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# **Impact of Computers on Cultures in Third World Countries: A Case of Computers in Education**

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## **Introduction**

While the use of computers has glamorized education, it has also raised new concerns and brought to the forefront old fears about the impact such technologies might have. Nowhere is this a case for greater concern than in the Third World nations of the world where the new communications media are being embraced for the purpose of enhancing education. The term “Third World” as used in this paper is taken from Todaros’ (1985) description which applies to more than 143 countries of Asia, Latin America, Africa, and the Middle East characterized by low living standards, high levels of population growth, low per capita income, and general economic and technological dependence on industrialized countries of the west (p. 610).

These fears relate to the impact computers might have on local cultures. The fears are not merely of a paranoid people, they have roots in the colonial history and experience of most of the people in the Third World countries. During the colonial period, the curriculum used in schools represented the dominant ideologies and cultures of the ruler, namely, the colonialist.

This paper will examine the impact computers currently being used in education might have on cultures in the Third World countries.

## **Background**

The history of formal education in most Third World countries reflects a prolonged period of domination by the cultures and ideologies of foreign colonial rulers. Culture is for the purpose of this discussion taken to mean the way of life of a discrete group of people, including its body of accumulated knowledge and understandings, skills, beliefs and values. Culture is seen as central to the understanding of human relationships, and acknowledges the fact that members of different cultural groups have unique systems of perceiving and organizing the world around them (Horton, 1967).

According to Giroux (1981) cultural reproduction refers to the “transmission” (p.3) of cultural norms and values via schools and other agencies of socialization; this transmission is seen as a necessary and unproblematic functional requirement of the larger society. It is a regenerative process, which is characteristic of a social order marked by consensus and social harmony. Thus, according to this definition of cultural reproduction, curriculum is one way in which society reproduces itself. Lawton (1975) pointed out that curriculum reflects the best of culture in terms of shared knowledge, skills, beliefs and values.

Curriculum is therefore essential because it makes certain assumptions not only about people, but also about the nature of knowledge, the nature of learning and the way people behave. Since curriculum is a selection, it follows that whatever is selected would depend largely upon the experiences and the ideologies of those involved in the selection. It is also important to note that in the selection process, some values are also sometimes left out i.e., not transmitted. A selection often reflects, and is influenced by the dominant world view/ideology of a particular time and place. Thus curriculum selection normally results in the imposition of the dominant group's interests on the institutions and practices of the dominated societies (Apple, 1979).

What is taught in schools therefore represents societal selection, i.e., values, beliefs and knowledge that have been entrusted to teachers for transmission to the young as mentioned above. Individuals and groups in society accordingly have a stake in the school experience. They operate formally and informally to have schools become fitting means to ends which they value. The relationship between schools and their constituencies hence occurs in a complex cultural context, wherein individuals and groups are "agents" of a particular orientation that schools reflect.

For instance, according to Said (1993), by 1914, Europe held about 85 percent of the world as colonies, protectorates, dependencies, dominions, and commonwealths. Britain was one of the European imperial powers. British traditions, identities, values and knowledge were "naturalized" (p.8) through the different spheres of cultures where they ruled. British literature also helped to define these identities in a convenient way to the British imperial interests.

Schooling in many nations then under British rule aimed at training the indigenous populations to serve as low-level clerks and public servants in order to enhance the effectiveness of the colonial administration. Schools therefore suited the needs of the colonialist rather than that of the conquered. In addition, the few who went through this type of school system were not trained to be proud members of a society to which they belonged but to submit to all that was British and European (Thaman, 1993). Colonial schooling was thus "education for subordination, exploitation, the creation of mental confusion and alienation" (Okoth, 1993, p.139).

Derrida quoted in Mouffe (1993) pointed out "identities are shaped and connected to the dominant-subordinated polarity through the sphere of culture. These are embodied in oral and contextual narratives, scientific and artistic discourses, and direct or mediated forms of communication" (p.141). These relational identities are built within a range of texts that includes all levels of abstractions, from the particular to the universal. The same mutually exclusive pattern works to polarize and position individual, groups, nations, and regions of the global society. The constitution of an identity is always based on excluding something, and establishing a hierarchy between the resultant two poles, which could be black/white, woman/man, ruler/ruled etc.

The oppressor, in this case the colonialist is centralized and the qualities it represents are magnified and naturalized. Their emotional effects are generally opposed to those

identified as outside the imaginary boundary: the oppressed or subjects of the colonies. These subjects are termed the “other” and put into a perpetual state of marginalization. Their voices are omitted or silenced from the mainstream culture and they are left dehumanized and victimized (Mouffe, 1993).

