Distinguishing the Field of Educational Technology

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Abstract: Drawing on what researchers and professionals in the field internationally report, this paper reviews educational technology as an emergent field. The review reveals the continuum of perspectives on what the field is, and how it is bounded or fragmented. The paper describes the field from two perspectives: the professional and scholarly and considers how the forms of knowledge differ and overlap in each domain. It posits some dichotomies which may frame the field such as science/ social science and positivist/ post-modernist. Finally the paper provides conceptual frameworks for distinguishing fields from each other and suggests what the categorisation of the field might mean, especially considering its emergent status in a rapidly changing context.

Keywords: Educational technology, e-Learning, profession, discipline, field, knowledge

1. Introduction

This paper considers the field of educational technology in terms of its nature and its distinctiveness. Drawing on the views of researchers and professionals in the field itself, the paper reviews the forms the field takes, and describes the basis on which it can be differentiated from other fields. That educational technology is an acknowledged field around the world is not in doubt. It is called a young field by numerous researchers (Conole, Dyke et al., 2004, De Vaney & Butler, 1996, Dueber, 2004, Jones, 2004, Luppicini, 2005) and acknowledged as a field across the world: from Portugal (Coutinho & Gomes, 2006) and Spain (Graells, 2004) to South Africa (Czerniewicz, Ravjee et al., 2006) and Australia (Alexander, Harper et al., 2006).

Although there is general consensus that the field exist, its nascent state is evident in the lack of agreement about its name[1] Depending on context, community and related factors, it may be called by such variants as Elearning, Networked Learning, Telelearning, Instructional Design or Telematics. An umbrella term, educational technology –one increasingly common- is used in this paper, and encompasses the activities and knowledge domain where education and technology intersect.

While such activities and such a domain are acknowledged to exist, there is disagreement about the extent to which the field is coherent, contained and bounded. Impressions of the field seem to lie along a continuum, ranging from a perspective on one end which considers the field to be unified with common postulates, ranging to a version of the field as one coming out of its infancy to a point of maturity where it is possible to seriously formalise it. The far end of the continuum sees it as fragmented and incoherent.

The "unity" view is framed by a belief in consensus, and agreement about the nature and precepts of the field. Thus a confident statement from Dutch researchers asserts "the consensus about substantial elements of the knowledge base and about the nature of I.D [instructional design]"(Elen & Clarebout, 2001) and related views align themselves with a Kuhnian version of a field which states that "Despite occasional ambiguities, the paradigms of mature scientific communities can be determined with relative ease" (Kuhn, 1962). The most explicit of these positions is expressed by Merril and the ID Group who insist that:

> *There is a scientific discipline of instruction and a technology of instructional design founded on this science. Like all science, the science of instruction is based on specific assumptions about the real world. The technology of instructional design is founded on scientific principles verified by empirical data. Instructional science is concerned with the discovery of the natural principles involved in instructional strategies; and instructional design is the use of these scientific principles to invent instructional design procedures and tools (Merrill, Drake et al., 1996).*

Another view is that the field is "growing up" and is ready to reach agreement on key elements. An example of this process to reach agreement regarding the rules and elements of the field can be seen in a 2006 IT (Instructional Technology) Forum paper which set out to explicitly formalise and confirm key aspects of the field. The authors invited the more than 2000 members of 45 countries (at the time) to "a dialogue about the specific language of instructional design and some new ideas we've developed about how to describe our field." They "propose that Instructional Theory has now reached a level of development where a common

[1] Authors elsewhere have described this in more detail and suggested what this might mean or imply (Czerniewicz et al., 2006, Moll, Adam et al., 2007).

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knowledge base with a consistent terminology would greatly facilitate the future development of knowledge in this important area" (Reigeluth & Carr-Chelman, 2006).

