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Lifelong Learning: More than technology it is necessary to help people to develop a mindset for learning

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Abstract

Our current knowledge about learning and about the use of technology in education has contributed to our understanding about learning that is taking place in schools and how technology can be effectively used in learning processes. This paper argues that schools are not contributing to help students to develop lifelong learning skills. Also, the development of these skills is related to people's attitude towards learning rather than what technology is used in education. The article discusses these issues and presents a teacher training course that integrates different types of digital technologies and activities to help teachers to acquire lifelong learning skills.

Keywords

Teacher training, technology in education, learning process, construction of knowledge, online education, information and communication technology.

1. Introduction

Papert and Caperton in their paper "Vision for Education" stated that:

The primary commitment of education should be about vision. Every citizen should enter the world with:

- *A proud vision of self as a powerful life-long learner,*
- *A vibrant vision of a worth-while life ahead,*
- *An optimistic vision of a society to be proud of, and*
- *The skills and the ethic needed to follow these visions* (Papert & Caperton, 1999).

These visions lead us to think about several important questions. First, they do not make reference to the use of technology. The educational commitment is not about technology but about people's attitude. Second, the visions are progressive in the sense that they emphasize that learning is about helping to make a better world that is worthwhile living for. Third, they require that we come to the world with these visions. We may do so, however our current educational system do not relay on and improve these visions. On the contrary! As I will discuss later, it suppresses them, emphasizing certain aspects about education that contribute to people's negative attitude towards learning. As children we have very good learning

strategies, which schools do not encourage students to rely on them so they can become lifelong learners.

Thus, it seems that more important than developing digital technology for fostering lifelong learning, it is necessary to be aware of certain aspects related to learning in schools. First, our educational system today is not about learning in the sense of constructing knowledge but about transmitting information. This type of education is contributing to the development of a mindset about learning (Fisher, 1999) that does not help students to move in the direction of becoming lifelong learners. Second, it is necessary to implement activities in our current education process, including the use of technologies, that can contribute to people's awareness of their learning strategies. It is the improvement of these strategies and how to use technology effectively that will help people to become lifelong learners.

In this paper I discuss these issues and describe a professional development project that exemplifies the implementation of the ideas. I argue that the lifelong learning commitment does not start with technology. This does not mean that I am discarding technology. The proposal presented here places a great emphasis on technology as a tool to help people to think about learning. Thus technology has a very important role, but it is not the starting point.

2. What is lifelong learning?

The dissemination of information and communication technology (ICT) in our society has helped to establish a distinction between information and knowledge, the latter understood as the product of the process of attributing meaning to the information according to one's own experience. The role of learning is seen as the continuous development of skill to integrate information and experience to achieve mobility along a hierarchy of information, knowledge, comprehension and wisdom (Adler, 1986; Davis & Botkin, 1994).

As people develop skills to access and give meaning, thus, increasing the value of the information, refinements of these skills are required throughout a person's life in order to adjust to new situations and needs. Thus lifelong learning means a continuous process of learning about particular concepts, including learning, as well as about the person's own learning strategies. Learning should be under the learner's own control, should be a fun and enjoyable experience, done individually or in a group, with or without the help of teachers. If a person desires to learn, for whatever reason, no matter where or when, s/he should have the opportunity to do so. It should be something that anyone can do from birth and throughout her/his life.

This interpretation is share by several authors and institutions such as the famous Unesco Report about education for the 21st century, "*Learning: the treasure within*" (Delors, 1996) that presents lifelong learning as the process of "education throughout ones life". Other author presents as a continuous process of constructing knowledge (Longworth, 2003).

Unfortunately, lifelong learning is more often than not coined to refer to adult education at the post-secondary level. It refers to continuing education and ways of providing people with opportunities to get degrees and certificates. The end result is more about lifelong certification than lifelong learning. For example, the 34 international institutions offering post-secondary education as "lifelong learning", described in Maehl's book (Maehl, 2000), may be better categorized in the realm of lifelong certification process. Reports from the World Bank also equates lifelong learning to a constant professional improvement process (World Bank, 2002), which is also the case at the United States Department of Education that equates lifelong learning to "adult education" (www.ed.gov/index.jhtml)

The proposal I want to set forward here is that the learning one should experience in school or after the schooling period should be similar to the learning process children do before entering school. Also, that learning how to learn does not happen by default but needs to be promoted by interested and prepared people.

