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A Reflective View on the Digital Transformation of Words in Learning

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Because of the need to have more balanced ways of applying digital technologies in learning, this paper presents a few of the negative aspects of our dependence on writing and reading using the computer. By referring to Walter Ong's analysis of symbolic experiences, it is argued that the essence of digital writing is a sense of phenomenological lightness, being destined to control, and being destined to copy. By referring to Martin Heidegger's philosophy of Being, the substance of modern technologies is understood as a web of control. In digital writing, we control words and symbols as objects. This makes words more situation-free, and loosens the ties between words and our physical selves in specific places and times. This, in turn, facilitates our tendencies to be rootless, to be not at home, and to forget Being (as in Heidegger's conception). Based on these discussions, this paper suggests that we need more to hear thoughts in art education to reflect on ourselves regarding the use of technologies in education.

Keywords: digital transformation, words, reflective view, Ong, Heidegger

Introduction

Distance education, or e-learning, as a progressive mode of teaching and learning, has been especially reliant on computer-mediated communication, and it now looks very likely that we will come to depend more on it and on related digital technologies. Many other aspects of our social lives as well are now drastically influenced by digital modes of communication. A few of the typical views towards such technologies in learning are illustrated by the following quotes; "Students can instantly get in touch with central facilities"; "the most powerful feature of the system is the conferencing and messaging system ...allowing students to register on-line and to work collaboratively"; and "Students rapidly acquire a taste for the virtual community" (*The Times*, October 7, 1996). However, we are also noticing that there are pitfalls or side-effects in using such technologies as well, such as the one demonstrated by this story; "The student has been asked to find information on George Stephenson. He or she goes to the computer, finds the right disk, discovers the information, ensures that it is the right Stephenson, prints it out and then returns, waving the print-out in triumph. End of story" (*The Times Educational Supplement*, June 28, 1996).

In order to use these technologies in more balanced ways, we need to examine critically the

nature of our experience in such an environment. When our students depend heavily on digital tools to obtain their learning resources and to write their coursework, what psychic framework do they get for learning and knowing something, and what is the nature of knowledge obtained in such a way? To avoid possible pitfalls, we have to recognize the negative images that are part and parcel of the positive images. Information technology in education offers enhanced interaction, communication beyond time and distance, problem based learning, access to a large amount of knowledge, collaborative learning etc. It makes it seem as if everything new is possible. But both 'yin' and 'yang' are necessary. This study, then, tries to create a mirror that reflects the negatives of digital technology in teaching and learning. Here we recall that in writing with a computer words are always processed digitally, producing digital transformations. Words are transformed into binary codes to be processed digitally within the machine and then transformed again into words on the screen. This is extending to the whole range of symbol systems within multimedia and is also expanding exponentially through the networks. In practice, we enjoy this convenience, and in education we too often speak of it positively in terms of obtaining a wider range of information, communicating beyond time and distance, realizing situated learning, and other such benefits. However, are there any 'trade-offs' in this phenomenon, or we are not losing something even as we are gaining something? We first need a well-grounded base to recognize such trade-offs.

Questions and Approaches

To illustrate my questions, let us imagine three-layered concentric circles (Figure 1), the base of which is the Earth or the world of living and nonliving things. Over this base, though not separated from the Earth, is the first layer, which Ong (1982) called 'orality'; over that is the second layer, referred to as 'literacy'. This is overlaid by the third layer, termed 'digital literacy'.

