Designing Virtual Learning Environments for Academic Language Development

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Introduction

Educational programs for on-line learning are constantly increasing in numbers and sophistication. Both in USA and in Europe this is the case. It is worthwhile to consider whether small European countries like Greece represent a good indicator for tendencies that are valid beyond the metropolitan centers and might thus reflect broader and more enduring educational, linguistic and social shifts. Furthermore, conferences of IT specialists who are active in educational contexts offer a more or less detailed picture of the specific issues that are central in educational research and practice and mark tendencies. In September 2002 a conference of IT scientists who are involved in education took place in Rhodes / GR hosted by the University of the Aegean. In a series of presentations from Greece, Europe and overseas the contributors demonstrated a clear interest in shaping IT in ways that would facilitate knowledge generation now and in the future.

If there is a main tendency to be pointed to, this is the attempt to articulate an accurate pedagogical framework. It is like having the technology searching for pedagogy, but having pedagogy not automatically emerging out of concrete IT educational projects.

We argue here that the effectiveness of IT educational applications can be coherently addressed only in relation to the potential of IT within particular pedagogical orientations.

A

Making the pedagogical orientation of an educational project explicit does not limit itself to the implementations of IT, but it is a necessary question referring to all kinds of programs that carry a promise of educational reform (Cummins 2002, Wells 1999, Skourtou & Kazoullis 2002). What creates the need for explicit pedagogical reference

of an IT project, however, is the unequal relationship between the wide range of technical options and the relative poor educational results regardless of the technical means (Cummins 2000,). It is like having the technical part of IT developing very fast and the educational part following slowly far behind.

This is our staring point: the need to reverse things and develop explicit educational goals at the beginning of any IT application. To do this there is a need to make clear which are the options available in reference to IT and which are the options concerning education. Starting with technique, the following points are important for education as well as for the communities involved. There are a series of possibilities and a series of changes taking place that represent new ways of 'knowing' (Wells 1999). The most general of these are: (a) technology getting cheaper and easier to handle and (b) having different language fonts available and combinable with English fonts. Both these possibilities bring IT to remote places and 'remote' languages. Also, in reference to technique, there are a few other points that relate to the ones mentioned here: (a) the availability of multiple resources, which means multiple resources in multiple languages; (b) simulation, which means adding 'realism' to the lesson; (c) the combination and synthesis of information, i.e. the possibility to make a synthesis of features that at first sight appear to be 'foreign' to each other, (d) possibilities for the student to become a teacher, i.e. the possibility to use former knowledge and skills and (e) necessity of the teacher to become an 'inquirer', i.e. to initiate his/her own inquiry aiming to improve his/her own knowledge and the effectiveness of the students' activities (Wells 2000, 2000a).

B

Several authors offer a classification of distinct pedagogical orientation (e.g. Kalantzis & Cope 2000, Cummins 2000). According to Cummins, the main pedagogical orientation behind any educational IT application is threefold: traditional, progressive / constructivist, and transformative (Cummins 2000). These orientations are distinct from each other, especially as regards the distance of traditional pedagogy from progressive and transformative pedagogies. The orientations seem to move away from traditional towards progressive / constructivist approaches. The challenge seems to depend on two things: (a) how far the students can reach within their ZPD (zone of proximal development) (Vygotsky 1978) and (b) the possibility of extending progressive / constructivist orientations to more transformative ones (Skourtou 2002). This step from progressive to transformative is like going beyond the school itself into

the community around it. It entails a potential of applying the skills developed in the context of progressive / constructivist pedagogy to social realities outside the school that are relevant to students' lives. Cummins (2000) points out that most IT educational programs tend to qualify only up to the points that refers to progressive / constructivist pedagogy, while programs that make the step towards transformative pedagogy are more seldom applied.