3. We do come to the world with learning skills

The work of Piaget shows that people are natural learners and they are learning all the time, without formal teaching. That is how we learn how to walk, to talk, to be professionals, to sustain a family and to be parents. Piaget showed that children develop many scientific concepts and build their own theories about how things work and how people think. They learn all these things by playing, by doing, by being with people, and this knowledge is constructed by each person according to her/his interest, experience and mental capacity, rather than by being formally taught. Also, as pointed out by Delval, people have a natural capacity to pass on important culture and values that society has accumulated (Delval, 2000). Human beings are the only species that intentionally accumulates information and devotes major efforts in passing it to other community members. People understand other individual's difficulties and knowledge level and are able to appropriately situate to her/his level. For example, a person instinctively behaves differently when interacting with babies, children or adults.

Thus, the most important things people learn in life happen not because they are formally taught. People learn because they have to solve problems and interact with other people: trying ideas, thinking, getting help from more experienced people – learning takes place because people interact with the world and they do not even recognize that they are learning.

While engaged in doing something enjoyable such as learning – assuming control over an action or over the unknown – people have the opportunity of living an optimal experience, as proposed by the "flow theory" (Csikszentmihalyi, 1990). In these situations people feel a sense of exhilaration, a deep sense of enjoyment that are remembered as landmarks for what life should be like. These moments are not achieved by an easy or passive attitude but in general they happen when people have to stretch their body or mind to its limit and work very hard. "*But in the long run optimal experiences add up to a sense of mastery – or perhaps better, a sense of participation in determining the content of life – that comes as close to what is usually meant by happiness as anything else we can conceivable imagine*" (Csikszentmihalyi, 1990, p. 4)

Now, what happens in school today in terms of learning? Can we say that this experience is planned to be an optimal experience? Where in our lives did we have a chance to learn with pleasure? In schools, outside schools?

4. Learning experience in school

We can see interesting things if we considered that most of the schools today are still centered on the transmission of information. The learning that takes place in school and in our life can be divided into 4 major periods: head start (0-4 year-olds), school (4-23 year-olds), work (23-60 year-olds) and retirement (beyond 60 year-olds). First, there is a clear separation between school and life. There is the learning done at school and the learning done in other activities in life. Second, no doubt there are moments of excellent learning experience in our life although, paradoxically, when people are at the peak of their best learning capacities, during the school and working periods, they are most of the time been taught.

As pointed out by Papert (1992) before entering school, babies and young children learn in a natural way and this can be seen as an optimal experience. These children are effective learners: they are self-motivated, actively seeking and pulling information. They have what Fisher (1999) called learner's mindset for learning. In this period that antecedes school, society encourages head start activities such as games and playgrounds so as to enhance and enrich the learning environment. However, children's learning mindset continues to be that of the active-seeker of information and activities to do.

During the school period, all too often the active-seeker mindset is gradually oppressed and students no longer learn by interacting but they are taught. They have been encouraged to be passive and information is pushed into them. They get used to the idea that learning is not fun, it is hard work and it is always dependent on the teacher who prepares lessons and delivers the information on a silver plate. Even after graduation, during the working period, when people become capable professionals, if they have to go back to educational institutions, the emphasis in general is on the certification and the educational approach continues to be that of pushing information.

After retirement, people can go back to learning for fun. A growing number of adults are actively searching for pleasurable learning experiences, a growing demand that is being met by many museums, universities, and community groups. Institutions in Brazil, in the United States and in other Latin American countries offering educational programs for retirees have their pedagogical approach not based on lectures but on discussions, dialogs, without tests, grades and certifications. Educational activities are centered on projects or problem solving and on overcoming challenges set up by the learner. Just eager students with a mindset for fun learning (Kachar, 2001; Wilgoren, 1999), much like the pre-school child. Elderly students and institutions are willing to work with the pulling approach to education.