It is this experience of colonial education as stated above that has aroused the current concerns about the use of computers in education. These concerns are heightened by a view that the west is a central location of knowledge and high culture. In the cultural or civilization arena, computers carry a code which sees the west as entrusted by destiny with the mission of casting the rest of the world in its mold. The ideas that generated computer technology constitute a certain cosmology: an implicit way of viewing the world in general and society in particular. This paper will not go into a detailed discussion of cosmology since it is beyond its scope, but a brief overview will be useful.

Five western cosmological points that are significant to the discussion on computers as a vehicle of western culture are, the tendency to see geographical space in center-periphery terms with the west at the center; the tendency to see time as linked with progress, increasing in a linear, and preferably in an exponential manner; the tendency to think of reality in terms of units abstracted from the whole, of which they are parts, and relate them to each other causally and mechanically so that changes in one will imply changes in the other; the tendency to see vertical and individualistic relations between human beings as the normal and the natural; and the tendency to see man as the master of nature with unlimited rights (White, 1974).

According to this cosmology, then, computers are taken as normal and natural, and computers as used in education are therefore not neutral. They can be viewed as meant to spread western culture and way of life to areas where they are used. Computers can also be seen as presenting western culture as more advanced than other cultures in an evolutionary sense. Thus the computer can personify a form of cultural invasion: an invasion possibly more insidious than colonialism and neo-colonialism because such an invasion is not always accompanied by the physical presence of western personnel.

Computer use in education is highly centralized in the United States of America and Europe due to its widespread use, coupled with early pedagogical experiences in computer mediated communications. Western-based educators are thus well positioned in the mainstream of using computers in education. These advantages have led to the centralization of policies regarding organization, production, distribution, accreditation and evaluation of computer (i.e., hardware, software and programming etc.) in the western world.

This process has led to an inequity dividing the educational sites between originator and receiver, producer and consumer, voiced and silenced. Definitions of contents, costs and decisions as to who participates in matters of concern in distance education are also all centralized in the west. The idea that the west is a central location of knowledge and high culture has prevented most educators in Third World countries from exploring policies of

collaboration and partnership with those in the west in the production and distribution of education materials (Hall, 1996; Buell, 1993).

Most educators in the west have rebutted the argument that the production of content is all centered in the west by suggesting that when education programs are delivered to Third World countries cultural differences are overcome, but what they mean is that the existing software is translated or new software is written in local languages. Nonetheless, this solution leaves intact the view that western technology and science represents the most advanced stage in cultural evolution (Gunawardena et al, 2003).

The discussion above has led people in Third World countries to reaffirm the beliefs they already held: that the same western world that had assaulted their cultures and values in the colonial period is now homogenizing them, diluting their culture and relegating them to marginalized positions in a standardized modern world. By spreading the languages and cultures of Europe (such as English, the values of individualism, self-gratification and consumerism and the ascendancy of the market model over other models of political – economic development), many believe that the west is back once again to launch a major assault this time via the use of computers in education.

### **Use of computers in education**

Society through education and indeed schools transmits culture to the young generation. It also passes on the metaphors that translate our history and traditions into meaningful symbols. However, computers as used in classrooms today are only considered according to their educational value: the software programs, students as users, information to be processed and the teacher. The fact that the dynamics of the classroom are historically shaped by cultural forces appears to be largely irrelevant to the promoters of computer use in education. As discussed earlier, the computer is thence taken to be primarily neutral. And yet if the design of programs is considered, it is clear that the mind of the programmer reflects the form the subject matter takes and the processing possibilities provided, which is reflected as a cultural bias in the program (Long, 1985).

In order to fully understand the issue of how computers use in education might affect the cultures of Third World countries, five topic areas must be explored: neutrality, information as a conduit, information vs. ideas, nature of culture, and literacy vs. orality.

#### **Neutrality**

The issue of neutrality relates to whether, at the level of the software program, computers accurately represents, the domains of the real world in which people live. Most proponents of computer use in education have taken the position that it is a neutral technology. According to McClintock (1988) “computers are artifacts, designed and manufactured tools, whereas education is a pre-eminently cultural phenomenon, something which takes place through and for people.” In emphasizing the neutrality aspect of the computer McClintock further claimed, “all cultures can be coded so that it can be operated on with digital computers” (p.351).

