"NAVIGATION" STRATEGIES IN THE INTERNET ERA: A SYSTEMIC / CYBERNETIC APPROACH

IOANNIS I. KEKES

University of Athens 15 Navarinou , Athens, Greece
ikekes@primedu.uoa.gr

Abstract

In this paper the issue of the didactic utilisation of the internet is investigated. The didactic value and the communicative effectiveness of the sources of information interspersed in it are examined, particularly in relation to individual learning. The determination of the most important strategies employed by both learners and teachers, when navigating on the internet, is an issue of interest as well.

INTRODUCTION

The internet as a learning environment

Nowadays it is widely believed that surfing (search, "navigation") in a well organised multimedia educational application is an interesting and a fruitful experience from a didactic point of view. One can "retrieve" from various sources, observe for as long as they wish, even print images and tests related to the topic they do research on or wish to know more about. Moreover, one can follow their own personal course while searching, a kind of "surfing" that enables one to "plunge in" when they feel there is reason for a deep investigation.

According to this general reasoning, the internet acquires a unique didactic function, especially as an easily accessible "store" of multimedia and hypermedia material. Obviously, in the framework of such a consideration, almost all advantages and disadvantages of the use of new technologies in education must be attributed to the internet (see also Raptis & Rapti, 2004). However, such a perception of the internet seems to be particularly restrictive, as through it, the internet is perceived as a medium, a huge CD-ROM with huge capacity and the ability of immediate updating.

The issue seems to be more complicated though, as the internet has additional characteristics and therefore its effect on the learning process must also be different. At this point, we could query what and how one can learn by searching for information, or more generally, by surfing on the internet; in other words, to what extent can internet access be considered as a learning experience. The internet, by its "nature" and operation, can support and contribute to the development of various learning methods, such as:

THEORETICAL BACKGROUND:
Learning by doing - Learning by reflection - Case- based Learning - Learning by exploring - Incidental Learning

This procedure of individual learning, as demonstrated with the use of the internet, is directly related to the learner's attitude and motivation during "navigation" on the net. It seems that they find particularly "stimulating" to be given the opportunity to interact by distance and have access to a huge volume of information with which they can dynamically interact. The researcher D. Perron (Calvani, & Rotta, 1999) after observing his students' behaviour and the expectations in the information technology classes (Mount Alisson University, Canada), determined two basic categories based on behaviour: learners and adventurers. The former were specifically interested in searching for information and acquiring knowledge; the latter were mainly interested in experimenting and enjoying the novel learning experience and for them the procedure was particularly successful. From another point of view, P. Foltz (1996) also seems to attest this general categorisation by means of his own research on the use of the hypertext. He found out that during the search – exploration in an environment with various hypertexts, the learners who had set specific and clear goals were restricted to very few links and web pages while those who set more general and less specific goals tended to explore more freely the environment in which they "surfed".

Based on these two first findings **one may assume that the internet facilitates incidental learning** and this is directly related to the general strategy chosen by the learners while surfing in an environment of information. This makes it necessary for us to further consider the way and the degree of interaction between the "public" and the information units in environments that are barely structured, while at the same time they provide a variety of possible choices. In other words, it looks like a course in a vast and unexplored space which we try to access from the ground. Of course there may be advantageous points of observation (e.g. a rise in the ground) or in some extreme cases we may be able to "fly" above the "ground"; however, we usually have to move knowing very little as to where exactly we need to go and "identifying" the area step by step. **This is a particular "geographical image" of the internet** which, in our opinion, is a useful metaphor for approaching it in the first instance. In any case, one needs to "survey" (standardize) the complex environment in order to understand it better, without missing A. Korzybsky's (1942) realisation that "the map is not the ground".

Various museums in the USA and Canada that conduct surveys regularly among their visitors, tackle touring not based on the parameters of socio-economic origin or culture but rather on the basis of their general attitude to and relationship with the museum environment, (Calvani, & Rotta, 1999). According to this approach (based on the length of stay too) they are divided into:

- "Runners", those who move fast in the museum areas without spending much time in front of the exhibits and without being interested in reading or hearing the information available.

- "Wanderers", those who devote more time to the visit but move driven by the curiosity of the moment without having a structured plan or clear goal in mind.

- "Readers", those who devote considerable time to the visit, read and listen carefully to the information given and consider this experience important for their education.