Another perspective is expressed by authors noting and decrying lack of coherence in the field. The field has been described as "amorphous" (De Vaney & Butler, 1996) and "disjointed" (Bruce & Levin, 1997). The fluidity of the field in Australia led two authors to suggest that it is hard to distinguish the field from any other related field. They said that the current enterprise has neither simple nor singular parameters that distinguish it from other disciplines or fields of study (Hedberg & McNamara, 2002). Another Australian article begins with the suggestion that there is virtually no body of knowledge underpinning work in the field.

> *Despite the fact that e-learning research (variously referred to as Computer-Based Learning, interactive multimedia, online learning etc at different times) has a history of some 50 years, there is little evidence of the emergence of a "body of knowledge" to support practice in the field (Alexander et al., 2006).*

And finally, on a note of despair is the doubt that the field exists at all:

> *Given the available evidence, it unfortunately does not seem to be an overstatement to claim that professionals of all types in the field of IDT, including academics, practitioners and students, do not see the field as having a consensus definition, clear focus, distinct boundaries, established links between research and practice, or any obvious added value when compared to other fields (Bichelmeyer, 2004).*

One might have thought that location on the continuum of perspectives would be clustered by specific groupings, countries or location: this is not the case. The range of views - the differences and agreements - regarding the coherence of the field is spread across the globe.

2. The field as professional

Simultaneously and in overlapping ways, a new professional field is coming into being and a new knowledge field (or professional discipline) is emerging. The differentiation is not clearly demarcated because in educational technology, the scholars and professionals in the field may well be the same people[2]. A profession is associated with an occupation, and often with specific sites (such as law with the courts). What adds confusion to the emerging profession of educational technology is that the university is one of the key contexts in which that occupation is located (the others being schools, and other sites where training and education take place). It is likely that professionals are employed in universities on non-academic conditions of service, thus differentiating those working as academics in the new scholarly field in some ways. Depending on the status of the practitioner's position, the work may be invisible and professional knowledge unacknowledged.

Attention is increasingly being paid to professionalisation of the field especially in the UK and the US (Beetham, Jones et al., 2001, Oliver, 2003, Richey, Fields et al., 2001, Surrey & Robinson, 2001). This work addresses matters such as competencies, job standardisation, career paths, sanctions, accountability and so on. The process of formalising job descriptions is still relatively new itself. While career paths were only mapped in 2001 in the UK (Beetham et al., 2001), the US has been setting out the competencies of the work for years, with the third edition of the key text in instructional design competencies being published in 2001 (Richey et al., 2001). The professional demarcation and the regulation of professional knowledge are key indicators of the emergence of the professional field, since professional knowledge is certified and credentialed (Weber, quoted in Macdonald 1995).

While knowledge is central, in both the professional and the scholarly, its role and focus differs. Professions are knowledge based occupation described as a form of cultural work where the tasks addressed are human problems amenable to expert advice (Macdonald, 1995). Professional work is thus distinguished from other work by the fact that it is underpinned by abstract knowledge (Macdonald, 1995). In a scholarly field, knowledge - through production, synthesis and dissemination - is the *raison d'etre* with the goal or outcome being academic knowledge itself.

The kinds of knowledge valued and foregrounded in the professional and the scholarly, will both overlap and differ. Thus understanding the field requires engaging with the different forms and expressions of professional and scholarly knowledge. What do professionals in the field do and know and how do they

[2] It has been noted that the field in the UK is now reaching a second generation division of labour Conole, G. 2004. The Role of Learning of Learning Technology Practitioners and Researchers in Understanding Networked Learning Networked Learning 2004 (Sheffield,

communicate that knowledge? What are the differences between the way knowledge is experienced and expressed in scholarly and professional contexts? Writing in the field of teacher education, Hargreaves (1996) differentiates the different forms of knowledge (see table below) and lobbies for a new order where professional knowledge is regarded as a valued resource.

