With student nurses spending 50 per cent of their time in practice and these placements often being at a distance from the university, it would seem that Internet-based communications have the potential for making life easier for students, or at least reducing the amount of travelling that they have to do. The use of computer conferencing however has not always been found to be a positive experience. Hammond (2000) found that the style of interaction did not always reflect the students' preferred learning style.

Computer conferencing is becoming a popular way to augment the learning experience and thus to seek to improve learning outcomes; with the flexibility offered by the asynchronous nature of the system allowing the student choices over when and how to participate, rather than needing to be online at the same time as colleagues (Barnes, 2000).

Email has been found to be a successful tool by Shaw and Polouina (1999) with students liking the convenience of mailing lists, especially as for the students in the study email was a frequently used tool, requiring no additional software, or programmes for students to have to use over and above their normal computer behaviour. Tansley and Bryson (2000) found that when they studied a virtual seminar system set up via email, staff made use of the system to discuss work in progress; however it was almost unused by students, as was a more information cyber café – styled area.

With students responsible for their own learning, less time will be spent face to face with lecturers and their student colleagues. This will require a range of support mechanisms for the student to access (Jarvis, 1998). This may require the lecturer to be online, with some universities joining together to run online modules and provide a 24-hour student support by a visual learning environment (VLE) or managed learning environment (MLE).

It may be argued that students from within the healthcare profession will have access to a computer within practice, with the drive for IT within the NHS. However in practice there may be one computer which would be needed for ward agendas not allowing the student to remain online for long periods of time to access e-learning material. Compatibility of machines and programmes may also be an issue. With such rapid changes in technology, and computers and their programmes commonly being updated, the student or the university programmes may not be able to compete with the technology demands or in fact with each other.

With the students responsible for their own learning, less time will be spent face to face with academics and their student colleagues, rather it can be accessed online anytime anywhere. To have such a strong pedagogic focus will require a range of support mechanisms for the student to access (Jarvis, 1998). This may require the lecturer to be online, with some universities joining together to run online modules and provide a 24-hour student support or by VLE or MLE.

The online-earning environment needs to be managed to allow isolated students to participate in group discussion forums. However it must be acknowledged that not many students to date have been comfortable with education solely online and prefer a hybrid of 'bricks and clicks' (King, 2004).

A constructivist approach to education may be seen as the best way forward utilising a range of teaching methods including face-to-face teaching to develop individual curricula (DH, 2003; cf. Chapter 2). It is important that the needs of the student come first rather than the novelty of technology (Jarvis, 1998). Information Technology alone will not create an effective learning environment; however by utilising a variety of teaching methods deeper learning can be achieved and 75 per cent more knowledge is retained if the student can see, hear and participate in their own learning (Richards, 2001). This may be especially true of student nurses who may well develop cognitive skills from an online-learning

environment, but will also need to develop psychomotor skills which may be hard to achieve purely online. By using a virtual environment with the use of simulations the psychomotor experience could be practised and reviewed over and over again (Simpson, 2003).

Conclusion

In recent years government's educational and social policies have had a huge impact on the provision of higher education within the United Kingdom (DFEE, 2003). The key words identified from the available literature are 'creating a knowledge economy', 'life long learning', 'widening access' and 'flexibility'. Where once the educational population had been confined to the vicinity of the university, the aim now is global education. This will require new partnerships to be developed and changes within traditional structures of the university to enable participation in a global society.

The NHS is aiming to promote working with IT to improve care for patients. Nurses need to be able to understand the role of information within the organisations they work in, as well as its role in supporting their professional practice.

Student nurses also need to develop IT literacy to work in an increasingly computerised health service (Bond, 2004). They will need to learn how to be analytical of the wealth of knowledge available on the Internet, which at times can be overwhelming. Nursing students' experience suggests that using computerised support systems could have benefits, especially while the students are on placement away from the University. Growth in media and technologies, such as live chats, video- and audio-conferencing, asynchronous discussion boards and email have broadened the scope for supporting distance and face-to-face learning opportunities. However, not many students to date have been comfortable with education solely online and prefer a hybrid of 'bricks and clicks'.

Finally, millions of words have been written about the technology and its potential, but not much about what the lecturers and learners actually do online. We are catching up on what technology is offering, but not challenging it (Salmon, 2002). Those in nursing education need to ensure that innovations are led by sound educational principles and not techno-wizardry or the agendas of educational publishers (Ribbons, 1998. cf. chapter 8). The following chapters will identify strong guiding principles and case exemplars which illustrate their application.

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