The opinion above that computers are a tool that is culturally neutral is based on the assumption held by most proponents of computer use in education, about the nature of computers: namely that when armed with the right questions teachers will be able to exercise rational judgment about the effective use of computers. What this opinion emphasizes is that all the user of a computer has to do is to make choices of what the user wants to do and the computer will merely follow the command. Mowshowitz (1984) referred to this view of the computer as “grab bag theory.” Speaking metaphorically he states that “the potential use of the computer is like a grab bag” in which individuals are “free to stick their hands into this grab bag and pull out whatever applications they choose” (p.8).

The culturally neutral aspect of the computer as espoused by the proponents of this view is due to the fact that computer technology is based on the Cartesian view of knowledge. According to Winograd and Flores (1986) “one of the characteristics of this tradition is that it only deals with the explicit and observable aspects of experience” (p.85). Thence the people writing the educational software have tended to ignore the tacit dimensions of our cultural-linguistic experience. It is also fair to say that the designers of educational software in not being aware of the phenomenological traditions of thought have simply ignored the epistemological problem of how to represent the cultural foundations of a person’s tacit knowledge, which is highly contextual, through a medium that de-conceptualizes knowledge and can only deal with what is known at an explicit level of awareness.

The Cartesian view of knowledge is also based on the mind-body dualism that establishes the primacy of procedural thinking and a mechanistic view of the external world. It however, also detaches from the rhythms of culture and nature. By emphasizing the explicit nature of language, the Cartesian tradition thus establishes the objective and distancing nature of thought. This in turn allowed for a view of the individual as not embedded in the continuities that connect the past to the present (Bordo, 1987; Rorty, 1979).

The viewpoint that computer is neutral ignores an interesting historical coincidence. For instance, the writings of A.M. Turing entitled “On Computable Numbers” and Lewis Mumford’s “Technics and Civilization” published in 1934 and 1936 respectively focused on how western technology then in existence (i.e., the mechanical clock) had altered consciousness and thus the pattern of human relations.

However, major contributions towards understanding how the nature of computer technology mediates and thus transforms human experience (i.e., moral, political, and cultural dangers connected with viewing computers as neutral or the embodiment of progress) was later advanced by Martin Heidegger and Jacques Ellul. Ellul (1967) argued that technology based on western assumptions that connected efficiency, control, and rationalism, was now operating according to its own inner logic and had become the dominant force shaping the direction of cultural development around the world.

Heidegger more than Ellul expanded on the non-neutrality nature of technology such as computers. He explained it by examining what constituted the “essence of technology in its relationship to human existence.” Heidegger stated that the essence of technology is existential and thus cannot be viewed simply as a technique that has an independent relationship from the person who uses it. He made this point clearly by elucidating that the essence of technology is by no means anything technological. Thus we shall never experience our relationship to the essence of technology so long as we merely conceive and push forward the technological, put up with it, or evade it. Everywhere, we remain un-free and chained to technology, whether we passionately affirm or deny it. But we are delivered over to it in the worst possible way when we regard it as something neutral for this conception of it, to which we particularly like to do homage, makes us utterly blind to the essence of technology (Heidegger, 1977).

Ihde (1979) expanded on Heidegger’s ideas by clarifying how technology transforms human experiences, or rather what constitutes the “essence” of technology. He used the terms amplification and reduction to illustrate how the use of technology transforms our experience. He argued that the use of technology amplified certain aspects of human experiences and reduced others. For example, the telephone can be seen as amplifying our voice over distances while at the same time reducing our ability to use our own or other people’s body language as part of the message system.

The amplification-reduction characteristics of the telephone involve what Ihde termed the “selectivity” of technology (Ihde, 1979). That is, the essential nature of the technology selects the aspects of experience that will be amplified and reduced. Hence technology is not simply a neutral tool, ready at hand to be directed by human beings.

The essence of each technological device also determines what aspects of experience will be reduced. A case in point is the computer whose selection-amplification characteristics can be recognized as knowledge that is explicit and can be reduced to discrete bits of data that can be stored on a massive scale, can be manipulated in complex ways that do not distort the sense of accuracy, and can be recovered in a tireless and efficient manner. However, these reduction characteristics of computer which are both related to the essence of the technology and to cultural mythologies that are written into the software programs have largely gone unrecognized.