	Scholarly Knowledge	**Professional Knowledge**
	generalised	context-specific
	codifiable	difficult to codify
	rational	also moral and emotional
Epistemology	public	private or inter-personal
	written	oral
	explicit	tacit
	question-oriented	practical
	propositional in form	metaphorical, narrative in form

Adapted from (Hargreaves, 1996)

The existence of substantial research over many years is testimony to the importance of tacit knowledge in professional practice[3]. In educational technology this is an important and neglected area of study in two ways, as we need to analyse both how educational technology professionals express and share their knowledge, as well as how technology mediates forms of knowledge within professional academic communities.

Rare commentary on these issues in the educational technology literature is found in Jones who draws on the work of Barley and Orr to suggest that educational technologists may draw on new knowledge but not produce it (Jones, 2004). This raises a crucial point about the relationship between research (knowledge production) and professional practice with one view in the field of educational technology decrying the lack of research and theory to inform and support practice (Alexander et al., 2006) and another concerned that "instructional design theory is not grounded in practice" (Bichelmeyer, 2004). This too raises issues worth of research attention i.e. the relationship between research and policy; and the relationship between research and professional practice.

Ironically, because the field is so new and so rapidly forming as technology shifts, the gap existing between professionals and scholars may not be as wide as in other fields such as teacher education. It is quite possible that new knowledge may be emerging from professional fields in ways that needs to be tested by scholarly research, rather than the other way round, as is the usual assumption.

A useful way of categorising professions in relation to academe has been suggested by Greaves who suggests the following typology (Greaves, 2007):

1. Profession Type 1: Emerges outside the university and then moves into it eg law, accountancy and medicine
2. Profession Type 2: Emerges outside the university and remains outside the university eg estate agents. Such types have professional bodies and a knowledge domain, but it are not studied as a scholarly undertaking.
3. Profession Type 3: "Near professions" eg trades with tacit knowledge, accreditation and professional bodies, eg artisans and traders boiler makers fitters and turners
4. Profession Type 4: Emerges inside the university, gains status and moves out eg business studies through modern business schools
5. Profession Type 5: Emerges inside the university and stay inside – this results in a close relationship between communities of practice and scholars eg higher education studies or higher education leadership studies

Where might educational technology be located? Assuming it to be framed by higher education issues and in that context, it would be an example of Type 5. Whatever the classification, the challenge is to ensure that different forms of knowledge and new practices feed into one another. Its very emergence makes this more difficult, and viewing the field in its scholarly form may provide a more accessible lens.

[3] Jaffer, S. 2007. Tacit Knowledge- a Literature Review University of Cape Town). mentions an abundance of literature on the topic ranging from philosophical theorizing of the concept (Polanyi, 1958 & 1966; Ryle, 1949) to current research studies (Gamble 2004; Waagenaar 2004; Welsh & Lyons 2001).

3. The field as scholarly

The most common way to describe a scholarly field in a higher education institution is as a discipline. A discipline has been described as

> *[…] a relatively stable and delimited field, easy to identify, has an academically and socially recognised name (eg found in library classifications) inscribed in institutions, labs universities, international journals, conferences, procedures (Bourdieu, 2004).*

and

> *The term, discipline, is usually reserved for areas of inquiry and application that have been established over time and follow established paradigms. There is likely to be a consistency in their basic beliefs, rationales and common principles that define the scope and structure of the discipline (Ely, 1999).*

Stability, recognition and boundaries are therefore generally associated with the concept of a discipline. Given that these are still so contested, it is unsurprising that educational technology seems more often referred to as a field than as a discipline.

Yet the field is also described in disciplinary terms of one kind or another. Thus, a discussion paper published on a online forum makes the case forcefully that it is a discipline and indeed a scientific one. The paper opens with the statement that, "There is a scientific discipline of instructional design" (Merrill et al., 1996). Elsewhere it is referred to as a relatively new discipline (Conole et al., 2004) or as a new "inter-discipline"(de Laat, Lally et al., 2005), multidisciplinary (Whitworth & Benson, 2004) and inter-disciplinary (Jones, 2004).