C

The notion of 'transformation' in the educational orientation is becoming very central in an IT context because it implies that the learner is not merely an information consumer but an acting subject. We will try here to highlight the concept of transformative pedagogy both in the way that learning is occurring in an IT context and in the way that the generated knowledge is applied to a wider social context. It seems that the latter becomes possible when the former is an integral part of the learning process. Gee (2000:54) expresses the same thing in a different way: "…only knowledge that can be extracted from situated sociocultural practices can be spread and used outside the original community of practice". In his approach of "learning through language" Wells (1999) suggests the formation of "communities of dialogic inquiry" where students in negotiation with their teachers plan their "topics of inquiry" integrating their prior or everyday knowledge into the knowing process within the school. The aim is to offer students multiple opportunities to "contextualize learning". In Gee's work the notion of "context" is a central one: Learning becomes meaningful to students when they can create a context consisting out of what they already know and what they are taught. Kress (2000) makes the link between context making and transformation in learning. He refers to transformation as a feature in the learning process, which implies that the learning resources do not represent a stable quantity and quality. In this sense, the individual student is seen as a 'remaker' or 'transformer' of the learning resources rather than as a 'user' of them. Remaking of learning resources, materials or texts is a necessary process that the student has to go through in order to contextualize the content and make it thus comprehensible for him (Wells 1999, 2000). Prior knowledge and contextual support are in this case the means for this transformation. Furthermore, according to Kress, the notion of transformation opposes itself to the notion of 'use'. In a traditional educational framework, the focus is on making students competent in using the possibilities of an 'existing stable system' (Kress 2000:156) without acting upon this system. As user, the student creates the competence of using but not of remaking, reshaping or

transforming learning resources. For second language learners, use in this sense limits the potential to a minimum because practically it does not allows the student to incorporate prior knowledge into the learning process.

Cummins (2000) takes the step that brings the notion of transformation outside the classroom into the community surrounding the school. Transforming according to Cummins means the willingness to make knowledge socially useful. It has to do with social applications as consequence of the outcomes of an educational program. Furthermore, transformation in this sense has more to do with the notions of "design" of one's social future (Kress 2000) and of "critique" (Gee 2000) of the social reality.

D

As we have already mentioned, classifications of pedagogical orientation is have been already made. The common feature in these approaches is that they all stress the necessity for a clear distinction between pedagogies.

We also distinguish three pedagogical orientations but we envisage them rather nested within each other than being apart from each other.
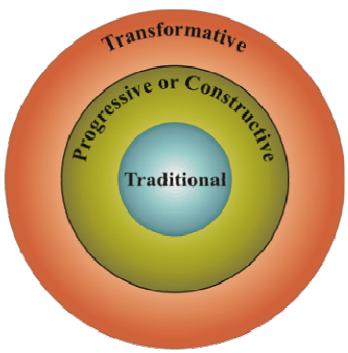

Diagram 1: Pedagogies nested within each other

In the inner circle, with the narrowest focus, is transmission-oriented pedagogy where the goal is to transmit the information and skills articulated in the curriculum directly to students. The middle circle marks a pedagogical space that we term sociocultural/constructivist pedagogy. This orientation incorporates the curriculum focus of transmission approaches but broadens it to include the development among students of higher-order thinking abilities based on teachers and students co-constructing knowledge and understanding. Finally, transformative approaches to pedagogy broaden the focus still further by emphasizing the relevance not only of curriculum transmission and knowledge construction but also of promoting critical literacy among students to enable them to analyze societal discourses and conceptualize forms of action to affect these discourses.

What makes this new approach necessary? To our understanding, features of traditional pedagogy are immanent in all kinds of learning. Both in classrooms that are clearly traditionally orientated as well as in communities of critical inquiry among students and teachers structured guidelines cannot totally be avoided. On the other hand, even in a traditional learning environment spaces can be opened for progressive / constructivist pedagogy. Eventually, the realization of a genuine constructivist educational program incorporates the seeds for transformative pedagogy.

The Situation in Greece

A lot of what is happening in Greece in relation to IT and education is made possible through EU funding. IT is very important in the EU today, as it is a means to *join* different languages and cultures beyond national borders. Thus, it is understandable why there is so much emphasis placed on IT. Edwards (2002) outlines how IT can be used to improve the status of minority languages in Europe.

