

SECTION 2: PRACTITIONER-BASED NOTIONS OF ICTS IN SOUTH AFRICAN HIGHER EDUCATION

2.1 HOW ICTs ARE UNDERSTOOD

There is an emerging consensus that technology in higher education refers to information and communication technologies (ICTs), a term that can be defined as the amalgam of computing and telecommunications technologies. It includes equipment, such as computers, the Internet, CD-ROMS and other software as well as digital cameras that can be used as part of the teaching and learning process. It is noted that networked computers have shifted the emphasis to include not only information or content, but also communication.

...what I mean by ICT is in fact a combination of the two Technologies. I mean computers and the Communications Technology provide the Internet connection. So in a sense, when I say IT, I literally mean computers by themselves. And when I say ICT, I understand computers plus the communications channel, because in fact ICT is a hybrid, in fact of Information Technology, Computer Technology and Communications Technology. I mean a computer can only just get you this far in your office, but you've got to be connected to somebody else. And the connections then bring in the Communications Technology. I mean you can be connected just from a computer to a computer, in which case you are just using computer technology, but the minute you that include the Internet, the Internet connections are based on telephone communications. So what we are actually reading, whether they be satellite or cable, or whatever, it is the merger of the two concepts – the IT and the telephone communications which makes it ICT for me. (I.B.)

One person commented that what is traditionally known as IT has become a subset of ICTs: “Information and communication technologies, now it talks about this environment which IT is just a little part of – it's like an island of its own type of thing” (I.A.).

The explicit link between information and communication is important, because it underlies many of the debates regarding the role of ICTs in higher education, with some arguing that the value lies in the increased possibilities of online content, while for many others the importance is in the communication. This difference of opinion can be sharp, and can reflect important differences about the priorities and purpose of the teaching and learning experience itself.

With regard to content, there is often a focus on increased access to content, especially for those in disadvantaged circumstances:

...effectively what it [technology] has done is it has given access to almost any kind of information. There is almost nothing that you can't find and there is no question that you can't find an answer to these days by creatively looking on the Web. (I.H.)

This point is extended to emphasize how increased access is provided to a larger system:

... if you think about it a normal university course that just starts in the classroom, your ability to get into it from outside is larger to begin with than what is in the library. And as we know, our library is under-resourced and has been for a long time. So you don't typically accept [the

idea that] if it is a strong research area you don't have access to the latest information. But if the subject is what technology enables you to do, it is for you to not only have input but to give output to outside as well – so the ecosystem becomes bigger. (I.H.)

The immediacy of information is also stressed, and the value of immediacy and speed for research purposes:

OK, let me take an example. One of the things that I think faces us in the 21st Century is that we've to find up-to-date information. ... in terms of my students finding research, for example if we've got a paper from a particular author and we're not quite sure of how he's explained something, we can find his e-mail and we can mail him and say, "Tell us, what do you think about this?" We've got this query with the person who is really able to help us. Previously you may [have] writ[t]e[n] a letter, but you would never get that information back as quickly. (I.X.)

On the other hand, a repeated criticism of online learning is that it is used too often to 'dump' content, and that the real opportunities lie in the communication possibilities of the technologies.

I reject that notion that a computer can teach you. It is not about information, delivery of information, I think ICTs are about openness, about allowing people to communicate, about giving you tools to recreate in other ways. So learning to me is a process, it is not about information. Information is important but the delivery of information is not learning. Information is having the information and converting it into knowledge through processes and that is where technology can play a role, lots of different types of roles but it is communication which facilitates our desire, flow, design, all those kinds of things that technology can do. It is not about delivering content. I am very much against using technology just as a means to dump your notes on the Web and say "I have a course on line". (I.K.)

A similar sentiment was expressed more bluntly, as the excerpt below shows:

OK, let's put it this way, a computer is a machine, it has no life to it, it has no personality to it; it's a creation of man [sic], Ok. All that a computer has done [is that] it has made communication a lot more effective. (I.D.)

For many people in higher education, using ICTs means using the Web. Thus the term 'web-based' is used as an equivalent to ICTs even when, technically speaking, the two are not the same thing. The shift from stand-alone multimedia machines to inter-connected web-based technologies was summarized by one of the few interviewees, whose university has been systematically working in this area even prior to 2000.

I would say there have been two moves. The production has moved to do-it-yourself. The multimedia, I would say moved by the end of 1999. I would say we moved from production to the whole idea of "give them a fish or teach them to fish" so we would "give them a fish or teach them to fish" in 1998. And then with regard to multimedia I observed the move at about the end of 1999, the move to more web-based, not moving away, I mean not saying that you should not have the multimedia elements but not the stand-alone multimedia applications, rather a web-based approach [with] much more focus on communication, interaction, those types of elements or that was the idea of it. So moving away from the language lab., where people sit alone with

their earphones, to an environment where we share and work collaboratively on anything in the earth's atmosphere or web-based whatever ...environment. (I.I.)