The computer also selects and reduces aspects of experience from the transmission of knowledge process that characterizes the educational setting. Since computers function on an algorithmic system, it is impossible to program forms of knowledge that cannot be made explicit and organized into discrete components or whose operational rules cannot be formally represented. Hence, computers cut out the communication process (i.e., the reduction phenomenon). In addition, while the computer amplifies the sense of objectivity, it reduces the awareness that the data represents an interpretation influenced by the conceptual categories and perspectives of the person who “collected” the data or information.

The computer also reduces the recognition that language, and thus the foundations of thought itself, is metaphorical in nature. The binary logic that so strongly amplifies the sense of objective facts and data based thinking serves at the same time to reduce the importance of meaning, ambiguity and perspective. And finally the sense of history, as well as the cultural relativism, of both the students and the software writer's interpretative frameworks is also put out of focus (Bowers, 1988).

This process of cultural selection, amplification and reduction can be seen occurring in any educational software program as the language of the program serves to frame conceptually what is to be presented to the students. An example will suffice here to illustrate this process. An educational software title "Jenny of the Prairie" was produced to compensate for the bias in gender orientation of a popular simulation program "Oregon Trail" that was perceived as amplifying a masculine interpretation of the pioneer experience. Thus "Jenny of the Prairie" was designed as a simulation program that involved a young girl exercising the skills and judgment required for surviving alone on the pioneer trail. Apart from asking students to make decisions about building a shelter, gathering food, and dealing with wild animals, the designers of the program selected for amplification a cultural value that fits more properly with today's relativistic orientation than it does with cultural patterns that characterized Jenny's time, i.e., the time of the pioneers (Rhiannon Software, 1984).

What is relevant here about the discussion concerning the use of computers in education involves the process of cultural selection, amplification and reduction in the representation of "Jenny of the Prairie" in the simulation program as being free of cultural influences. Roszak (1986) confronted this problem by stating that the problem of representing the tacit contextual and metaphorical dimensions of cultural experience in educational software programs will not be resolved by designing new programs like "Jenny of the Prairie" which addresses new and highly politicized concerns. The dynamics of cultural selection, amplification and reduction will continue partly because of the widespread belief within the field of educational computing that technology is neutral. Roszak indicates that a conceptual framework for making explicit how the culture is mediated through the process of educational computing as well as the specific cultural orientations that are reinforced by this technology will make it possible to give more serious thought to the problem.

### **Viewing language as a conduit**

The writings of most proponents of computer use in education take language for granted, perceiving that it is undeserving of special attention because it is like other "neutral technologies." For instance, Becker (1983) stated "the more rapidly and effortlessly that students can translate what they want to say to the computer in machine readable communication the more effective will be the time spent at the computer station." (p.37). The issue here though, is not to consider whether language is viewed as another instance of a "neutral" technology rather it is to examine the educational consequences of using computers in a manner that reinforces the view that language is a conduit or conveyor for the communication of information and ideas.



The metaphorical language which is associated with computers (e.g., input, output, storage, memory, retrieval and so on) is based on the image of data and information being entered into the computer and stored until a person wants to retrieve it (often after performing certain manipulations). This image of language as a conduit where concepts are put into words and words are expected to carry meanings to others reflects a number of assumptions: a). that language functions like a conduit, transforming thoughts bodily from one person to another; b). in writing and speaking, people insert their thoughts or feelings into the words; c). words accomplish the transfer by containing the thoughts or feelings and conveying them to others and d). in listening or reading, people extract the thoughts and feelings once again from the words (Reddy, 1979).

This sender-receiver model or input-output model described above reinforces the view that the ideas, information and data that are transmitted through the language are objective, i.e., the human authorship of the knowledge is obscured. This is one of the flaws in this model.

By taking the view that knowledge is objective, the proponent of computer use in education misrepresents how knowledge is humanly constructed over time in culturally specific ways and is continually reconstructed as it is communicated to others (Reddy, 1979). For example, when students interact with computers, they are involved in a process of communication that is very much influenced by the cultural assumptions and epistemic categories embedded in the language thought process of the person who wrote the software program. This relationship is analogous to that of the reader and the author of a text. The problem here, though, is that whereas questions can be asked about the conceptual biases of a book's author, the same is not true with computer since the emphasis on information processing and the complexity of using the computer have made it more difficult to recognize the human authorship of the programs.

Another flaw in viewing language as a conduit has to do with the nature of language, what Heidegger (1982) termed how "language speaks"(p.124); what is of concern here is how language helps frame how we think, i.e., what organizes thinking. Schon (1979) called this a "generative metaphor"(p.254) which provides the most basic conceptual paradigm not only influencing the selection of iconic (image) metaphors but also providing the most basic conceptual patterns for organizing thought.