These idealized and distinctive learning periods, as reflected in the current predominant mindset can be graphically displayed as shown in figure 1.

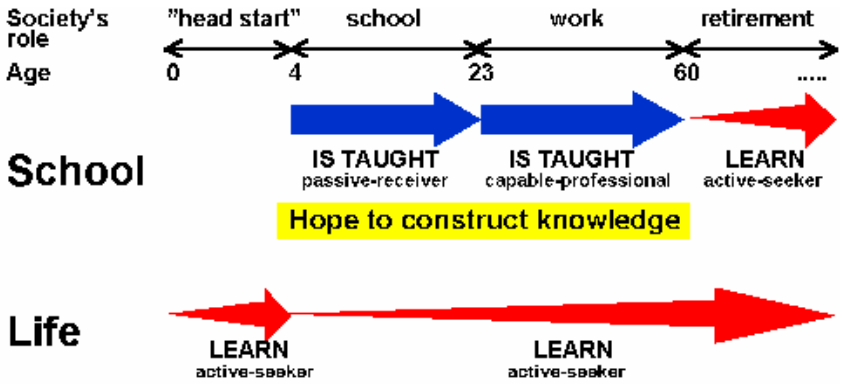

Figure 1. Mindsets according to people's different school periods and in life

However, two important points need to be made. First, is that the educational approach used in schools is done with the hope that the information transmitted will be converted into knowledge by the learner. The role of the teacher is to pass information and students, somehow, have to convert this information into knowledge capable of being applied in any problem solving situation they encounter in their lives. This is a very simplistic way of seeing education and is based on a false assumption about the construction of knowledge.

Second, even though individuals enrolled in schools are being taught, in life a great deal of learning is taking place according to the natural learning process. People can construct

knowledge by using both types of mindsets, the active-seeker or the passive-receiver, relying on one or the other, depending upon the circumstance and learning style. This flexibility in being able to shift from one mindset to the other is what helps people become effective problem solvers and to learn to adapt their performance according to the context they are living through.

However, as learners, people may not be aware of these different mindsets and may totally deny them. This happens because they may consider that learning is what they do if someone is teaching them, if they study, take tests and so on. In fact, this was shown in a research done with adults learning a specific skill by watching a video tape. Even though they indicated that they had learned the skill by using it appropriately, they considered they had not learned through the tape. Watching the tape was too easy and this could not possibly have helped to learn the subject (Rosado, 1990).

Certainly, people learn by adopting a mindset that varies on a continuum between the active-seeker and the passive-receiver. Just adopting one type is very counterproductive. The active-seeker mindset may be very effective in many situations. However, as the activities become more knowledge driven and the problems to be solved more sophisticated, the skills or the knowledge required may demand much more than reading a book or looking for information in the Internet. On the other hand, lecturing everything is not the solution either.

5. Project based educational approach

Project based education was proposed by Dewey in the beginning of the last century as a way of bringing together two worlds that coexist separately: life and school (Dewey, 1933). More recently the development of projects as a pedagogical strategy has been presented as an attempt to promote learning contextualized on the student's interest and related to the situation that is familiar to the learner, as proposed by Paulo Freire (1975). The use of "work projects" as proposed by Hernández (1998) or "learning projects" by Fagundes and co-workers (Fagundes, et al, 1999) allows the integration of several educational features that are not present in schools today such as the world outside school, the coexistence of different views of the world and the confrontation between them, the importance of the learning context, the construction of knowledge that is relevant to the learner's interest and to what s/he already knows, and the reflection upon meaningful results obtained by each student (Freire & Prado, 1999). Thus it is an attempt to bring school and life closer together.