For many people, it has only been since the advent of the Web that ICTs have been 'mainstreamed' into education. This shows how relatively recently the utilization of ICTs has been. As one person said quite simply, "It's online because it is the Web that drives it – that is why I always talk about online learning"(I.S.). The growth and prevalence of the Web is indeed widely considered to be associated with the growth of ICTs in education, either as a facilitating environment or as a key driver.

While there is some consensus about what ICTs are, there is less about what they mean. The debate rages instead around the purposes of the possibilities afforded by ICTs and the way that they are being taken up, or not taken up. These debates feed into larger and sometimes competing discourses on technological change evident in the literature, as is discussed later. The understanding of what technology means in and for teaching and learning in higher education can be evocatively suggested by the metaphors used to describe them. These metaphors reveal the ways of thinking about technology and society through time. As mentioned earlier, these metaphors can also be usefully interpreted through the technological shaping of society and the social shaping of technology – and a co-construction approach that combines elements of both of these (Brey, in Misa *et al.*, 2004).⁴

The metaphors used to describe technology in education have been grouped as:

- the metaphor of a tool or vehicle; and
- the metaphors of ecology and the bloodstream.

There are two salient points about these metaphors. First, they all reflect serious thought about the issues surrounding technology, clearly placing competing ideas about teaching and learning at the centre of the e-Learning debate. Secondly, while these specific metaphors refer to ICTs in higher education, they can be seen to reflect larger discourses on the relationship between technology and change, and the role or function of technology in higher education.

The dominant conception of ICTs in education is that of the tool. In this sense, technology is a vehicle for change. The nature of this tool varies. For example, some view technology as a neutral tool, with the value located in the use alone:

Technology is neutral; it is what you do with it that is important. [I]t is what you do with the tool that is important and it is the same in learning, that ICT is just a tool, it is not learning itself and that is where some of the people get confused. I think they see technology as being able to teach people and I don't believe it can. (I.K.)

Another respondent expands this point into a discussion of issues of appropriateness, and the fitness of ICTs for the particular purpose and use:

I see it [ICT] as a vehicle, [or] different vehicles for different purposes. I suppose that's my metaphor I use as well. So that we can match more carefully what we need. For example, if we are going to [use technology then] the students need to just be sending e-mails to each other and that... a lot of students would just be sending e-mails to each other. Then in fact we don't need the latest up-to-date computers in those labs. We can actually roll out some of the less capable computers into special e-mail labs and keep the [top]end computers for more specific stuff.

⁴ While we cal□

et al., 2003.

I think that my big concern is that perhaps we're not clearly matching the right equipment to the right purposes. In time gone by you'd find that perhaps the head of departments had the best and newest computers, but in fact he or she didn't know how to use it properly. Whereas the secretary, who was actually doing most of the work, was sitting with an old dilapidated one. I actually used a strategy when I first came here six years ago of getting an inventory of what people thought they had and what they used and what they would like and then on that basis of the kind of "higher" end users, the newer computers that we ordered I gave to the people who were actually using them most and that did not necessarily mean at that time the head of department. It does now, but it didn't then for that particular head of department. And that was a bit of a change – in "cascading" down from the purpose for which it was used, rather than using a position as an indication of computer use. But I think that [a] metaphor of [a] vehicle is: what is the most suitable vehicle for this job? Do you need a tractor? Do you need a bus? Do you need a car? Do you need, you know, a motorbike? I think I'm seeing computers in that perspective. (I.B.)

Different uses do not necessarily imply neutrality:

Is there any such thing as a neutral tool? [You can use it in different ways but] that does not make the technology neutral. It empowers me to do something that I would not otherwise [have] be[en] able to do and whether I do it or not, that is my choice, so it depends on what you mean by neutral. Because if by neutral you mean [that] by itself [it] does not do anything well of course, you know.... There are lots of computers sitting in boxes in the back rooms of institutions where people are not using them and they are not adding any value so it is what you do with it.... (I.X.)

A less commonly articulated approach imbues tools with human values:

Tools do have politics but the interesting thing about the internet and I think that sort of covers your last question [that] it is such an amorphous anarchical [thing] and it will continue to shrug off any attempts that might be made to formalize it or whatever. And that is the beauty of it; you can't have societies in the future saying, "Well we did not know" because you do know, this source of information, the source of understanding, whatever you want to call it, is just not controllable by any government or anybody and so that is the positive side of it to my mind. (I.M.)