A case in point is the generative metaphor taken by proponents of computers in education that views language as a conduit. Thus, one finds that when thinking about the mental processes of the individual in comparison to the computer, it makes perfect sense to substitute database for memory, retrieval for recall, etc. On the other hand, when one uses the computer as a paradigm for thinking about mental processes, it seems inappropriate to associate memory with personal aspects of a life history, i.e., feelings recall with intentionality and a sense of moral responsibility. The point to be illustrated is that it does not make sense to associate computers with personal experience, feelings, existential choice and responsibility. The reason for this is that our collective past and on going cultural experiences provides the symbolic basis for the generative and iconic metaphors that frame our way of understanding and communicating (Schon, 1979).

## **Information vs. Ideas**

Closely associated to the nature of language is the difference between idea and information. While agreeing that computers greatly extend our ability to process information, Roszak (1986) observed that those who believe that computer literacy is the only appropriate educational path to the future have “lost sight of the paramount truth that the mind thinks with ideas, and not with information”(p.88).

He further emphasized that information may helpfully illustrate or decorate an idea; it may, where it works under the guidance of a contrasting idea, help to call other ideas into question. But information does not create ideas; by itself, it does not validate or invalidate them. An idea can only be generated, revised or unseated by another idea. A culture survives by the power, plasticity and fertility of its ideas. Ideas come first, because ideas define, contain and eventually produce information. The principal task of education, therefore, is to teach young minds how to deal with ideas: how to evaluate, extend, and adapt them to new uses. This can be done with the use of very little information, perhaps none at all. It certainly does not require data processing machinery of any kind. An excess of information may actually supplant ideas, leaving the mind (young minds especially) distracted by sterile, disconnected facts, lost among shapeless heaps of data (Roszak, 1986).

According to Roszak, thinking is organized around “master ideas” or, as previously mentioned “generative metaphors”; other terms that could be used are paradigm or worldview (Roszak, 1986). At the surface level of our symbolic world, we are continually creating new master ideas often, but not necessarily derived, from the ideas that are at the core of the cultural belief system that guides how we conceptualize a problem and understand relationships.

The advocates of computer use in education however, seem to confuse information with ideas. Much as we do collect and process a great deal of information, being able to manipulate it even with the speed and accuracy of the computer is not the same thing as thinking. In addition, master ideas are not derived from data or information but from insights, convictions and imagination that is attuned to the need to understand and improve the human situation.

The distinction between analogical and digital thinking will further elaborate this point. When computers mediate learning, the digital form of thinking is amplified. Digital thinking involves a conscious intent in manipulating bits of information. It also involves separating the parts from the whole, and then reconstituting the parts through a linear form of thinking. In abstracting the parts, one loses sight of the context of relationships, i.e., the whole. McClintock (1988) elaborated on this aspect of digital technology by stating, “Digital technologies do not transmit one thing that is analogous to another, the real matter in question. Rather, a digital technology transmits exact or nearly exact values as precisely as these can be represented in binary code”(p.347). The key to digital technology compared to analog is the digital absence of ambiguity: it deals with successive states, either or conditions in which a circuit is either off or it is on. Insofar as

something can be described accurately in binary code, it can be recreated from that code (McClintock, 1988).

It is thus clear from this statement that experience, which is a source of meaning, understanding and pattern, is ignored as too ambiguous to be accurately represented. Digital knowledge in effect provides information that is taken out of context and then situated in a new and often highly abstract one that is constructed through the interpretative efforts of the person who uses the data or information. Digital thinking in a sense reinforces the cultural assumptions that we are autonomous individuals who can rationally construct the world we want.

Analogical thinking, on the other hand, involves relationships, context, redundancy and memory. It serves as a guide to understanding the present and thus involves continuity between the past and the present. To express this in another way: memory of past pattern-context-message exchanges is essential to a life of coherence, meaning, connections and predictability. The patterns as information codes learned in the past are redundant in the sense that we recognize their reproduction in the present and thus have a basis for determining how to proceed. Analogues are thus basic to the human thought process. However, they require a critical interpretation, which means being able to place them in their historical and cultural context.

The consequences of having educational decisions made by the classroom teacher, the person who writes the instructional software program and the educational computer experts when they do not for the most part know the difference between analogical and digital thinking is that they will be unable to make intelligent judgments about the deeper implications of the technology they chose. In making judgments about computers, educational institutions need to consider the aspect of analogue knowledge that describes who we are: namely, what is distinctive about being human is that we are story tellers, and thus participants in a “community of meaning” (Bellah, et al, 1985, p.153).

