Global Perspectives on Higher Education and the Role of ICT

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Abstract

This article was prepared for and delivered in the Cape Higher Education Consortium Workshop at the University of the Western Cape on the 8th of September. It discusses the global- but locally applicable perspectives of ICT for teaching and learning at tertiary level. It outlines predominant concepts, useful and misleading assumptions, as well as the underlying theoretical perspectives behind various levels of thinking about ICT in higher education. The lecturer offered a balanced theoretical background and a frame of reference for discussions of the day. The main point of the lecturer is that since technology is socially-embedded and context-based, that practitioners should be weary of perspectives that claim to offer "one size fits-all solutions" to every challenge. Instead of being driven by a technological hype, that we should be mindful of our genuine needs and related constraints in any given institutional context if an initiative is to be meaningful.

Introduction

This article looks at global perspectives on higher education and the role of ICT. Our question is "*how academic reports, policy documents, as well as decision-makers' statements conceptualise educational ICT, and how they see the relationship between ICT and higher education*". We look at global perspectives, but of cause our commentary is not exhaustive and cannot be 100% fully global. It is diverse enough however, to help us gain a fair understanding of the dominant perspectives on the subject.

Here is what this paper addresses:
⇒ Predominant contextual reference to educational ICT;
⇒ Understandings of educational ICT (what it is seen to be);
⇒ Theoretical notions of technology (Using Andrew Feenberg's framework),
⇒ The role of ICT in HE (relative to dominant pedagogical and technology theoretical perspectives).

Predominant Contextual References to Educational ICT

Often research reports, government and HE institutional policy documents, as well as HE ICT practitioners talk of ICT in relation to the value it adds to the quality of HE. What do they mean by quality in H.E?

(1) For Harvey & Green (1993:10) in Tam, M (2001:47), quality is a relative concept that means different things to different stakeholders. In their discussion of quality and standards, Harvey & Green (ibid) identify five perceptions of quality in higher education. It is defined[1] by some, as *Exceptional; Perfection or consistency; Value for money; Transformative; and Fitness for purpose* (Harvey (1995).

(2) The Higher Education Quality Committee (HEQC)[2] Founding Document states that "the HEQC will develop a quality assurance framework and criteria based on (1) fitness for purpose in the context of mission differentiation of institutions – within a national framework; (2) value for money; and (3) transformation.

(3) According the SA Green Paper on Higher Education Transformation (1996), "*the pursuit of the principle of quality means maintaining and applying academic and educational standards, both*

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[1] Further, prominent authors on quality management – including Tam (2001), as well as Warn and Tranter (2001) use Harvey's work to conceptualise quality.
[2] HEQC Founding Document, (2001:10); and the HEQC Programme Acreditation Framework, (2002: p16 -20); as well as the HEQC Quality Assurance and Programme Audit Framework (June 2002, pp:7-8)

in the sense of specific expectations and requirements that should be complied with and in the sense of ideals of excellence that should be aimed at. The definition of these expectations and ideals can differ from context to context, partly depending on the specific purposes pursued. Applying the principle of quality entails evaluating services and products against set standards, with a view to improvement, renewal or progress".

(4) A number of universities including UCT, UWC, the old University of Natal, and UNITRA, among others, declare the standard of excellence in their mission statements, as their pursued quality goals.

But what is educational ICT?

Academic commentators, policy makers, and technology practitioners use various concepts when talking about a technology, and most concepts often reflect the purpose for which a technology is used. Where the context is educational usage, references are made to *Educational Technologies (*UCT, 2003:1)*, Learning and E-Learning Technologies (*Badenhorst and de Beer, emerge2004)*, Online Teaching and Learning Technologies (*Van der Merwe, and Möller, emerge2004: 11)*, Digital Library Technologies* (Peters, Dale (CITTE, 2002:3), *and Digital Learning Objects* (Smith, R.S, 2004: 1), among others. Technology is also viewed within the context of communication, and seen as communication tools and or networks. References are often made to *IT Networks and Communication Protocols (University of Natal, 2003), Electronic Information and Communication Technologies* (Van der Merwe and Pool, www2002), *Information Agent* (Razek et al (2003)*,* or just *Communication Technology (*Blanchette and Kanuka ,1999)*,* among other concepts.

