
Hypertext and Learning: A Conceptual Approach to Digital Pedagogy

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This paper explores the possibilities of digital technology in pedagogy and educational planning. Hypertext/hypermedia and its use in teaching-learning process are discussed to understand the modern methods of knowledge construction and knowledge transference. Conventional pedagogy under pins a linear kind of knowledge transference, whereas in hypertext, knowledge is transferred in a non-linear mode. Studies show that hypertext can be extensively used in pedagogy. As a case in point this paper examines the use of hypertext in medical education.

Keywords: Hypertext, Courseware, Net Learning, and Digital Pedagogy.

Introduction

The dawn of twenty first century opens new vistas in creativity and innovation in teaching learning process. This is happening as a result of the introduction of technology in education process, especially ICT. Introduction of ICT in invigorating pedagogies across curricula has become the focus of researchers at present. Digital pedagogy has opened up new areas of structural frame work in all disciplines and branches of knowledge. The importance of ICT as such has created new concepts and visions and the world now, we live in is literally called a world with multiple knowledge societies. Knowledge is constructed and transmitted through innovative technological contributions, which promoted to the development of a networked society. Herein, knowledge is generated and transferred with the help of new technologies in information processing. This paper attempts to present a descriptive study of constructive technologies for the use of classroom learning, giving particular focus to hypertext or hypermedia as it is called. Of the many net-Learning systems, the role of hypertext creation and writing has now paramount importance in designing digital tech-pedagogies. Hence, the basic research question in this paper will discuss the techniques of hypertext creation to make it useful for teaching learning process. Hypertext can be applied in all disciplines and the case in point will be from the field of medicine.

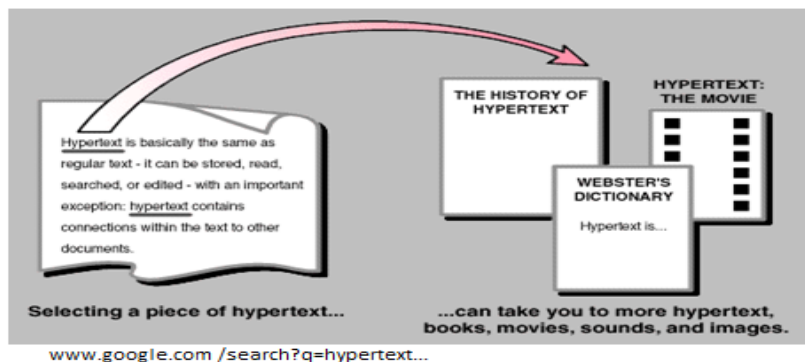
Background

The notion of hypertext and the other forms of representation in a hypermedia environment are not discussed in extenso. However, many conceptual and empirical approaches to the study of hypermedia have been developed by researchers. In the year 1965, Theodor H Nelson coined the word 'hypertext'. The idea of a machine aided hypertext like system originated in the minds of Vannevar Bush in the year 1945 itself. Thus, Bush and Nelson showed the method of hypertext creation for individual demands.

Thereafter, the production of hypertext (HTML editors) became so easy and it was applied in teaching and learning extensively. Another major contribution is from Dillon and Gabbard in the year 1998, who compared hypertext with traditional texts and exhibited the methods of better learning outcomes from hypertext. Hayes and Flower developed a model of hypertext in which authors can engage in three types of activities, ie; text interpretation, reflection and text production. It was Bereiter and Scardamalia who developed a generalized approach to the writing of hypertext. They pointed out three basic features of the hypertext such as writing nodes, establishing links, and the total structure of the hypertext.

What is hypertext?

Hypertext is a digital text to store information in its multiple facets without any linearity as in the format of a traditional text. Hypertext keeps information in a non-linear method wherein information is linked in a hierarchical manner. Multiple informative 'links' are provided in a text wherein the reader can choose varied information at the click of mouse at the same point of time. As such, information is not subjected to linearization and no priority presentation or information in order is brought about in a hypertext.



In simple terms, "hypertext is a concept of information management in which data is stored in a network of nodes connected by links" (K.Tochtermann). Hypermedia or Network based learning has now developed many platforms for education purpose. There are eduwares, such as the Moodle, Podcasts, Weblogs, Blogs, RSS, SMS, MMS, .com crash like google, ebay, with World Wide Web are the best examples. And the new generation will witness many more eduwares acting as the tutor, tutee and the tool in the classrooms. One cannot limit the technological advancements by suggesting only such examples, but explore the possibilities of each one of them in developing the software environments for the benefit of knowledge construction. So looking for a further development in eduwares and teaching modalities, this paper highlights

some of the effectiveness of hypertext in teaching and selecting and sampling medical science as the case in point.

Hypertext and Pedagogy

Technology for pedagogy is a long drawn-out idea ever since 1960s. ICT for teaching /learning purposes was conceived during the communicative language teaching renaissance itself. Afterwards, it was adopted by almost all disciplines as a pedagogical tool. The new generation of learners with their amplified interest in computer and net Learning welcomed a paradigm shift in pedagogy and the teachers were forced to equip themselves to face the new challenges in the field of teaching/learning process.

Because of this new change, a lot of network-based teaching concepts and practice obtained wide currency in education. During 1960s itself new terms and concepts such as computer assisted instruction, computer-based learning, courseware was coined by experts in the field. During this period, itself the benefits of hypermedia based educational software were realized and educational institutions started exploiting the benefits of network-based learning.