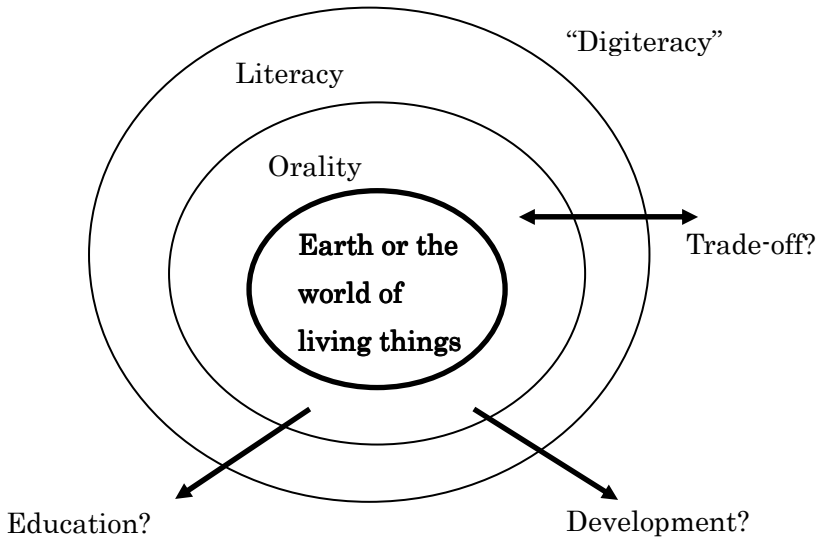

Figure 1. *Layers of symbolic transformation*

Note that these three layers overlap, and human beings actually experience these modes at the same time within the context of living things. This figure was illustrated only to express the relative historical trend of the three layers of our language experience. Let us call this figure the 'layers of symbolic transformations'. Roughly speaking, we now live in the world of literacy, before which we had a long period of orality when human beings had no written words. We are now experiencing computerized writing, which is basically digital transformation of words. It not only includes words but also the whole range of symbol systems. The constant fact is that we live on the Earth, or in this world, nowhere else.

Two questions arise from within this framework. First, what is the psychic nature of our experience with new information technologies? Second, what are the trade-offs, if any, in the shift from literacy to digital literacy? Both questions are related to how we understand reality and what it is that we are being in the world. To examine the psychic nature of our digital manipulation of words, I refer to Walter Ong's work on orality and literacy. To reflect on how we understand reality and its relation to language in the experience of digital tools, I refer to Martin Heidegger's philosophy. I do this because his philosophy ponders on our modes of existence on the Earth. To say it poetically, Heidegger's thinking touches the Earth and is rooted to it. He is trying to explore the distant past when man was obtaining language, a very special time in terms of the relationships between man and the world. He remembered something very important that we have been forgetting. That is “re-membering” or belonging-again. To what, though? Belonging again to the Earth, to Being.

In other words, or from a nostalgic viewpoint, this question was expressed by Sven Birkerts (1994) as; "When older people sigh and say that 'life was different back then,' we may instinctively agree, but how can we grasp exactly what that difference means?" (p.21). Birkerts himself tries to remember the past, and does it beautifully. "We hear voices, and we hear footsteps die away in the distance. Days pass at a pace we can hardly imagine. A letter arrives and it is an event. The sound of paper unfolding, of wind in the trees outside the door. And then the things, their thingness" (p.25) .This is one example of the trade-offs. In the age of telecommunication, we seem to have lost the significance of silence and its surroundings.

Partners in Cognition, as well as Trade-offs

To look upon the study of educational media, here, the general image of media's instructional effects is rather negative as far as we conceive media as being vehicles that convey instructional content. Clark(1983), after examining the results of meta-analytic studies, concluded that we could not attribute any direct instructional effects to media, while the active factors were the teaching methods that are developed and applied “behind the media” and learners' prior knowledge and motivation. We at least learned the "technology does not do it alone" lesson (Salomon, 1992).

However, when the computer appeared, many researchers felt that it was different from the previous media because it can interact with the learner. Because it is a symbol-manipulating machine and is somewhat like our brain, it would affect our thinking process and should

enhance our thinking ability. A good example reflecting such a view is a paper titled 'Partners in cognition' (Salomon, Perkins, and Globerson, 1991). Salomon, Globerson, and Guterman (1989) actually showed experimentally that using a computerized writing tool enhanced students' writing quality. According to them, there are effects "with" the tool and effects "of" the tool. When we work with a tool, we might perform better than we do without that tool. For example, people who use an abacus can calculate better when they use it, which is the effect "with" the tool. This operation is then internalized gradually within their head to the point that they obtain a thinking framework that works well even without the abacus at hand. This is the effect "of" the tool. Thus, we may gain new abilities through using a new intelligent tool.

Here a question arises. Are there any 'trade-offs' in this phenomenon, or are we not losing something by gaining something? As for myself, I feel that my ability to write Chinese characters has degenerated, obviously due to my excessive use of a word processor. Some people have already discussed such trade-offs to some extent. For example, Birkerts (1994), from observing college students' reading performances, generated a list of gains and losses of 'electronic postmodernity'. In the losses column, he listed (a) a fragmented sense of time and a loss of the so-called duration experience; (b) a reduced attention span and a general impatience with sustained inquiry; (c) a shattered faith in institutions and in the explanatory narratives that formerly gave shape to subjective experience; (d) a divorce from the past, from a vital sense of history as a cumulative or organic process; (e) an estrangement from geographic place and community; and (f) an absence of any strong vision of a personal or collective future (p. 27). These observations also seem to apply to Japanese students. It is interesting to note here that some of these points have resonance with Heidegger's ontological thinking about the conditions of human beings.