The distinctions between these terms are relevant to a framing of the field. Stathern usefully disentangles them when she defines multi-disciplinarity as the alignment of skills from different disciplines but interdisciplinarity as involving a common framework shared across disciplines to which each contributes its bit. She says that "interdisciplinarity …is ….a tool (a means) to address problems (Strathern, 2005).

She suggests that trans-disciplinarity involves bringing disciplines together in contexts where new approaches arise out of the interaction between them, but to a heightened degree. "The focus is on [the] context of application, and on a particular approach to problem-solving as one which creates its own theoretical impetus"; trans-disciplinarity requires "a common theoretical understanding" and a "mutual interpenetration of disciplinary epistemologies" (Gibbons et al., 1994: 29). Here the reach into core disciplinary practices carries the expectation of new theoretical models and new institutional forms.

By this definition, the achievement of trans-disciplinarity would mean the creation of and consensus about a new, in- depth shared paradigm for educational technology. As can be seen from this review, there is no evidence of any such consensus or such depth. Therefore the terms inter and multi disciplinarity prove more promising to describe the ways that educational technologist draw on and contribute to allied disciplinary fields. Exactly how this is manifest is worthy of research attention.

The consequences of the field being inter-disciplinary must therefore also be considered. It has been observed for example that because educational technology draws on so many disciplines, the community of educational technologists may only be familiar with "feeder disciplines", each of which has its own theoretical domain, and indeed these outlooks may be incommensurable (Jones, 2004). He adds, crucially that there is no one meta-theory linking the feeder disciplines or unifying the discipline internally, confirming that the field cannot be called transdisciplinary.

Indeed, some researchers regard this ability to draw on associated disciplines as both desirable and necessary:

> *I think in general we need to break down disciplinary barriers and view ourselves as a community examining issues and learning from one another. How do we break down those barriers – what is there to learn from one another? That is the first question. Then the question is how do we promote a culture change to change the focus from "defining instructional technology" to identifying important issues to be studied. And also identifying where other work is being done on those issues – finding collaborators (Duffy, 2003).*

and

> *In reflecting on one's discipline it is important to draw on closely related and even distally related disciplines to both inspire new ideas and sharpen boundaries….A discipline that draws on its own*

> *practices as the primary inspiration of its research and theory risks stagnation and decline (Kozma, 2000).*

and

> *The discussion so far suggests that research in open and distance learning needs to be grounded in theory, that there are often benefits in drawing theory from outside narrow educational confines and that research will suffer unless this is done (Perraton, 2000).*

This approach is a problem for those who have taken a traditional empiricist view of the field, as succinctly expressed by a well known US professor:

> *Those persons who claim that knowledge is founded on collaboration rather than empirical science, or who claim that all truth is relative, are not instructional designers. They have disassociated themselves from the technology of instructional design. We don't want to cast anyone out of the discipline of instructional science or the technology of instructional design; however, those who decry scientific method, and who deride instructional strategies, don't need to be cast off; they have exited on their own (Merrill et al., 1996).*

Although this statement may appear extreme, the aspiration for the field to be considered as a science with a single overarching paradigm as the natural sciences are believed to have, seems to be a common one. There are however, many researchers who consider the field to be a social science with all its attendant challenges:

> *The field of Educational Technology shares many of the same struggles in defining itself and substantiating its foundations, as do other social sciences and applied social sciences. (Luppicini, 2005).*

and

> *Research into e-learning brings together a broad range of social science researchers (Whitworth and Benson et al 2004).*

The issue is not yet resolved. This observation made almost two decades ago remains true today:

> *It is unsurprising that the tensions between the sciences and humanities antecedents are manifest in the field. In some circles this is expressed as a tension between what is called learning sciences or behavioural science and between physical and technological sciences (Banville & Landry, 1989).*