### **Nature of culture**

Culture as described above is central to the understanding of human relationships, and acknowledges the fact that members of different cultural groups have unique systems of perceiving and organizing the world around them (Horton, 1967).

According to Geertz (1973) culture “denotes an historically transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic forms by means of which men communicate, perpetuate, and develop their knowledge about attitudes towards life”(p.89). Goodenough (1981) expanded by stating further that culture can be understood in terms of providing “standards for deciding what can be, standards for deciding how one feels about it, standards for deciding what to do about it, and standards for deciding how to go about it”(p.62).

These definitions remove from the center stage the autonomous and rational individual who is empowered by the acquisition of data, a view espoused by proponents of

computer use in education. Such definitions also bring to the forefront the nature of culture, which constitutes the milieu of the classroom and is often neglected by proponents of educational computing.

Although the Geertz/Goodenough view of culture recognizes that the individual thinks, has feelings and a self-concept, faces moral dilemmas, etc, they emphasize the “patterns” and “standards” that are transmitted from the past through the various language processes that guide individual activities. Goodenough (1981) observed, “To learn the language that is to learn to use its vocabulary acceptably is indispensable for learning the cultural forms of its vocabulary encodes” (p.66).

The patterns for social space, organizing time, structuring our thoughts, regulating our emotions and so forth are also acquired and sustained through communication. However, this knowledge is seldom understood at an explicit level of awareness. It is instead part of our natural attitude and it is primarily when someone deviates from the taken for granted patterns that we become aware of there being a guiding pattern (Hall, 1977).

This view of culture when translated to the classroom helps us to fully understand what is going on there. For instance, the students are no longer simply seen as inner directed by their own feelings and own thought processes but largely as re-enacting with minor variations the shared patterns of dress, body, language and thought, etc. In addition, the teacher’s rational control of the classroom should also be seen as embedded in the deep patterns that constitute the living tradition we call culture.

The implication for this view is that the individual is seen as part of a larger information-sharing network. And the knowledge that provides the process of interacting with others is not seen as being exclusively located in the mind of the individual. Bateson (1974) elaborated on this point by stating that “the total self corrective unit which processes information, or, as I say ‘thinks’ and ‘acts’ and ‘decides’ is a system whose boundaries do not at all coincide with the boundaries of the body or of what is popularly called the ‘self’ or conscious.” The system or network includes all the “pathways a long which information can travel” (p.319).

Thus, the information exchange that characterizes the context in which the student is situated involves adjustments based on new information exchanged between the interacting parts, and utilizing preexisting cultural patterns. Hence, in effect, the individual involvement is mediated by culture.

Understanding classroom interaction as information exchanges that involve introducing students to new patterns that are to be used as guides in new social situations as well as reinforcing previously learned patterns is important because it helps one to understand how the use of computer influences the students’ experience or culture.

### **Literacy vs Orality**

Educational computing is identified in many circles with the mode of consciousness, which is associated with the tradition of print. Print is viewed as a visual means of representing what is transmitted through the conduit of language, and literacy simply involves the use of the necessary encoding-decoding skills. It is important to understand the difference between the written and spoken word in order to recognize the deeper issues that need to be addressed when deciding how computers fit within the cultural transmission process in the classroom, as well as when its use with minority cultural groups becomes a disguised form of cultural domination.

The dependence of computers on print seems to bring about a certain kind of alienation. This is because the printed word involves a different pattern of relationships from those we experience through the spoken word. Ong (1977) alluded to this when he stated that it would appear that the technological inventions of writings, print and electronic verbalization, in their historical effects appear to be connected with and have helped bring about a certain kind of alienation within human life. This is not at all to say that these inventions have been simply destructive, but rather that they have restricted consciousness, affecting men's and women's presence to the world and themselves and creating new interior distances within the psyche (Ong, 1977).

The way educational use of computers with their dependence on print technology contributes to the process of alienation can be seen in how the printed word involves a different pattern of relationships from those we experience through the spoken word.

Literacy contributes to two basic forms of modern alienation, which are the separation of the word from the body i.e., the reification of the printed word and separation in our personal relationships. Ong (1982) pointed out that a special status has been conferred on the printed word and there is a distrust of the spoken word "writing makes words" appears similar to things because we think of words as visible marks signaling words to decoders: we can see and touch such inscribed "words" in texts and books. Written words are residue. The oral tradition has no such visual residue or deposits. The printed word can thus be viewed as more real than the transitory quality of personal experience, taste, touch, smell, sight and the spoken word.

