

From Distance Education to e Learning: Philosophical and Design Imperatives

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Abstract

The questions addressed in this paper stem from the paradigm shift which engendered 'life long' learning. Distance Education models and e Learning practice share the philosophical framework of Open Learning. The design imperatives of e Learning have been shaped by ICT. The divergence as a design imperative is of relative significance. The principle of 'theory neutrality' in designing reusable learning objects is questionable from the viewpoint of instructional efficacy. The paper argues that scope and sequence are significant factors in the process of designing learning objects. They determine the bonding characteristics of the objects and thus dictate the manner of their reusability.

Key words

Distance education, open learning, lifelong learning, ICT, e-learning

Introduction

This paper addresses the issues of convergence and divergence between the Distance Education models and e- Learning practice. The complexity (and therefore the interest) in these issues stems from the fact that both share the same point of origin. They have been engendered by the Open Learning philosophy. The paper argues that e- Learning is but a logical extension of the same philosophical framework and the divergence is only a design imperative.

Open Learning: Conceptual Framework

The advent of the Open Learning philosophy and distance education models in the latter half of 20th century spelt a major paradigm shift in the socio cultural and economic connotations of education. Stepping out in the open from the campus-based instructional model into the 'life long learning' mode triggered many changes in the strategic and operational aspects of instruction. In addition, it altered the perceptions and roles of the teacher and the learner in a fundamental way. Distance education models address the conceptual rubric of 'life long learning' through

Openness (in terms of access)

Flexibility (in terms of time, geographical boundaries and learning pace/styles)

The systemic approach to curricular and instructional design resulted in

Integrated self instructional materials (Rowntree, 1986)

The notion of 'dialogue' and collaboration in learning (Evans and Nation, 1989)

The move away from the uni-directional 'acquisition' to multi directional 'guided discovery' as the preferred learning methodology (Laurillard, 1995)

The notion of 'dialogue' is relevant to this discussion in so far as it introduces and advocates the idea of a dynamic learning community. The methodological practice in Distance Education institutions (single mode and dual mode) has brought into focus, albeit in a seminal form, the concept of a network of learners engaged in the negotiation and construction of knowledge as opposed to a group of uncritical accumulators of content/knowledge.

The recognition of learner autonomy and as result interaction or dialogue as the preferred mode of teaching –learning transactions are two major developments emanating from the Distance Education models. The teacher's role here is to construct the world the learner interacts with, to set the tasks and to guide, advise and comment on progress. Hence the teacher's role has moved away from that of a 'storyteller' to a 'collaborator' in the learning experience.

Distance Education: Operational Aspects

The selection and integration of media formats played a crucial role in effecting this change of roles and approaches. The varied use of analogue and digital media including teleconferences and online discussion forum established and sustained this transition. In typical terms, an illustrative case reads as follows: the introductory aspects of a course sent out in paper-based self instructional material format followed by a face to face meeting and/or a conferencing system as a vehicle for participatory activities/tasks lasting 6 –10 weeks. (Anderson, 1999)

The major variants of the participatory, learner-centred instructional practice spawned by the Distance Education models may be summarised as

Collaborative distributed problem solving (where course participants work in small groups to define a problem which is amenable to group work)

Cooperative distributed problem solving (where a learner group defines an agenda for carrying out an assignment chosen by themselves in consultation with the tutors/peers).

Distance Education models are characterised by

Large scale development teams

Wide distribution of the systems

Problem-solving orientation

It is true that e-Learning shares these characteristics entirely. The factors mentioned above have taken a clearer, more evolved shape as the hypertext structure and the medium of the WWW have given a fillip to the practice of collaboration and problem solving (McConnell, 2000). Many cases of co-operative learning environments supported by Lotus Notes and Web CT can be cited as illustrations in this context. It is therefore reasonable to argue that e-Learning is an offshoot of Distance Education practice while its additional dimensions result from the impact of ICT.