The tension is also expressed as a positivist/ modernist and post-modern dichotomy. On the whole the most significant cluster of approaches to scholarly work in the field internationally could be described as positivist. (This impression itself would be worth verifying.) However, there is a cluster of research examples which are based on post modernist principles and argue that post-modernist approaches provide valuable lenses to the field (Bryson & de Castell, 1994, De Vaney, 1998, De Vaney & Butler, 1996, Hlynka, 2003). These views argue for pluralism, criticism rather than evaluation, constant rethinking of beliefs and technology, a focus on power relationships and the highlighting of the relationship between corporate interests and technologies in the classroom (De Vaney, 1998, Hlynka & A, 1992).

As a field educational technology (often in the guise of instructional technology or instructional design) is most established in the USA where it has been observed that six studies from 1970 to 1994 have already examined its identity as a field (Carr-Chellman, 2006). The USA is the only place where books on the nature of the field have been written; interestingly those too tend to refer to the field rather than to the discipline. It is of note that the more recent books Instructional Technology, the Definition and the Domains of the Field (Seels & Richey, 1994) and Educational Technology The Development of a Concept (Januszewski, 2001) refer predominantly to the field as professional and applied. While this might suggest that their focus is largely on professional knowledge and domains, the references to research agendas and to scholarly pursuits also suggest that the overlaps of the professional and scholarly in the US are substantial.

4. Differentiating knowledge fields

Academic fields or disciplines are defined partly in terms of what they are not, how they are distinguished from other fields or disciplines. Although writing about the formation of anthropology, Clifford's observations are pertinent. He notes that a discipline most actively defines itself at its edges, in reaction to what it says it is not. It does this by selectively appropriating and excluding elements that impinge, influences that must be managed, translated, incorporated. It draws lines to mark frontiers (Clifford, 2005).

Classifications may be expressed in different ways, ranging from structural to bureaucratic to theoretical.

The way the universities are structured may be crucial to the identity of the field in terms of where it is located and concomitantly where it is not located. Clifford notes that structural issues are linked to 'disciplinary patriotism' and that disciplines are sub cultures of a wider polity, in this case the university. The setting of such boundaries is not a neutral activity. Using Bourdieu as a lens to understand the scholarly field of Career, Lellatchitch et al argue that a field is a social sub system based on historically generated system of shared meaning. The boundaries of a field are where the effects of empirical research cease to have meaning, where the stakes of the game lose their impact (Lellatchitch, Mayrhofer et al., 2001).

Educational technology research, courses and new departments may be located in education departments, in computer science departments or in media studies departments. In South Africa it has been noted that they are increasingly located in higher education development structures or higher education studies (Czerniewicz et al., 2006). Given that structural location may significantly determine the influences a field is both exposed to and identified with (and thus what becomes valued), such structural decisions may have profound effects on the nature of the field in certain settings.

The way that bureaucracies are organised may also be key determinants in field formation. The classification schemes of state information systems or research body clusters may play a role in the development of a field's identity. Indeed, government and funding organisations devise systems to suit particular agendas (White & Liccardi, 2006); the location or indeed the invisibility of educational technology is these classifications is also worthy of research attention. In South Africa for example, disciplines are classified under the 2004 Classification of Educational Subject Matter (CESM) taxonomic coding scheme (Education, 2004). This organises subject matter into 22 (first order) categories and a wide variety of categories to the fourth order. State funding is partly determined by CESM classification (the Teaching Input Grid being a dimension of the funding formula), with for example the social sciences receiving half of the funding of the physical sciences. A new Masters in Educational technology programme located in Computer Science would receive more state funding than the same programme located in Education. Thus which kind of science the field is defined as being, has profound resource implications, as well as identity implications.

The most common classification within higher education for differentiating disciplines was developed by Biglan in 1973 (Biglan, 1973a, Biglan, 1973b) and extended and popularised by Becher and Trowler in their book Academic Tribes and Territories (Becher & Trowler, 2001). Biglan's original classification suggested three dichotomies, with the three continuums being: practicality (Pure/applied); paradigm development (Hard/soft); and object of study (Life/non –life).