In reference to IT in Greek schools, there are different levels of activity such as:
   a) the teaching of IT as a subject in schools,
   b) the use of IT as a tool of teaching in other subjects,
   c) the use of IT for administrative purposes (i.e. the design of software for school administration) and
   d) the use in IT in experimental student-centered learning environments, and
   e) the training of teachers through Ministry of the Education programs.

Golemati (2000) found that the majority of uses in Greek schools involved situations (a) and (b) above.

Koutsogiannis (1999) separates the use of IT in Greek schools into three periods:

- The first period (1986-1992) includes the first computer rooms/ labs in approximately 500 schools in secondary education and the use of these labs for the teaching of computer science.
- The second period (1992-1996) deals with the creation of 800 more labs and the inclusion of pedagogical goals.
- The third period (1996 to 1999) deals with: a) pilot studies on smaller scales that include Computer Mediated Communication, b) software for the teaching of specific subject areas and c) in-school training of educators.

An overview of educational applications of IT in Greece as described in conference papers and articles shows three trends:

a) In many cases, there is no reference to any particular pedagogical orientation but assumptions can be made judging by the descriptions. In these cases, the orientation is mostly traditional, but also progressive or constructivist;

b) In cases where reference *is* made to a specific pedagogical orientation, the orientation is mainly progressive or constructivist;

c) There is no evidence of transformative pedagogy stated specifically, although there are many programs that, judging by their descriptions, could be moving towards a more transformative orientation.

Papers written by teachers applying IT to their teaching are traditional if their teaching style *without IT* is traditional. Teachers who have more creative teaching styles, use IT in more creative ways. Koutsogiannis (1999) found that the majority of teachers studied followed the curriculum of the school and used traditional pedagogy. He also found that educators tried to transfer methods in the regular classroom to the new electronic environment. We must remember, however, that these teachers teach within an educational system. As the teachers must follow a central curriculum, there is little space available to do many things differently (Raptis and Raptis 2002). Thus, the space the teachers works in, i.e. the educational system, dictates how they will teach and how they will use IT. Material designed for teachers is also often

traditional. This includes software which are drilling exercises or textbooks on how to use the Internet in the classroom.

On the other hand, papers written by researchers or groups of researchers working with universities and technological centers or as a result of EU projects seem to be more constructivist. Perhaps this is because they have, apart from the know-how, mainly the power (if they are experimental projects funded by the Ministry of Education), to try experimental programs in public schools. Although, there have been great efforts in the last few years to train teachers how to use the computer in their classrooms, this is not the entire solution. Even if teachers know how to use the computer, they must have the right to use new pedagogies in their classrooms. This means that they need to be less confined to a central curriculum. It is believed that IT can lead to different ways of teaching in Greek schools and there are many programs that are geared to this; however, there is an agreement that reform must begin from the active participation of the teacher (Raptis and Raptis 2002, Kazamia 1991, Vosniadou-Kollias 2001, Kynigos 2001, Matsaggoura 1999 and Raptis and Raptis 2001 in Raptis and Raptis 2002a). For example, Vosniadou (2002) describes the program ODYSSEIAS (http://odysseia.cti.gr) as a project geared to: a) the development of critical thinking and b) alternative ways of teaching.

There is little evidence of transformative pedagogy stated specifically. An example of transformative pedagogy is the internet based sister class project DiaLogos, described in this paper. However, there are some programs that, judging by their descriptions, could be moving towards a more transformative orientation. Raptis and Raptis (2002) refer to the project *Island of the Faiakes*[1] (a sub-project of ODYSSEIAS) as "constructive, holistic and to a point, transformative."