Most authors however, take for granted that the meaning of these concepts are known and never bother to define them. Where defined, almost all definitions tend to link technology with knowledge: either as knowledge itself or the technical means of doing things (which implies knowledge) (Bergen.org)[3], as a tool[4] to advance knowledge, or as a domain[5] of knowledge for specific purposes (i.e. knowledge advancement). Educational technology generally "*encompasses computers, software, video, communications, interactive video, satellite communications, television, video, robotics, CD-ROM, and the Internet*" (among other things). *"It includes the knowledge and skills necessary to use technology as a tool"* (ibid).

Theoretical Notions of Technology (ICT in H.E.)

ICT according to a number of commentators, enhance teaching, learning, and research, both from the constructivist and instructivist theories of learning. Behind this increasing faith in the role of technology in higher education however, lies implied acceptance of technology by various commentators, either as neutral and autonomous, neutral and human controlled, autonomous and value laden, or human controlled and value laden (Feenberg, 2003). Where technology is seen as neutral and autonomous, the belief is that technology is merely a tool, an instrument that can be used by humans to further their own goals. Feenberg (2003) calls this theoretical perspective "instrumentalist".

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[3] Bergen.org defines technology as "*the technical means people use to improve their surroundings. It is also a knowledge of using tools and machines to do tasks efficiently*".

[4] Sanbenito.tx, USA defines technology as "*a tool that extends human capabilities to solve problems",* that "*can be used to assist students in the acquisition of knowledge",* and ... *it empowers teachers and administrators to stimulate learning more effectively*".

[5] Educational Technology according to UCT (2003:1) - *UCT Educational Technology Policy Document,* Education technology is the "*Knowledge domain that deals with the articulation of education and information and communication technologies (ICTs)*"*; and the* Department of Arts, Culture, Science, and Technology, *SA R&D Strategy* (2002:13), defines it as a "*key domain of knowledge that underpins innovation"*.

Instructivist claims that "technology cannot teach, but is a tool for use by teachers to instruct (transfer knowledge), that it is not value-laden and has no such implications on the user since it is just how you use it that matters", would most probably fit this instrumentalist category. On the other hand, a belief that technology is neutral but not humanly controlled sees technology as a determinant of progress and change in higher education. Feenberg (2003) calls this belief, the determinist theory of technology.

A number of constructivist theorists -who see technology as an agent for change fall under this category. In this model of thinking, "technology enhances education", "it enables independent learning", "it influences or drives the theory of learning", "it breaches many walls crated by distance and times zones"; "it unites people and create powerful and synergistic partnerships at local, regional and global scales"; "it motivates students and energises classroom".

On the other hand, technology can both be autonomous and value laden. Feenberg (2003) calls this view the "substantivist" perspective of technology. In other words both the means and ends are linked in a system. In this case, technology influences academic process and change, but is also influenced by those processes. Finally, technology can also be human controlled and value laden. Feenberg (2003) calls this perspective, the critical theory of technology. In this case we would use technology as a tool to further our goals, but the way technology is designed, and sometimes imposed on people with no influence or say in its design could impose external values that are not their own, either positively or negatively.

Feenberg (2003) calls for more openness and social involvement in decisions of technology developments and design if possible negative effects are to be minimised and maximum benefits derived from technology use. In their account of technology, critical theorists would be weary of uncritical "technology praise-singing", and interrogate possible negative connotations that emerge out of the use of technology, and offer recommendations on how the obstacles can be addressed to maximise ICT benefits for all. They would appreciate advantages of efficiency that technology offers to users, but then question that which happens to those without access. They would question the hidden profit maximising intentions of ICT manufacturing companies vs. relevance to the needs of the technology user; and they would be critical of the long term implications of proprietary software licences on students and HE institutions relative to open source software. *With this framework in mind, we look at existing perspectives on higher education and the role of ICT in the following section.*

Fig 1: Andrew Feenberg Theory of Technology

Technology is:	*Autonomous*	*Humanly Controlled*
Neutral (complete separation of means and ends)	**Determinism** (e.g. modernization theory)	**Instrumentalism** (liberal faith in progress)
Value-laden (means form a way of life that includes ends)	**Substantivism** (means and ends linked in systems)	**Critical Theory** (choice of alternative means-ends systems)

Source: Andrew Feenberg (2003), "What is Technology", Lecture for the Komaba undergraduates, June, 2003, in http://www.rohan.sdsu.edu/faculty/feenberg/komaba.htm

The Role of ICT in HE

While instructionists would be content with traditional technologies for knowledge transfer through content delivery, and constructivists pushing for technology that would encourage knowledge construction, both sides seem to agree on the positive effects that ICT has on the quality of teaching and learning in HE.