Some interpretations of technology as a tool problematize it further by arguing that it can, under certain conditions, be beneficial, but it may not be under other conditions, and it is highly dependent on other factors, such as the specific context, the history of the institution, and so on.

No, it is a tool and tools are used to manipulate. So how can it be neutral? In fact, that is one of the frightening sides of it and there is enough of an anarchist left in me from my youth to know that that is a frightening thing. It is a divisive tool and it is being used as a divisive tool and will continue to be used as a divisive tool just as genetic engineering is going to be used as a divisive tool. And it is up to us who are going to be on the wrong side of the divide to keep fighting like hell that it is not going to do that because otherwise we are going to be in deep trouble. (I.M.)

Thus, this research found that the predominant understanding of ICTs as a tool in higher education is that it is one that shapes society and is not necessarily neutral.

There are also some indications of an attitude that acknowledges the value-laden nature of technology; and there is also an indication of a belief that ICTs and education are co-constructed. These attitudes or beliefs tended to be expressed in two other metaphors, which were less dependent on specific images and suggest stand-alone or linear components. These metaphors suggest more systemic approaches: the ecology metaphor and the bloodstream metaphor. Both begin by explaining or defining ICTs in higher education as some kind of network. Interestingly, they both move towards describing ICTs in relation to processes of change.

The metaphorical comparison of ICTs in education as an ecology is expressed as follows:

Well the ecology metaphor is suitable for learning – period and the E-part of it is just one approach. But what the E-part of it allows is it allows the ecology to be bigger.... What technology enables is for you to not only have input but [also] to give output to [the] outside as well, so the ecosystem becomes bigger.... You know, that is why I talk about knowledge ecology, because those conversations happen in clusters that are like ecosystems and those clusters are in bigger clusters which are also like ecosystems, so the institution itself is just a series of these conversations and the more isolated the conversations are the more difficult it is to effect change. (I.H.)

The ecology metaphor forms part of a broader grouping of ecological concepts for e-Learning in education emerging in the form of information ecologies (Nardi & O'Day, 1999; McCalla, 2004), learning ecologies (Brown, 2000) and networks ecosystems (Kelly, 1994). These questions have been explored in more detail see (Frielick, 2004) by authors who ask whether the ecology is just a metaphor for thinking about a process or whether a networked learning environment indeed functions like an ecosystem. Frielick draws attention to the above-mentioned authors among others and argues for a perspective that goes beyond constructivism, into a new ecology of cognition and learning known as 'en-activism'. The bloodstream metaphor is used to indicate networks, but it is also used to suggest a diffusion mechanism by which ICTs are appropriately and selectively utilized, and are mainstreamed into the core business of the university.

Basically this was part of the whole e-Campus project; that is where e-Campus is the blood stream of the network type of University metaphor that we used for that and e-Learning was just one part of it...you know, so that network type of thing, so it is not just e-Learning anymore, it is teaching and learning. Yes, the technology is part of it; it is part of the blood stream; it is part of business as usual; it is part of the way we do things. It is not just e-Learning any more, it just teaching and learning practice. You see that was the idea of the e-Campus. It is a system thing and then it does not mean you have to be part of all the arteries. (I.I.)

The diffusion metaphor is indicative of a theme not covered in this project, that of the processes and mechanisms of organizational change, especially in relation to ICTs. The 'how' of such unfolding and elaborate change in institutions is the subject of much international literature and is certainly an area of investigation that would be valuable here.

2.2 THE TERMINOLOGIES AND LANGUAGE(S) OF ICTs

In the same way that the parameters of the field of work are still being defined and named, so are the practices themselves, as well as what they are called. The language of ICTs in education therefore

varies a great deal, although the most commonly used terms are e-Learning and online learning. Other common terms include ‘blended learning’, ‘open learning’, ‘multimodal learning’, ‘distributed learning’ and ‘telematics’.

Different, and often contradictory meanings are ascribed to these terms, relating to whether or not distance education forms part of the meaning, whether the term relates to networked computers or stand-alone computers, or even to computers at all. There is a differing emphasis placed on the ‘e’ and on the ‘learning’ part of the words.

2.2.1 e-Learning and the Web

The most atypical comment was that e-Learning need not have anything to do with computers. For example, one respondent said:

My definition of e-Learning is electronic learning, ok, so electronic learning ...is everything electronic. So it need not necessarily have anything to do with computers at all. E-Learning could just simply be putting up information on an overhead projector. (I.D.)