Ong (1977) further expanded on this point by stating that people who are educated to use the codes, i.e., who are literate, can "reconstruct real words in externalized sound or in their auditory imaginations." He continued that "most people in technological cultures are strongly conditioned to assume that the printed word is the real word, and the spoken word is inconsequential. Permanent unreality is more plausible and comforting than reality that is transient." (p.21).

Unlike the printed word, which must be decoded, the spoken word is the natural means of communications about a living relationship. Scollons (1985) stated that when the word becomes an object as it is in print, it falsifies our most basic relationships. He observed "the word comes to take precedence over the situation, analysis takes precedence over participation, isolated thought takes precedence over conversation and story telling, and the individual takes precedence over the community."(p.10).

Another basic difference between printed and spoken words is that the narrative tradition of the spoken word involves the sharing of analogue knowledge, i.e.; the stories that contain the conceptual and the redundant elements of culture that have evolved through a testing process of many generations and serve as guidelines for life in the community. The basic difference between the printed and spoken word, thus, is that the spoken word involves participatory relationships and the use of language to communicate about the living i.e., present word, whereas print fosters isolation, abstract thought and the reification of the word.

The argument here is not for the eradication of the printed word but rather the recognition that the two modes of communication are fundamentally different, and therefore a need for an understanding of the cultural and personal consequences that follow when either mode is given a privilege standing within the context of our society. In terms of broader curricular policies, this understanding should lead to a more conscious effort to balance the educational methods that use the printed word i.e., books, computers and printed materials with ones that use the spoken word i.e., storytelling, oral history etc. This concern with balancing the written and spoken word has implications for the use of computers in education. In effect the privileging of print over orality means that the use of computers strengthens certain cultural patterns and orientations and weakens others. It therefore raises the question about how educational computing fits into the socialization process and the judgments that a teacher should be able to take when using computers in the classroom.

### **Implications for Third World Countries**

The adoption of computers for educational purposes by Third World countries is being done for the purposes of “development.” According to Ali Mazuri, computer literacy, the phrase that is so problematic within western cultural contexts is becoming a hallmark of modernization and thus the goal to be achieved by Third World countries that do not wish to be viewed as culturally backward (Mazuri, 1978).

It appears that the decision to introduce computers in classrooms is being done without a clear understanding of the cultural-amplification characteristics of educational computing, and also without an understanding of the consequences in terms of changes in social patterns, values and ways of thinking. The decision is being made solely on the assumption that a computer is culturally neutral and is adaptable to local culture simply by changing the content of the instruction program.

Winograd and Flores (1986) warned about the thinking that computers is neutral when they noted that there is a culturally specific view of the rational process that is built into computing, including educational software programs. A program thus represents the programmer’s interpretation of the situation in which the program will function. But the assumptions about how the programmer approaches the problem of representing objects and relationships in the subject domain is based on views of the rational process, individualism and the nature of language that are part of the Cartesian stream of western philosophy. Thus the symbols used by a programmer to represent a particular domain of

experience always involve the use of “abstraction that produces blindness” (Winograd & Flores, 1986, p. 98).

In order to illustrate this point, Winograd and Flores (1986) further elaborated on the consequences of not recognizing how a software program distorts what it purports to represent by stating that “the programmer acts within a context of language, culture and previous understanding, both shared and personal. The program is forever limited to working within the world determined by the programmer’s explicit articulation of possible objects, properties, and relations among them. It therefore embodies the blindness that goes with articulation” (p. 97).

The second consequence of this conceptual blindness or cultural bias is rooted in the Cartesian view of the rational process that dominates the field of computing. According to Winograd and Flores (1986), this rationalistic tradition incorrectly views thinking as the mind’s ability to objectify the external world language as “a system of symbols that are composed in patterns that stand for things in the world” and cognition as individually centered (p.17).

Although the cultural changes that the introduction of computers would bring in the Third World countries cannot be known in advance, since only hindsight provides the perspective for making a meaningful judgment and it often comes too late to reverse the process, it is fair to say that it will certainly impact cultures in the Third World.