In the September 2002 conference which took place in Rhodes / GR hosted by the University of the Aegean and organized by the "Greek Scientific Union of Information and Communication Technology", 154 papers were presented and published in two volumes. This was the third of a series of conferences dealing with Information and Communication Technology (ICT) and education in Greece. Dimitrakopoulou (2002) compares the presentations in all three conferences and

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[1] http://www.uoa.gr/faiakes/800x600/index.html

concludes that the third marks the "beginnings" of new trends in IT applications in Greek education. However, she states, "A new age in Education? Not yet…." (Dimitrakopoulou 2002). Although all three conferences show the plethora of hardware and software being developed, it is unclear how each project fits into the larger picture of education. European Union funding has greatly influenced movement in these areas; however, as Raptis and Raptis (2000a) state, the reason for lack of exceptional change in education is not the lack of funding, hardware or software, but the inflexibility of the educational system. They propose beginning with the teacher and the educational system. The case is that usually IT applications begin with computer experts developing a product rather than educators stating what types of products they need. On the other hand, teachers are restricted by a central curriculum that does not allow them space to actively take part in the production of knowledge (Raptis and Raptis 2000). Kron (2002) refers to the importance of Electronic Media Teaching Competence for Teachers.

The Example of DiaLogos

DiaLogos (Kourtis-Kazoullis, unpublished doctoral dissertation) was an Internet based sister class project that took place between primary school level classes in Canada and Greece. The theoretical framework underlying DiaLogos dealt with: a) the learning of second/foreign languages, b) the utilization of identities and experiences of the students and c) the creation of a learning environment based on transformative pedagogy and IT application. In reference to (a), students in elementary school in Greece were learning English as a foreign language and students in Canada were learning Greek a second language. Although, in the Greek classes, DiaLogos was carried out in a very traditional educational setting with a traditional pedagogical orientation, the pedagogical orientation of the project itself was explicitly transformative. The route, however, from traditional to transformative was via constructivist/progressive. As portrayed in the diagram below with the three orientations nested within each other, the activities that took place in the classroom (with or without IT), could be placed at any spot within this framework. For example, the X on the diagram could be one particular activity or part of an activity. At certain times, the activities were partly traditional and partly constructivist. At other times, they were constructivist, moving towards transformative. However, no matter where the activities were placed on the framework, i.e. no matter what types of activities

were taking place at a particular time, the "target" was always within the transformative realm.
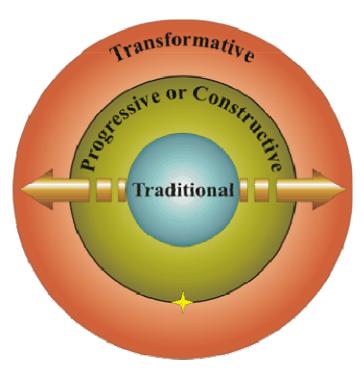
Diagram 2: From traditional via progressive to transformative

When Internet applications are applied in a classroom situation, the step is inevitably taken allowing the students to go beyond the school itself and into the community around it. The students can observe this community or can actively participate in realities outside the school which are relevant to students' lives. For example, in a project where Greek students were asked by students in Canada to supply information about Ancient Greece, the students in Greece were able to learn very much about their own culture. They learned that they often viewed their own culture in ways that were very different from how it was portrayed on the Internet. The students were also able to take the step from constructivist to transformative by stepping out of the role of "observer" to the role of "active participant". When searching for information about Ancient Greece, the students in a class discovered that they disagreed with the answer to a question on an electronic educational quiz dealing with archaeology . The question stated:

> The marble figures and sculptures from the Parthenon in Greece, but have been
> owned by Britain since 1801 are called
> a. The Parthenon facts
> b. The Greek Relics
> c. The Elgin Marbles
> d. The Olympic Artifacts (Dig Magazine 2000, quiz 6)

Most of the students had answered (A) as the students knew that the marbles were from the Parthenon. The answer given was not correct in the eyes of the students as

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Lord Elgin (i.e. the correct answer given) was the person responsible for the removal of the marbles from Greece.