On the whole, most practitioners assume that e-Learning has to do with networked computers, specifically the Web, rather than stand-alone computing. Thus,

I think in practice if people talk about e-Learning they are talking about using the Web and e-mail, which is not quite using a PowerPoint presentation or using a tutorial even on a stand-alone computer. (I.H.)

Well e-Learning to us is when a lecturer and sometimes with and sometimes without students creates a learning environment on the World Wide Web and where learning in collaboration takes place. But it very much again depends on how the lecturer uses it so sometimes it extracts content of simulation and [at] other times it is collaboration to various degrees. (I.C.)

2.2.2 An emphasis on learning

Given the emphasis on the social aspects of ICTs observed in this study, it is not surprising that for many it is the ‘learning’ part of the word which is important, whether the term is e-Learning, or online learning (another quite common term):

We use the term e-Learning. It is not quite just habit. I think the whole issue is clearer when I write it; I always try to be consistent and make the “e” small and the “l” large to emphasize the learning and the “e” as the small or abbreviation type of thing but the learning is the most important thing.... (I.I.)

Online learning... is not about technology; it is the way that technology is used to convert, to support learning cognition and meta-cognition, that is what online learning is to me, it is about creating environments where people are given the tools to negotiate information, to turn information into knowledge. (I.K.)

I use the term “online learning”. ...This what I have said to all my students. When we start out our research work is, “If you don’t know about learning, you don’t know about anything in this field, you can’t judge or evaluate or implement anything if you don’t understand how people learn”, so I always like to see the word “learning” in any terminology. (I.L.)

2.2.3 Different pedagogical associations

E-Learning can also be associated with a specific pedagogical approach.

I hate the word e-Learning...because it means that, if you say e-Learning, people think about the model that M-Web puts forward that all the content is online and you go and get the content and that is e-Learning and I reject that model so I reject the word associated with it too; so for me online learning is an experience, [it] is what I do. You can call it e-Learning if you want to but I don’t like the term; I don’t like the label “e-Learning”, because it is associated with the instructivist approach to learning. (I.K.)

On the other hand, a report stated, some [higher education] institutions even equated the mere use of technology with constructivism (CHE, 2004).

That e-Learning is associated with opposing pedagogical approaches, instructivism and constructivism, is an indication of how diverse the connotations of the concept can be.

2.2.4 Distance education and open learning

One respondent associates e-Learning with distance learning and argues that the more correct term for using ICTs in a residential context is ‘blended learning’.

I started in ’98, ’99 when everybody else was starting to realize that we should experiment and he [the then VC] was 100% behind what they were calling e-Learning at that stage, but what they actually mean is “blended learning”. There is no idea of turning us into a distance education university using WebCT. I have been trying to say that we are doing blended learning rather than e-Learning, but then nobody has paid any attention. (I.G.)

Another perspective is that when distance learning is to be supported, it is called ‘open learning’, regardless of the platform on which it occurs.

Open learning networks [are those used] to facilitate distance education and to promote life-long learning. It facilitates access. (University of Natal, 2000. Strategic Initiatives for the University of Natal. October 2000: 15 & 12)

However, the term e-Learning is sometimes also used explicitly for both situations.

e-Learning [is] the process where education technology is used in the virtual campus to enhance both distance and residential education processes. (University of Pretoria, 2002. University of Pretoria Strategic Plan, 2002-2005)

It is of note that the term ‘distributed learning’, a term quite commonly used elsewhere in the world to indicate a separation of lecturer and student mediated by ICTs, was used once only, and in quite a narrowly defined way. The person who mentioned this said that the common term was e-Learning, but that he thought this was incorrect:

“Distributed learning” is what it should be called ... distributed learning basically is where you broadcast your lessons to students and then they can use [the information] at any time that is convenient for them. (I.D.)

2.2.5 A plethora of other possible terms

Another term that was only used once is that of ‘multimodal learning’, a term that has several meanings even within a single institution. It is of interest that there are a number of terms used elsewhere in the world that are not used in South Africa. These include ‘virtual learning’, a concept often linked to the idea of a fully online ‘cyber-university’, and ‘networked learning’, a term commonly used in the United Kingdom.

In the light of this assortment of terminology, the following comment is understandable:

It means different things to different people. ... My approach is a very pragmatic one; I don’t give a hoot what you call it; it is what you do with it that matters. (I.H.)

Thus far, the diversity of meanings of ICT usage and its terminology have been noted. The next sections explore frameworks and forms that enable and constrain the implementation of ICTs in South African higher education institutions. Some of the issues about the current uncoordinated nature of ideas concerning ICTs, at the policy level, are noted.