The life/non life continuum has been dropped from the work of researchers who extended this model and fields are usually located in categories such as in the table below.

	Hard	**Soft**
Pure	e.g. chemistry	e.g. History
Applied	e.g. Engineering	e.g. Accounting

There are no examples of educational technology as a discipline having been classified using the Biglan table, an activity which would be a challenge given its nature. If the Life/Non-life continuum were to be resurrected it would also force a choice between the two key concepts as the primary object of study: education (life) or technology (non-life). Biglan has, however, been used for studies on ICTs and disciplinary differences ; and Biglan and Becher's frameworks have been used to classify the associated fields of computer science and information science (Clark, 2003, Webber, 2003).

Another fairly common classification scheme, Whitley's, is also long-standing and still in use today (Whitley, 1984). Whitley distinguishes between fields on the basis of task certainty/ uncertainty and strategic certainty/ uncertainty. This refers to the degree of problem variability and instability which influences the conduct, co-ordination and control of research in the field. While Whitley's framework has not been used to map the field of educational technology, it has been valuable in descriptions of the related field of academic development and computer science (Bath & Smith, 2004, Clark, 2006, Moses, 1990).

Finally, disciplines have been distinguished on the basis of whether they are convergent (with tightly knit and clearly defensible boundaries) or divergent (with ill defined boundaries)(Becher & Trowler, 2001), with educational technology clearly providing an example of the latter.

Field identity formation means distinguishing the field from that which it is not. The differentiation process occurs through strategic, resource and conceptual strategies and categorisation processes, none of which are neutral. While the overt boundary-setting process is still in its early stages in the educational technology field, it is evident that approaches to setting the parameters in the field are varied. The common approaches described briefly here provide pointers to an area requiring closer attention.

5. Conclusion

This paper has sketched the terrain as it is perceived by those working in the field internationally. The internal dimensions of the field - its community structures, journals and conferences – have not been reviewed here; the focus has been a consideration of scope, parameters, borders and classification. This nascent professional discipline or inter-discipline is taking undoubtedly shape, inevitably marked by the dichotomies and contradictions demonstrated in the paper. By showing the more common taxonomies of field differentiation, ways of distinguishing the field have been suggested.

Why does all this matter? Newcomers being inducted to the field need to know the parameters of the field and its knowledge base. Members of the research and professional community need to agree where their shared areas of interest, focus, approach and projects lie. Clarifying some of the bigger picture issues raised in this paper will help build a shared language. Agreement of the key elements of the new domain, and agreement about ways of seeing will help build the internal consistency in the field. With researchers and professionals from such a wide range of backgrounds, coherent articulation and integration are necessary. While field formation cannot be prescribed, the process can be made explicit. Sufficient consensus is needed to enable communication amongst educational technology researchers and professionals, and in order to build a credible, legitimate and distinguished knowledge field.

6. References

Alexander, S., Harper, C., Anderson, T.D., Golja, T., Lowe, D., McLaughlan, R., Schaverien, L. & Thompson, D. 2006. Towards a mapping of the field of e-learning in: E. Pearson & P. Bohrman (Eds) Edmedia World Conference on Educational Multimedia,Hypermedia & Telecommunications (Orlando).

Banville, C. & Landry, M. 1989. "Can the Field of MIS be Disciplined? " Communications of the ASM, 32(1), pp. 48-60.

Bath, D. & Smith, C. 2004. "Academic developers: an academic tribe claiming their territory in higher education", International Journal for Academic Development 9(1), pp. 9 - 27.

Becher, T. & Trowler, P. 2001. Academic Tribes and Territories Open University Press.

Beetham, H., Jones, S. & Gornall, L. 2001. Career development of Learning Technology Staff: Scoping Study Final ReportJISC Committee of Awareness, Liaison and Trainingg programme).