(1) For Brown, David G. (2002), "computers enhance teaching and learning via: Presentations, more opportunities to practice and analyse, and more access to source material via Internet. Computers and Internet connectivity has been found to enhance communication and interaction between colleagues within faculties, between classmates, and between faculties and students".

Pedagogical perspective: "presentations" implies an instructional mode of teaching where knowledge is transferred from the presenter to the recipient (the student), and ICT can improve this method of teaching.

Technology perspective: instrumentalist.

This *is a* first world perspective of ICT (where physical access and computer literacy was not a problem), and demonstrates that ICT (computers and Internet) enhances teaching and learning through improved interaction across cultures, between students, academics and between both. Often these kinds of conclusions inform development strategies beyond the borders of developed countries, yet different socio-economic factors in developing countries could impact otherwise.

(2) Hawkins, R.J (1998) of the *World Bank Institute* outlines "Ten Lessons for ICT and Education in the Developing World". Technology, according Hawkins, "motivates students and energizes classrooms", and it also "*empowers girls*". Hawkins argues for the development of computer labs in HE institutions in developing countries. They may take time and money, "*but they work*" well in improving access and usage. But "technical support cannot be overlooked..." he adds.

Pedagogical perspective: ICT benefits are associated with higher education processes generally, without pedagogical bias. ICT enhances educational process from any perspective, but depends on how it is applied. Technology perspective: Determinist

(3) For Bowen, William G. (2000: p11), "*Many walls created by distance, time zones, and the need to work directly with physical objects have been breached, and there is much more to come as new technologies emerge and the costs of hardware, software, and connectivity continue to fall.*" An example would be research – which one of the leading HE functions, and it benefits immensely from electronic journal archiving whose access defies distance, time, and space. The facility further improves library administration as manual controls are reduced, and enhances distant learning, adds Bowen (2000: p12).

Pedagogical perspective: Makes purely constructivist claims. Statement emphasises that access to ICT such as computers, Internet, and e-mails bridge the physical distance between student and online information. It enhances interaction and has a potential to enhance HE activity. Technology perspective: Determinist

(4) For Alavi (1994) *"Many educators, students, and employers intuitively feel that the integration of the computer into the learning experience will enhance learning. This should increase the student's ability to apply knowledge and skills to future problem solving situations"*

Pedagogical perspective: Constructivist. Technology perspective: Determinist

(5) For Keats, Derek (2003), "when used wisely, ICT such as Internet can help unite people and create powerful and synergistic partnerships at local, regional and global scales. The use of Internet has enabled the formation of various forms of virtual universities within and between countries across the globe". The

point here is that as a communication medium that cannot be limited by time and space, Internet is enabling new local and global education synergies on teaching and learning -- for enhanced HE to unlimited audiences, beyond time and distance boundaries, easily and conveniently.

<u>Pedagogical perspective</u>: Makes purely constructivist claims. <u>Technology perspective</u>: Determinist

(6) UNESCO (1998).*"The rapid breakthroughs in new information and communication technologies will further change the way knowledge is developed, acquired and delivered. It is also important to note that the new technologies offer opportunities to innovate on course content and teaching methods and to widen access to higher learning".*

<u>Pedagogy perspective:</u> Makes a constructivist "knowledge development" statement

<u>Technology perspective</u>: Determinist.

(7) For Thomas Roswell (1999), the Rector of the Swedish University of Agriculture, ICT enhances H.E. in a number of ways:

- ⇒ It enables the effective storing/sorting of information, and can offer new fast ways of communication;

- ⇒ It enables the reduction of information quantity towards a higher quality and better structure;

- ⇒ It can be integrated into teaching and learning strategies – and used to support relative learning theories; and

ICT (computers, Inter and Intranet) can be used to create new types of interactive learning media for improved quality, equity, and access in H.E.

<u>Pedagogical Perspective</u>: Makes a strong case that ICT enhances teaching and learning, and can be "integrated into teaching and learning strategies (which may be any strategy, ranging from knowledge constructivist to knowledge transfer strategies).
<u>Technology perspective</u>: Instrumentalist

Not all commentators however, are the unquestioning praise singers of educational ICT:

(7) Muse jr. (2003) for example feels that there is just too much hype about Web-based Learning, but less is said of technical difficulties students face, and ultimately high levels of technically motivated dropouts. In his unpublished doctoral thesis in North Texas in May 2003, Muse, H.E. jr. interviewed a number of students who dropped out of Web-based courses. He found that most students could not obtain, access, or install all the required learning materials in a timely manner due to ICT literacy constrains, and had to drop the course while they still had a chance to do so.