The educational systems in the majority of Latin American countries as well as other developing countries around the world have already proposed and implemented the use of projects in practically all segments of education – classroom, administration, school community. To a certain degree there has been a project overdose in education, what Torres has called "projetite" (Torres, 2001, p. 65). In spite of the banalization process that has happened with the idea of project-based education, this pedagogical strategy has in fact innovated and helped to solve some of the deficiencies in the traditional education approach. As described by Torres (2001), innovative and successful projects have helped students to be more engaged and motivated about what they are doing in schools and to learn in a meaningful way the subjects treated in these projects. Also, the development of projects presents all the pedagogical features that are necessary to work out the lifelong learning strategies.

However, the fact that students are developing projects does not mean that they are constructing knowledge and comprehending what they are doing. As shown by Piaget (1978), comprehension depends upon the quality of interaction between the learner and the objects and people in the world. Just interacting with a given object or developing a project does not

necessarily guarantee the acquisition of the underlying concepts involved in this interaction. Piaget established a distinction between doing things successfully and being able to comprehend what has been done. Piaget's finding has important implications for learning because if not examined carefully, people can appear to know what they are doing when in fact there is very little understanding. It does not take much to make the analogy to the procedures children use to do division or how they memorize historical facts to understand history.

From Piaget's observation we can conclude that it is not enough to leave students alone, developing their project. Comprehension involves the intervention of more experienced teachers, to make sure that the interaction with objects and concepts is rich and effective in the process of knowledge construction. Similar ideas, although using different argument, have been proposed by socio-constructivist theorists such as Vygotsky and Paulo Freire. All these authors were convinced that in order to construct knowledge it is necessary to be helped by more experienced people. The learner needs to be challenged and questioned about concepts involved in the project, to reflect upon results, to make relationships with knowledge already learned. In synthesis, the learner's process of knowledge construction needs to be promoted by teachers who are aware of the learning process that can lead to the development of life-long learning skills. The question is how to prepare these teachers.

6. Teachers preparation for using ICT and developing a lifelong learning mindset

At the Eurologo 2003 conference I presented a teacher training course that was developed to prepare secondary school teacher to be able to use ICT in their pedagogical practice. This course introduced several activities for helping the teacher to be aware of their learning skills (Valente, 2003). The activities the teacher developed were stored in each individual *portfolio* in Teleduc – a distance education environment developed at Unicamp (Rocha, 2001) – and could be accessed and commented by all the courses participants. Each participant had to describe his/hers life history (Josso, 2004; Pineau & Le Grand, 2002). He/she also had to write down answers to three questions: "In what do you consider yourself an expert (or do very well)?", "How did you acquire this knowledge?", "How do you know that you are an expert (or how do you know that you know)?". The participants discussed each colleagues' life history and the answers to the questions in terms of similarities and differences regarding learning preferences and style. They used material developed based upon the learning styles literature (Cavellucci, 2003), such as the *Index of Learning Styles* (Felder, 2002; Riding & Rayner, 1998) for confronting what they had already found in their learning process with the results presented by these tests. The knowledge the teacher acquired through these activities were used in their process of leaning about ICT and of learning how to use these technologies with their students.

The product of these activities have helped teachers to understand about their own learning process and teachers reported that they started to see their students differently, acknowledging the fact that there are similarities and differences, and appreciating the fact that not everybody is the same. These are considered the first steps in the direction of developing lifelong learning skills.

Also the use of ICT played a fundamental role in the teacher's learning process. The teachers used computers as a way of developing different types of activities and to do so had to learn about several types of software such as programming language, word processor, spread sheets, etc. In addition, the computers were used as a way of accessing information on the internet and as a communication tool to make available their production and to exchange information with their colleagues at distance. Thus, the technology played two fundamental

roles as a learning tool: to make thinking processes explicit and to allow the establishment of a virtual learning network. In the first, computer activities create a window into the learner's mind (Weir, 1987; Valente, 1995) so the course professors could engage and interact with the teachers in a socratic mode to discuss their knowledge construction. In the latter people were allowed to present and discuss via Internet the product of their learning process with a larger audience and at a depth that is almost impossible to do in a face-to-face classroom situation (Prado & Valente, 2002). In both cases, the objective was to help the teachers to become better learners and to give them tools to become lifelong learners.