Hypertext and the Learner

The question of how we make use of hypermedia for teaching/learning process in the medical discipline will be examined in this paper as a case in point. The traditional classroom teaching and the reading from huge volumes of printed materials in the Medical institutions often drag the learner to drudgery and boredom. The medical content material with its nonlinear arrangement and its inter textual links draws the learner to motivation, creativity and initiative in learning. The learners of multiple intelligences can make use of their inherent capacity in learning by exploiting the hypertext links. All types of learners, for example, visual, kinesthetic, etc can convert learning as a meaningful experience in a technology bound learning environment. Most of the materials will be interactive and effective applications of computer-based instruction can be served.

Some of the basic features of the hypertext may be examined so as to assess the effectiveness of the use of hypertext in the classroom. If learning is to be effective, there should be meaningful choice of materials and content for comprehension. Hypertext will provide flexibility in accessing the knowledge according to the need of the study. The student can control the learning process based on his interest and motivation. The hypertext reader can choose and find his own methods and ways of pleasure and entertainment in selecting the knowledge required and can easily assimilate the required content. Further, a hypertext learner can accumulate information on a particular topic from various perspectives. It becomes then quite common that a learner turns into a researcher throughout the period of study.

A hypertext learner becomes a global learner instead of a narrow book- canvas learner. Multiple texts are available to him at the same point of time and he could navigate through multiple frames of information. And at the same time, more metacognitive requirements are demanded from the learner that he has to select, process, assimilate and scroll through the required text. The learner becomes a macro learner and not confined within the walls of the classroom.

Hypertext and Medical Education

This paper discusses the use and applications of hypertext in medical education. It has been reported that researchers in hypertext for the benefit of medical diagnosis and its effectiveness have not been much identified so far. In the conventional medical diagnosis, the physician gathers data and uses it for hypothesis and arrives at decisions. Thus, it becomes a deductive kind of clinical diagnosis using physical examination, laboratory analysis and analyzing the history of the patient; wherein a schematic and linear type of information gathering process takes place. In such diagnostic practice, the physicist is not able to hold multiple hypotheses at the same time because the human brain cannot hold multiple hypotheses at a juncture which creates complexity for diagnostic purposes. Most often, if a poor unskilled doctor collects irrelevant data and improbable hypotheses that may deter a proper medical diagnosis. In computer assisted clinical diagnosis, such problems will not occur. In hypertext, a number of nodes may provide the symptoms of the disease, laboratory findings, physical exam findings, related experiences of other doctors, research studies, etc, which are linked by specific patterns for a particular detection of disease.

At the touch of a button, after recording the specified symptoms and navigating through the links will provide the Doctor all information and diagnostic solutions. As for example, when a patient approach with joints pain, it might be examined and can be linked in comparison to various other symptoms and tested so that the possibility of multiple diseases can be identified easily.

By way of entering 'joints pain', the pattern in the hypertext will show many numbers of associations of joints pain with diseases such as arthritis, meningitis, malaria, fever, etc... or less likely diseases. However, it may not show any pattern probability with gastro-enteritis or cataract, or with no way related diseases. So, such pattern findings, identification and diagnosis will be more scientific and meaningful in hypermedia and related expert systems.

Another focus of the intended study is on the pedagogic systems in medical profession and the use of hypertext in context. Professional education, especially in medicine at present is not prone to any dynamic or creative teaching methodologies; since doctor-teachers are not professionally trained in the art of teaching.

Hence, teaching-learning process becomes non-attractive in medical education. Therefore, the introduction of hypertext-based teaching may generate new eduwares consisting of multiple courseware and technological systems for the learning space of the classrooms which are attractive, creative and innovative. This new hypermedia- approach will be vibrant, productive and motivating for generating new learning environment in medical education in Kerala, India.

The varied facets of hypermedia show animations, illustrations, audio and video that make learning process pleasant and effective in the classroom. It can also create lively situations and real-life-learning situations. The digital hypermedia-teaching situation becomes a powerful tool as it gives more meaning and authenticity for learning materials. It can be used for any process teaching or procedural teaching. In order to explain a procedure, hypertext can present photos, animations and simulations that may help to demonstrate and illustrate the teaching/learning procedure. Such types of modalities of ICT technological tools for medical education can be exploited widely.

For example, hypermedia can be utilized for heartbeat measurement, recording images; taking medical pictures in context that serve as guides to procedural learning. A learning module for measurement of medical data and procedure of diagnosis can incorporate pictures and animations that enlist the real situations of the heartbeat, blood pressure, lung functioning, etc. In such situations, the learners can adopt a self-directed and experiential learning.

Conclusion

In a period of globalization, scholars, learners, policy makers and curriculum planners opt for an ambivalent attitude towards advanced pedagogies. Advanced pedagogies exploit both conventional and traditional standards and that of the digital technology. In a techno bulged world, both synchronous and asynchronous methods of knowledge gathering are adopted. Curricula across the world advocate dialectical interactions, digital discourse, self-directed learning, experiential approaches and advanced dialogues within the classroom boundaries. Innovative ideas for bridging the gap between the conventional and glocalised approaches in teaching have contributed to hypertext/hypermedia in edu-technology. The future of educational planning will be mostly controlled by scientific innovations for the new generation learners.

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