For example, Mazuri (1978), while writing about computers as a modernizing technology, observed that modernization in the Third World countries involves a shift in consciousness from a concern with “custom and intuition to innovation and measurement” from a “preoccupation with ancestry and tradition to a concern for anticipation and planning, and from the holism of supernatural explanation to a concern with the temporal and specialized focus.” He continued that modernization does not automatically translate into social, economic and cultural development. “The computer in Africa” he acknowledged, “probably helps to promote modernization but it also aggravates Africa’s technological and intellectual dependence on Western Europe and North America” (p.332).

As mentioned earlier, the cultural traditions of the host society i.e., where the computer technology originates, as well as the unique characteristics of the computers make it difficult to know in advance the consequences of cultural borrowing. However, the character of western ideology i.e., the worldview that is amplified through the use of computers in education needs to be assessed critically.

Firstly, according to Winograd and Flores (1986), computer programs are based on a western rationalistic tradition that incorporates the view about the nature of language that is: a conduit that store and manipulate the information or data that is contained in the language. The representation i.e., “knowledge” that people have about the external world are put into language and then transferred to others. What this means for students in Third World countries is that as they enter information into a database, they will also be

undergoing socialization to this conduit view of language; that is' language will appear to convey objective, de-contextualized knowledge which is the basis for rational individualistic judgment (Winograd & Flores, 1986).

The acceptance of objective knowledge i.e., facts, data, and information as the basis of conceptual authority strengthens the possibility of social development along a western social, political and cultural pathway instead of reinforcing traditional (indigenous) societal forms of authority in Third World countries. The emphasis on objective knowledge will thence privilege the new social class of experts who pass the linguistic ability to collect and represent the meaning of the data.

A second point regarding the character of western ideology is that when a technology like computer is associated with modernization and progress, it is essential that a careful assessment of the original host culture be made. This assessment is the purpose for which it is being used, the social groups who promote and benefit from its adoption, and the changes that it precipitates in the experience of work, social relationships, guiding values and beliefs. For instance the argument being advanced today for the adoption of computers in education is that it empowers people to live in the information age. This information age, according to the argument, is merging continents and countries world wide into a mass communication network or a global village that is more harmonious and productive through the sharing of information. However, it is worth mentioning that the adoption of computers for educational use will foster the digital form of knowledge that is to be exchanged through the information networks that link together modern cultures. Hence acquiring computer technology is being regarded here as a universal symbol of modernization.

Nonetheless, policy makers in Third World countries that are adopting computers for educational purpose need to think deeply about this idea of the new information age and especially the claim that it represents the next stage in evolutionary process. There is also need to assess the economic and political interests of people who would gain from promoting the technology, as well as the impact a digital form of knowledge which is associated with computer technology would have on most cultures and traditions in Third World countries that are based on analog knowledge. It is essential for these countries to realize that they need not neglect master ideas which originate from analogue knowledge simply because it is ancient and not "modern" as the digital knowledge.

The third and final consideration regarding western ideology is that as countries in the Third World continue to adopt computers in education, they need to consider how to maintain a balance in the educational curriculum between local knowledge which is transmitted through the spoken word (orality) and the more universalizing perspective acquired through the written word. Mazuri (1978), while writing on the African perspective stated this problem unequivocally: "The nationalist task consists in indigenizing what is inputted and giving it greater consequence with the realities of its environment. But indigenizing the educational institution of Africa is in some ways more straight forward than re-rationalizing them" (p.210). While referring specifically to the orality-literacy distinction (i.e., literacy being identified with Western rationalism), he



noted “the call for de-rationalization, from a nationalist point of view is a call for national survival. A wave of modern research interests in African oral tradition and oral history is one step away from the rigid rationalism which has equated historical knowledge with written documentation bearing specific dates” (p.212).

### **Conclusion**

As Third World countries continue to adopt computer technology for educational purposes it is imperative that policy makers and professionals in the field of education have the ability to make professional judgments about the impact the technology has on the process of cultural transmission. This would not only require the understanding of the indigenous culture in the specific Third World country but also an ability to recognize how borrowed technologies serve as carriers of exogenous cultural values. As far as computer technology goes, it would involve understanding the nature of language, i.e., the indigenous language that is based on analogue knowledge vs. computer technology, which is digital knowledge based.

In addition, the cultural orientation embedded in the dominant western languages used for writing the software also needs to be fully understood. Teachers using the technology need to understand the dynamics of the socialization process in order to recognize when to supplement an instructional program with a historical perspective, how to ground it more in the life world of local customs and how to demystify it by making explicit the hidden assumptions of the person who wrote the software program.

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