Bichelmeyer, B. 2004. The ADDIE Model" – A Metaphor for the Lack of Clarity in the field of IDT (Indiana University).

Biglan, A. 1973a. "The characteristics of subject matter in different academic areas", Journal of Applied Psychology, 57(3), pp. 195-203.

Biglan, A. 1973b. "Relationships between subject matter characteristics and the structure and output of university departments", Journal of Applied Psychology, 57(3), pp. 204-213.

Bourdieu, P. 2004. Science of Science and Reflexivity (Chicago and Cambridge, University of Chicago and Polity Press).

Bruce, B. & Levin, J. 1997. "Educational Technology: media for inquiry, communication, construction and expression", Journal of Educational Computing Research, 17(1), pp. 79-102.

Bryson, M. & de Castell, S. 1994. "Telling Tales out of School: Modernist, Critical and Postmodern stories about Educational Technology ", Journal of Educational Computing Research, 10(3), pp. 199-221.

Carr-Chellman, A. 2006. "Desperate Technologists: Critical Issues in E-learning and Implications for Higher Education", Journal of Thought, 41(1), pp. 95-115.

Clark, M. 2003. "Computer Science: a hard-applied discipline?" Teaching in Higher Education 8(1), pp. 71 - 87

Clark, M. 2006. "A case study in the acceptance of a new discipline", Studies in Higher Education, 31(2), pp. 133-148.

Clifford, J. 2005. Rearticulating Anthropology, in: D. Segal & S. Yanagisako (Eds) Unwrapping the Sacred Bundle, Reflections on the Disciplining of Anhropology (Durham and London, Duke University Press).

Conole, G. 2004. The Role of Learning of Learning Technology Practitioners and Researchers in Understanding Networked LearningNetworked Learning 2004 (Sheffield,)

Conole, G., Dyke, M., Oliver, M. & Seale, J. 2004. "Mapping pedagogy and tools for effective learning design", Computers and Education, 43, pp. 17-33.

Coutinho, C. & Gomes, M.J. 2006. Critical Review of Research in Educational Technology in Portugal (2000-2005Ed Media Proceedings (Orlando,

Czerniewicz, L. & Brown, C. 2007. Disciplinary differences in the Use of Educational TechnologyInternational Conference of E-Learning (New York,

Czerniewicz, L., Ravjee, N. & Mlitwa, N. 2006. ICTs and the South African Higher Education Landscape in: CHE (Ed) Higher Education Monitor (Pretoria, Council for Higher Education).

de Laat, M., Lally, V. & Simons, P.W., E. 2005. Questing for Coherence: a Synthesis of Empirical Findings in Networked Learning Research in Higher EducationUniversity of Southampton).