The design practice of e Learning: Adoption and Innovation

By definition, e-Learning as a medium has evolved out of the widespread use of WWW for self-paced training/learning – as a natural extension of the Distance Education models. This argument is supported by the fact that the following marks e-Learning practice:

The adoption of the 'course team' approach from the Distance Education models for the design and development of courseware

The emphasis on building a 'dialogue' with the learner group through technology-driven interactive elements in the courseware

The affordance for interaction, discussion and collaboration in learning through instructional design elements.

The principal point of divergence which is taken up for this discussion is the notion of non-linearity in e-Learning. To elaborate on this point a little further, the self-instructional materials of the Distance Education models have been linear. Print is essentially a linear medium. Print has been the mainstay of the Distance Education models. Other analogue and digital media – while used to complement or supplement the main medium – do not detract from the linearity in the narrative structures or the design. This is true even of the ‘integrated’ materials design principles of the Open University, UK. However, non-linearity in design is one of the significant claims of e Learning as a training/learning medium. There has been a range of assumptions and arguments regarding the generic structure of the World Wide Web as a medium for information access and learning. On the one hand, it has been pointed out that the associative engine inherent in the hypertext structure dictates a non-linear format. On the other hand, there is the current debate on the design parameters for learning objects. This paper argues that the popular metaphor of ‘Lego’ blocks used in conjunction with learning objects (as a highly desired format for e Learning design) disregards the fundamental principles of instructional systems design.

The object-oriented paradigm of computer science drives the design parameters governing learning objects. Reusability is the core of learning object as a design option – the other aspects including non-linearity, generativity and adaptivity – stem from this primary principle. In order to be reusable the learning object needs to be ‘combined’ with other objects to make an ‘instructional block’. According to <http://www.lego.com/> six of the standard 2*4 blocks can be combined in 102, 986,500 ways. This is the basis for the ‘theory neutrality’ of learning object design principles. Consider this in view of the assertion: narrative structure is fundamental to comprehension (Mandler and DeForest, 1979). Further research proves that comprehension and learning can/will be undermined in certain forms of multimedia where a clear narrative structure is absent (Plowman, 1992). This contradiction points to a problem. Can we combine any learning object with any other and create curricula and courseware? One would think not.

The problem with the hypothesis of ‘theory neutrality’ of objects and the resultant pointer to absolute non-linearity in courseware development is that it does not focus on two important aspects of instructional design – scope and sequence in object properties and behaviour. The scope of an object determines its size. Its internal sequence dictates how it allows itself to be combined with other objects. It is for this reason that the metaphor of an atom (Wiley, 2000) scores over the Lego metaphor. It is important to note that

Not every atom is combinable with every other atom

Atoms can be assembled in certain structures prescribed by their own internal structure

Some training is required in order to assemble atoms.

Here is a diagrammatic representation of the two metaphors:

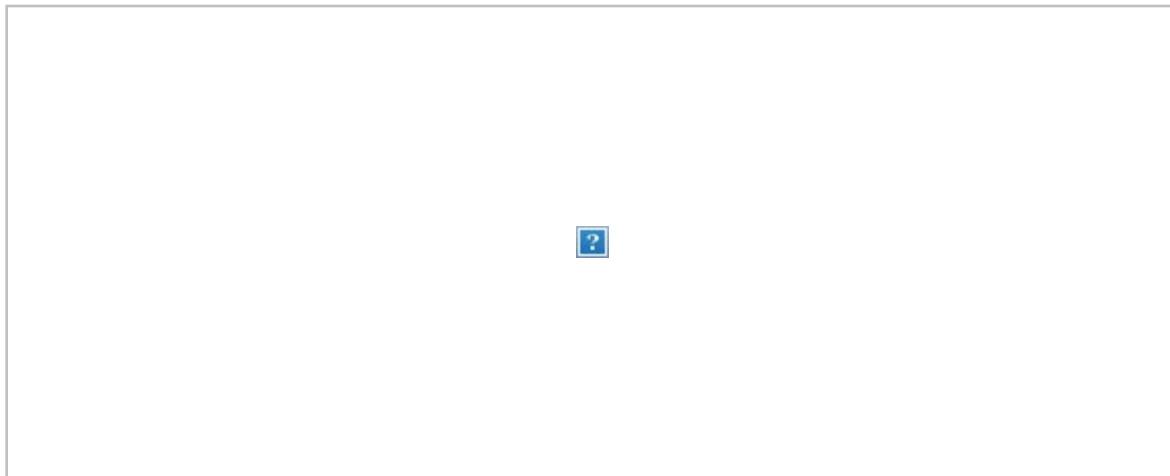


Figure 1: Learning objects: the LEGO metaphor versus the atom metaphor

While departing from the current claims of software vendors and standalone bodies such as Learning Object Metadata Working Group, Wiley’s perspective on learning object design is more in line with the work in the domains of instructional design theories (Reigeluth, 1999, van Merriënboer, 1997).

It is true that learning through ‘discovery’ and ‘guided discovery’ is best supported by formats with ‘interactive’ elements – whether it is a field trip, the laboratory practical, the home experiment kit or a simulation. The learning process is complete only when it takes the sum of the parts into account. Therefore the learning architecture must reflect a logical construct – no matter where the parts fit into it. The answer to the question ‘how’ they fit must be provided.

The bonding rationale and the internal logic of a given object thus become crucial elements, which represent the fundamental principle of systems theory on which instructional design rests.

While the philosophical framework of 'openness' and 'flexibility' supports Distance Education and e Learning models it is imperative to take into account that the theoretical structures of sound instruction need to be kept in focus at all times. The concept of 'Shareable Courseware Object Model' and the current work in learning object design take e Learning (as a medium) to a far higher level of technological sophistication. However the technology cannot override the instructional rationale underlying curricula which dictates that only certain courses can be combined to make a programme of 'n' credits. This is relevant to the context of combining 'learning objects' to create bespoke courseware.

As the learning environment changes with the technological developments and the dynamic demands of a knowledge-based workforce, granularity (and thus reusability) has emerged as a significant design consideration. This promotes a combination of cognitive and constructivist models of learning (Duffy & Cunningham, 1996). It is a major step forward from the very first version of self-instructional materials based on the behaviourist and cognitive models (outcomes-based curriculum design practices).

However, the constructivist point of view depends on the inherent logical structure of the whole – while the parts (learning objects, in this case) are contextualised to a degree that their scope and sequence are clearly determined.

Conclusion

If Distance Education models brought in a learner-centred, outcomes-based curriculum design practice, e Learning practice nurtures the constructivist learning environments.

The hypertext structure, the 'reach' of the WWW and the training needs of the knowledge-based workforce have taken the teaching-learning far beyond the confines of the campus and the academe. Instructional content now resides as a joint property of the designers/trainers, the learners, the publishing industry and many other stakeholders.

Let us consider this statement made in the mid 90s on e publishing: publishing ... 'is no longer a river in its own right but is just a current in the digital ocean. Once we drop the idea of discretely bound and sold sheaves of glossily processed wood pulp from the model, what do we have left? Anything useful? From the reader's point of view, it's useful in much the same way that a paper magazine is: it's a concentration of the sort of stuff she's interested in, in a form that's easy to locate, with *the added advantage that it will be able to point seamlessly at all kinds of related material in a way that a paper magazine cannot.*' (Adams, 1995)

The future of e-Learning practice points to a context where learner-centredness and self-direction in learning will be demonstrated perhaps to its fullest potential. Courses can be created and configured 'on the fly' from a host of available learning objects. There is a clear potential for creating a vast and rich library of resources from which the teachers, the learners and the designers can draw information/knowledge.

In order to realise this vision it is imperative that e-Learning practice should remember the lessons learnt from its predecessor – the Distance Education models. It is dangerous to consider the design and development of e Learning products from the business and technological points of view alone. This short paper argues that e-Learning practice –while technology savvy – is still about the dynamics of teaching-learning and therefore sound instructional design theory should be its foundation and the primary building block.

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