- On the other hand, surveys conducted at the Georgia Institute of Technology, Atlanta (Catledge, & Pitkow, 1995) aiming at studying the behaviour of users in relation to the "navigation" strategy they choose, while searching the internet for information, rendered a similar grouping in three categories; this grouping is significantly equivalent to that of museum visitors:

1. Browsers
2. Those who Serendip
3. Searchers

These surveys as well as others that followed (Kekes, 2001) showed that each internet user category employs a different strategy to deal with the issue of information search, which cannot be irrelevant to the quality of search and the significance of the results. Actually, the idea that **each strategy developed for the "navigation" on the internet corresponds to a learning strategy** is widely supported (Calvani, & Rotta, 1999).

What has been mentioned above does not mean that incidental learning is probably better than learning by means of systematic research; nor does this categorisation exclude the existence of "mixed" types, or even the possibility of a flexible strategy which changes during the "interaction" with the internet. On the contrary, we believe that **the philosophy and network structure of the internet favour and rather impose its non linear consideration, which allows a more effective "interaction" given its ambiguity and complexity**. In this line of reasoning the internet seems to be a privileged area, for both those who are attracted by the "primitivism" and the challenges of incidental learning, and those who deem that organised and systematic search for information on the internet may significantly extend the limits of learning.

Besides, it is true, in specific teaching processes where one needs to do literature research or to immediately have access to a significantly large amount of specialised information, the internet provides incredible opportunities. In any case, a very important issue arises; the issue of the validity and reliability of the internet "sources", general legislation on which seems to lie a long way ahead. Many researchers believe that there is a great need (a requirement to survive on the internet) to develop learners' critical thinking, even if this to be in the form of compulsory training (Kling, R., 1996). The need for critical thinking is demanding both at the stage of information search and the stage of selecting and classifying it.

In reality, however, the broader internet space, as it is today, as well as its already visible extensions, is a field where two factors constitute the **critical loop of two-way feedback** which determines learning through its use. One the one end there is the user, who is here considered as a bio – psycho – social system which is cognitively - self organised (in the sense that he, himself has to confront – to a great extent - knowledge and information, usually without the counterbalancing intervention of the experienced teacher in the classroom) (also see Kekes, 2000) and on the other end, the response of the system "internet" to the specific search – knowledge strategies the user decides to employ.

Dimensions of the interactive process between the learner and the new environment:

Is it an utterly new educational environment or is it just a "technological transformation" of the old one? The answer to this crucial question presupposes the description and the understanding of the basic elements that compose the new reality. In this sense, our consideration is organised around four groups of concepts, ("dimensions") that on the whole determine **the interactive relation of the learner with the technologically supported learning environment:**

A. The "technological dimension": During the last 50 years, more and more scientists coming from various fields of research tend to agree that the whole of the "reality" around us, which we strive to get to "know", cannot be explained in simple, based on the concept of time, terms of the natural law and order. As computer science becomes more and more accessible to these scientists as well as to many other people of all age and social-economic class, the supposition mentioned above is further verified; this world is not linear and specific it is not described with symmetric equations and algebraic approximations. On the contrary, it is an incredibly complex series of interdependencies, where the slightest change in a remote spot affects the whole of the system. What is shocking about the internet is that it allows a huge number of users to access situations, information, and sometimes even "virtual" experience, that in the past were only available to few and specially trained people. In a "Systemic / Cybernetic" (see Kekes, 2001) consideration of the internet, the prevailing concepts are those of communication and control. It is here, in our opinion, where a fundamental difference between internet and real environment lies. Specifically, the "conquest" and familiarisation with the natural environment was set off because of the need to "control" the people and the natural parameters, and later the idea of "communication" between them was promoted as a counterbalancing factor. This constant battle for balance, according to others a battle for an "interaction" between "communication" and "control" will determine in the near future the function and usage of the internet, particularly for educational purposes. No matter what the course of events will be in the future, no one is entitled to disregard the fact that the internet and its services lie next to us and soon will "demand" that we exist within them.