Your answer for question 2, Parthenon, is WRONG!
The answer is c, the Elgin Marbles. The marbles were taken by a British ambassador named Lord Elgin in 1801 when Greece was ruled by Turkey's Ottoman Empire

This had the effect of allowing the students to take the step from inactive observer to active participant as they were given the incentive to take action. What gave them this strong incentive was the mismatch of the information supplied on the electronic quiz to their own image of themselves. They decided to research the topic, write to the editor and argue their point. This action may seem like a very small step; however, it was a major step for these 10-year-olds. These *small* students from a *small* island in a *small* country, speaking a *small* language took a big step into the world far beyond their classroom to *battle* with the   editor of a *large* educational magazine from a *large* country with a *large* language. They may not have ever taken this step if they had not felt that they were being taught their *own* identity by someone else who was *wrong* in their eyes. The students were able to create a context consisting of what they already knew and what they were "taught" by the magazine (Gee 2000). They were able to take this further by thinking critically about this relationship and by deciding to take action. In this sense, the students were not merely the users of learning resources available, but the 'remakers' or 'transformers' (Kress 2000). This is a necessary learning role when IT is implemented in the classroom. Prior knowledge and contextual support are the means for this transformation here as the students compared what information they were receiving to what they already knew about themselves and the world around them. Also, contextual support is necessary as the students must be guided in learning how to learn. In DiaLogos, the students (and teachers) were guided from a traditional method of learning that was teacher-centered to ways of learning that involved critical research. The students were taught how to research, an activity that is rarely carried out in Greek public school until students reach university level and actually take part in research. The teachers and students were given aids such as the following framework of phases of critical research:

Critical Research

Phase 1 : Setting Questions
What do we want to know?

Phase 2: Using what we know and what others know to construct new knowledge

First we begin with what we already know. The students begin from themselves (i.e. what do they about the topic), then what each member of the group knows, then what the class as a whole knows. Likewise, the same process (i.e. ourselves in relation to others) takes place with the sister class (i.e. What does the sister class know? Do they know something different?).

Once we utilize what we already know, we can gather new information.

Phase 3: Gathering Information

a. Finding information.
Where can we find information? We find information by first looking at what is physically near us and then moving more and more distant. First we begin from our own environment. For example, in *Ancient Rhodes students* can begin by what they see around their home and school. All through the city there are brown signs that provide archeological sites. Is there one near their school or home?

Then information is found other sources (teachers, the Internet, visiting sites, performances, experts, textbooks, i.e. 4th and 5th grade history books, other books, etc.). Finally, see what information we can find from our sister classes.

b. Taking notes.
How do we store the material we find?

c. Documenting our work.
How do we state where we found the material?

Phase 4: Critically Viewing our Topic
Is the material we found all from one viewpoint? This can be discussed. The portfolio on Karagiozis gives articles on the same topic from different cultures. Before we start writing, we can discuss things in class. We can also discuss our topics with our sister class and see what they think.

Phase 5: Production as process not as product

This is where we actually write our articles. We must remember what we learned about documenting our work.

It is important that the text that students produce is not a product, i.e. a text that is written once and forgotten about. It is meant to be a process. The text once written can be changed at any time. More information can be added without time constrictions. The student can change his/her opinion. The text can be produced by one individual, but it can also be the combined efforts of a group.

Phase 6: Sharing our ideas with others both orally and in written form.
Our articles can be shared between students, classes and schools. They can be sent by e-mail to the sister classes.

Phase 7: Critically viewing our work with others.
When we share our work with others, we can critically view our work by asking for other opinions and discussing issues with others.
(Kourtis – Kazoullis, unpublished doctoral dissertation)

Transforming according to Cummins is the willingness to make knowledge socially useful. It deals with the social applications as consequences of the outcomes of an educational program. In the project described above, 10-year-old students had the willingness to make their own knowledge socially useful to themselves, the editors of the web page and other people viewing the page by asking for explanations why a symbol of their own history and identity was named after the person who took the marbles illegally out of Greece, arguing, "Elgin profited by stealing them. He should not profit by having them named after him." This small example shows how social applications can result from the outcomes of an educational program. Transformative pedagogy is not about changing the world. You cannot expect 8, 9 and 10-year-olds to be in such a position to do so. It is about making the student an acting subject , not an information consumer. This is a vital role when IT is applied in an educational environment.

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