De Vaney, A. 1998. "Can and Need Educational Technology Become a Postmodern Enterprise?" Theory into Practice, 37(1), pp. 72-80.
De Vaney, A. & Butler, R. 1996. Voices of the Founders: Early discourses in educational technology, in: D. Jonassen (Ed) Handbook of research in educational technology (New York, Macmillan).
Dueber, B. 2004. An exploration of the literature of instructional technology through citation analysis
Duffy, T. 2003. Learning Sciences and Instructional Technology Interview with Tom Duffy Indiana University Bloomington).
Education, N.D.o. 2004. Classification of Educational subject matter-SA CESM, First Edition Manual in: Education (Ed)
Elen, J. & Clarebout, G. 2001. "Instructional design, towards consolidation and validation", Journal of Interactive Educational Multimedia, 3.
Ely, D. 1999. "Towards a philosophy of instructional technology: thirty years on", British Journal of Educational Technology, 30(4), pp. 305-310.
Graells, P.M. 2004. The Investigation of EDucational Technology
Greaves, D. 2007. Response to Random Acts of Progress, Educational Technology as a Profession
Hargreaves, A. 1996. "Transforming Knowledge: Blurring the Boundaries between Research, Policy, and Practice", Educational Evaluation and Policy Analysis, 18(2), pp. 105-122.
Hedberg, J. & McNamara, S. 2002. "Innovation and Re-Invention: A Brief Review Of Educational Technology In Australia", Educational Media International, 39(2), pp. 111-121.
Hlynka, D. 2003. "The Cultural Discourses of Educational Technology", Educational Technology, July, pp. 41-45.
Hlynka, D. & A, Y. 1992. Postmodern Educational TechnologyERIC Digest EDO-IR-92-5).
Jaffer, S. 2007. Tacit Knowledge- a Literature ReviewUniversity of Cape Town).
Januszewski, A. 2001. Educational Technology: The Development of a Concept (Englewood, Libraries Unlimited Inc).
Jones, C. 2004. Theory and the Practices of Learning TechnologyNetworked Learning Conference (Sheffield,
Kozma, R. 2000. "Reflections on the State of Educational Technology Research and Development", Educational Technology Research and Development, 48(1), pp. 5-15.
Kuhn, T. 1962. The Structure of Scientific Revolutions (Chicago and London, University of Chicago Press).
Lellatchitch, A., Mayrhofer, W. & Meyer, M. 2001. The Field of Career; towards a new theoretical perspectiveEuropean Organisation Studies Group 17th Colloquium "The Odyssey of organising" (Lyons, France,
Luppicini, R. 2005. "A Systems Definition of Educational Technology in Society", Educational Technology & Society, 8(3), pp. 103-109.
Macdonald, K. 1995. The Sociology of the Professions (London, SAGE Publications).
Merrill, D., Drake, L., Lacy, M.J. & University, J.A.P.T.I.R.G.a.U.S. 1996. " Reclaiming Instructional Design", Educational Technology 36(5), pp. 5-7.
Moll, I., Adam, F., Backhouse, J. & Mhlanga, E. 2007. Status Report on ICTs in Higher Education in South Africa SAIDE .
Moses, I. 1990. "Teaching, Research and Scholarship in the Different Disciplines", Higher Education, 19(3), pp. 351-375.
Oliver, M. 2003. Community, identity and professonalisation: are learning technologists a community of practice? in: Cook & D. McConnell (Eds) Communities of Practice: research Proceedings of the 10th Association for Learning Technology Conference (ALT-J C 2003) (Sheffield, Association for Learning Technology).
Perraton, H. 2000. "Rethinking the Research Agenda", International Review of Research in Open and Distance Learning, 1(1), pp. 1-11.
Reigeluth, C. & Carr-Chelman, A. 2006. A Common Language and Knowledge Base for ID? IT Forum).
Richey, R., Fields, D., Foxon, M., Roberts, R., Spannaus, T. & Spector, M. 2001. Instructional Design Competencies: The Standards ERIC Clearinghouse on Information Technology).
Seels, B. & Richey, R. 1994. Instructional Technology: The Definition and Domains of the Field (Washington DC, Association for Educational Communications and TEchnology).
Strathern, M. 2005. "Anthropology and Interdisciplinarity", Arts and Humanities in Higher Education, 4(2), pp. 125-135.
Surrey, D. & Robinson, M. 2001. "A Taxonomy of Instructional Technology Service Positions in Higher Education", Innovations in Education and Teaching International 38(3), pp. 231-238.
Webber, S. 2003. "Information Science in 2003: A Critique", Journal of Information Science, 29(4), pp. 311-330.
White, S. & Liccardi, I. 2006. Disciplinary differences– Frameworks For Better Learning DesignProceedings of IEEE ICALT2006 - The 6th International Conference on Advanced Learning Technologies, (Kerkrade, The Netherlands,)
Whitley, R. 1984. The Intellectual and Social Organisation of the Sciences (Oxford, Clarendon Press).
Whitworth, A. & Benson, A. 2004. An e-learning research agendaEngineering and Physical Sciences Research Council).