<u>Pedagogical perspective</u>: No obvious link between pedagogy and technology- as there is with computer and literacy. What is obvious though is that web-based learning may be alienating to the less computer literate and those with limited or no access to resources -- thereby defining itself as the privilege for the computer skilled and those with computer access and internet connection. This challenges presuppositions of the Constructivist Theory of Learning and suggests the need for human intervention and support in Web-based learning. Especially for universities whose majority of students lack literacy and confidence in computers. What emerges here though, is that the argument immediately falls away when literacy and access support is addressed in institutional ICT interventions. The lesson for the constructivists then, is: be ware of this limitation and think of social and literacy issues when implementing ICT interventions in teaching and learning. <u>Technology perspective</u>: Critical theory

(8) According to Bowers, C.A. (1998: p113), in education, computers modify thought and communication – the development that requires huge economic outlays to put libraries online and for professors to research and to teach online. Students, in turn, *must be consumers of technology that will require an endless series of upgrades to feed the industry's need to increase its share of the market"*.

Pedagogy perspective: not obvious. Technology perspective: Substantivist theory.

It is clear for Bowers that not all ICT interventions are appropriate for every condition, and we must be weary of "*one size fits all solutions*" as most innovations could be driven purely by the profit maximization motive on the part of their producers – rather than the necessity – though all are portrayed as necessities.

Along with the current perspectives on higher education and the role of ICT emerges certain trends in educational ICT practices world wide.

Global Trends in Educational ICT Practices

The study on the Challenges and Choices for Higher Education Institutions – conducted on European and Australian Universities by Prof Robin Middlehurst of Surrey University (UK); and a survey of 500 universities in commonwealth countries undertaken by Observatory on Borderless Higher Education in May 2002 share some light on critical trends:

⇒ Increasing faith in the power of technology has seen an enormous increase in the use of ICT in education institutions world wide.

⇒ This trend has led the emergence of a number of non-traditional HE providers – competing for the student population among themselves, and with the traditional university.

⇒ The traditional university no longer has hegemony over the provision of higher education. In rising to the new challenge, it is turning to ICT to improve the quality of its operations, and also to reach for students in destinations beyond the traditional physical boundaries.

⇒ But the increasing use of ICT in higher education institutions is set within a context of wider economic, social, and political changes affecting countries world-wide.

⇒ As a result, the rationales and choices made by institutions for their ICT applications are influenced by a variety of macro and micro environments, and consequent perceptions of competition and the need for collaboration. Issues such as the *digital divides*, *literacy limitations*, *financial constraints* (largely developing countries), *changes (increases) in student enrolment numbers* (which is a global phenomenon*), global technological developments*, and *competition between and among HE institutions and the emergent providers of higher education* (global phenomena), are examples of the forces that drive change contexts (Middlehurst, 2003).

Conclusion

Different perspectives on the role of ICT in HE are hardly concurrent. The divide between them suggests four points:

⇒ That there are massive benefits that can be derived from effective usage of ICT in higher education.

⇒ But there are intervening issues, conditions, and situational contexts that encourage or hinder effective use of technology in different settings, and therefore the impact that technology would have on different audiences (critical theory of technology).

⇒ The impact of ICT on teaching and learning would therefore vary according to circumstances of a given case, and we should be weary of "*one-size fits-all solutions*".

$\Rightarrow$ There is a need for openness, and increased social engagement with technology developments and interventions to ensure value-added relevance.

In other words, don't just move with the hype of the times, but ensure that an ICT intervention meets an educational need, and that it adds value to an educational activity. Ensure that it is the most appropriate intervention for the given context, and that it would be sustainable in the long term. To this end, Rosenberg and Steinmueller (1982) argue in their examination of the economic impact of a development in electronics - Very Large Scale Integration (VLSI), that the diffusion of a technology (a VLSI diffusion in their case) depends on knowledge, costs, and its value-added capabilities. Their point is that "there has to be a strong link between social (consumer) needs, value added capacities of a technology, and its cost efficiency relative to all thought alternatives if the intervention is to be worthwhile.

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