However, in this course the use of ICT was very much centered on the computers. Even though the teachers used different types of software, they all allowed descriptions of thinking processes that are related to textual and sequential language. Very little could be done in terms of using other technological media for describing ideas or representing knowledge such as radio, television, photo cameras, video and their combination – what would more appropriately be characterized as information and communication technology. On the other hand, the effective use of all these technologies has to be done knowing the specificity of each technology and how to integrate them in pedagogical activities in order to expand the computer potential as a resource to represent, to construct knowledge and to establish a network of people who can share knowledge, values and emotions.

Each of these different media have been used in education through separate programs sponsored by the Ministry of Education in Brazil such as *ProInfo* (use o computers in education), *TV Escola* (use of television and video in school), *Radio na Escola* (use of radio in school) and *Proformação* (preparation of teachers through correspondence courses). However, all these programs are kept isolated from each other. The teachers participating in these programs and working in schools are also functioning independent from each other, which prevents them from exploring the pedagogical potential that the integration of these technologies can offer.

A 180-hour course A*prendizagem: Formas Alternativas de Atendimento* (Learning: alternative forms of working) was developed with the purpose of integrating resource professionals who use different types of technology in school as well as integrating the actual technologies so as to enhance the pedagogical capacity of the use of ICT. This course was offered to resource professionals and administrative staff working in schools from the State of Goias, in Brazil. This course constituted of face-to-face and online activities, via Internet.

In addition to the integration of different technologies and resource professionals from different programs working in schools, the course provided opportunities for professionals to reflect upon their learning process as well as their experience as online learners. Also they had to integrate different technologies to develop their own project and to use the distance education facility to develop a pilot experience in order to learn how to interact with other colleagues in a distance education situation. The idea is that these professionals can explore these technologies in education and can disseminate their knowledge in learning situations, involving other colleagues from the Education Secretary. As a final product from the course the participants prepared a plan of actions that they can implement so as to disseminate the knowledge acquired in this course.

There were 136 professionals, from different regions in the state, divided into five groups of 27 participants each. Each group had a course professor and an assistant, who were responsible for interacting with the professionals throughout the entire course. The course started with one-week of face-to-face activities (about 40 hours), then a 60 hours of online activities, followed by another one week face-to-face and then another 60 hours of online activities.

The results indicated that the projects developed by the participants not only integrated the different expertise each one brought from his/her particular area and technological program but also showed the integration of different technologies. Products presented were the materialization of integration of technology and of professionals. The second important aspect of the course was the level of reflection these professionals engaged in throughout the course. Their Reflective Memoirs showed a deep level of understanding of the teaching and learning process that can be achieved in schools through the use of ICT. These reflections were fundamental for the learning process about learning and how the use of ICT can contribute to the continuous process of learning. The third aspect was the production of a concrete pilot project about dissemination of the course ideas to their colleagues. The results of these pilot experiences were described as posters and as PowerPoint presentations that were showed and discussed in the second face-to-face week. These presentations functioned as a way of diagnosing the professional's level of theoretical understanding as well as of creating opportunities to use their practice to introduce new theories.

7. Conclusion

Before embarking on a process of developing digital technology for fostering lifelong learning it is necessary to understand what kind of learning is taking place in schools, what has to be changed and how technology can help teachers and students to develop lifelong learning skills. It is clear that the current schooling process is not geared towards helping students to develop the necessary skills for continuous learning. Also, ICT do not have the power to change the current situation and fulfill all the needs in order to reach this desirable goal. The work students do with technology needs to be mediated by knowledgeable teachers who understand about learning, about different technologies, about integration of them, and about how to explore all these resources in order to help the process of constructing knowledge of about particular concepts as well as about learning. Lifelong learning skills can be seen as an extension of the learning skills we bring to the world. However, we should not assume that these skills will develop as sub product of what we do in school. They need to be worked out and certainly technology can help. Thus technology is part of the education equation not the solution to it!

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