B. The "commercial dimension": Undoubtedly, the internet today is a privileged area for commercial transactions. The commercial dimension of the internet has some advantages as well as risks. The advantages are related with the variety of the educational services and products provided, as well as "customer care", to the extent and according the philosophy it is perceived by the system's "owner". In reality, there is a tremendous shift from the supposedly "innocent" state agent that has "undertaken" education as a project, operating with the logic of a "monopoly" where, usually, the writing up of the educational material and, its verification (according to given specifications) and evaluation, was always part of a unified procedure by the same agent and with given "customers", in a commercial logic, where "customer chasing" determined the selection criteria. It should also be noted that, on the internet, there are still several categories of institutions or individuals that operate as "missionaries", creating and supporting quality zones of educational material that meet purely pedagogical criteria.

C. The "communicative dimension": The third important dimension of the internet is the "communicative" dimension. The accessibility to information, knowledge and experience is, indeed, significant and it tends to increase. Of course, none of this generation of educators has fully become familiar with this reasoning, in contrast to their students, who (not in a few and negligible cases) seem to think of their computer keyboard as an extension of their body. Undoubtedly, there is a difference in "phase" concerning our familiarisation with technology and the rate at which it develops our communication codes.

D. The "human dimension": Learners (as well as their teachers), have different ways of learning, in that they have favourable "routes" to receiving and processing information. Some are interested in facts, data and algorithms, others feel more comfortable with theories and mathematical models. Certain people prefer the "visualised" representation of information (images, shapes, diagrams), while other people favour verbal presentations and written or oral performance. Finally, there are those who trust procedures that involve action and interaction more, while others are attracted by an introvert and individualised attitude towards the learning process.

CONCLUSIONS

In this learning adventure, in which all parties are supposed to participate with interest and effectiveness, factors that are related with purely biological issues (brain, senses, chronobiology, etc), psychological parameters and social situations concerning both the learners and their educators, are involved. It is a highly complex issue (Kekes, 2001), which becomes even more complicated, unless all participants, who are perceived as self-organised bio-psycho-social cognitive systems, contribute to it, in a Systemic / Cybernetic perspective. If we add to the above the necessary, as it seems, co-existence with the computers and the "revolutionary" logic accompanying many of their applications – which are mostly non linear -, then we may realise how interesting it is to find out what are the methods each one of us chooses to receive (or even to communicate) information, in other words, to "navigate" and interact on the internet.

Finally, it is imperative that we identify (not in the sense of the term in the times of explorations and discoveries) the limits, the restrictions as well as the facilities provided by the internet, not aiming at survival but at the functional co-existence with it, by considering it as a dynamic, non-linear and constantly developing cognitive, information environment. We are, indeed, obliged to navigate in this environment, deciding, sometimes by ourselves, other times as members of a structured group, our strategic decisions and tactics, in a world which is identified by complexity and ambiguity and for which the rules of operation are continually shaped and recomposed.

BIBLIOGRAPHY

Calvani, A. & Rotta, M. (1999) Comunicazione e Apprendimento in Internet, *Roma: Centro Studi Erickson.*

Catledge, L. & Pitkow, J. (1995) Characterizing browsing in the World Wide Web, In Proceedings of the Third International World Wide Web Conference.

Foltz, P.W. (1996) Comprehension, Coherence and Strategies in Hypertext and Linear text, In Rouet, J.-F., Levonen, J. J., Dillon, A. P. & Spiro, R.J. (Eds.) Hypertext and Cognition. *Hillsdale, NJ: Lawrence Eribaum Associates.*

Kekes, I. (2000) Anaptixi Pliroforikon Systimaton gia Perivallonta Ypsilis Polyplokotitas kai Asafeias: Ekpaideftikes Proektaseis, Minutes of the 2nd International Conference "The New Technologies for Society and Culture" organised by the Research Centre for Science and Training, Athens (In Greek)

Kekes, I. (2001). Systimiki Prosengisi kai Kyvernitiki: Ta Dianoitika Ergaleia stin Epohi tis Polyplokotitas, *Minutes of the International Conference "New Technologies in Training and Distance Training" organised by the School of Education, University of Crete, Rethymnon, Atrapos. (In Greek)*

Kling, R. (1996). Computerization and Controversy: Value Conflicts and Social Choices, 2nd ed. New York, Academic Press.

Korzybski, A. & Kendig, M. (1942) Foreword to General Semantics Monograph III, A Theory of Meaning Analyzed, Lakeville Connecticut, The International Non - Aristotelian Library Publishing Company.

Raptis A. & Rapti A. (2004). Mathisi kai Didaskalia stin Epohi tis Pliroforias, *Athens (In Greek)*