Orality, Literacy, and Digital Literacy

Before going to Heidegger, however, we need to reflect on the world when we had no written words. Walter Ong (1982) explored the psychodynamics of primary oral cultures, that is, of oral cultures untouched by writing. It is difficult for us to imagine what primary oral cultures were like, because we have been educated to internalize deeply the culture of literacy. Ong's analysis first shows the crucial role of sound. He writes, "In a primary oral culture, the expression 'to look up something' is an empty phrase: it would have no conceivable meaning. Without writing, words as such have no visual presence... They are sounds. You might 'call' them back - 'recall' them. But there is nowhere to 'look' for them. They have no focus and no trace, not even a trajectory. They are occurrences, events" (p. 31). Oral speech can not be seen nor recorded on paper. It just occurs before us.

Because sound exists only when it is “going out of existence”, that is, the sound of speech disappears accordingly just after it is spoken, human language is always closely linked to a specific time and place. The words never occur alone because they are addressed by a real person to another real person(s) in a specific situation that always includes much more than mere words. Sound is also 'dynamic', because it occurs with the power that comes from the body of a living person. Language connects your body and the world where you are. Because of these and other psychodynamics, oral cultures, Ong writes, "must conceptualize and verbalize all their

knowledge with more or less close reference to the human lifeworld “(p.42), and "tend to use concepts in situational, operational frames of reference that are minimally abstract in the sense that they remain close to the living human lifeworld (p. 49)". Oral cultures were thus more closely linked to actual human life.

By contrast, literacy, or the text of written words, "frees the mind of conservative tasks, that is, of its memory work, and thus enables the mind to turn itself to new speculation" (p. 41), although it took a considerable period of time for those cultures with written words to reach this stage. This was made possible, at least in Western cultures, by the invention of the alphabet. According to Ong, it was the Greek alphabet that first "analyzed sound more abstractly into purely spatial components. It could be used to write or read words even from languages one did not know" (p. 90). Words are also written in a specific time and place as oral utterances are made, but the difference is that those words can be read in a different time and place. Thus writing separates the knower from the known, and "establishes what has been called 'context-free' language or 'autonomous' discourse" (p. 78). It seems natural for Ong, after analyzing the psychodynamics of literacy, to regard writing as a technology. He compares it to the later technologies of printing and the computer, and declares, "Writing is in a way the most drastic of the three technologies. It initiated what print and computers only continue" (p. 82). By contrast with natural, oral speech, writing is completely artificial. But is it this all? Are there not any new psychodynamics in the use of computers?

If literacy is the techologizing of the word, it may also be possible to say that the invention of the alphabet was the beginning of digitizing the word. The computer advanced that process through electrical automation of processing binary digits. Although we are not always conscious of it, writing with a computer is always a digital transformation process. Behind every character and symbol we input and retrieve, there are ASCII codes. With Japanese kana and kanji characters, we have JIS codes. Behind these codes is a digital world of 0s and 1s or on and off. We are unconsciously initiating a double or triple codification, first from sounds to visual characters, and then within the machine itself from those characters to digital codes. Heim (1994) pointed out that this kind of reductive thinking had begun with Leibniz in the 17th century.

What then are the psychodynamics of the digital transformation of words? To summarize a few works: Michael Heim (1987) analyzed the nature of our experience of word processing from the viewpoints of manipulation of symbols, formulation of thought, and linkage of texts; Nguyen and Alexander (1996) pointed out some problematic aspects of on-line experience, which include the globalization of time, the breakdown of boundaries, and the transcending of the body; and the book by Mark Slouka (1995) on artificial reality technologies contains chapters on the assault on identity, the assault on place, the assault on community, and the assault on reality. Joohan Kim (2001) pointed out that a digital-being is not exactly a thing because it does not belong to objective time and space. I would like to add here, only three aspects of the phenomenon.

1) Floating on the screen

On the other side of the many benefits we get from digital tools the first aspect of the phenomenon that shadows our sense of words is their lightness. In the process of digitally

reducing words, which is done automatically within the machine, words instantly appear on the screen as typified figures. They “float” on the screen. You can scroll the text and store your text in your machine or somewhere in the mainframe by sending it from your terminal. You can also send your text to another mainframe. Words are going out, moving or flying about, not at home. Words as visual symbols are never fixed in a physical sense. They are rootlessly light. 'Rootlessness' (English translation by McWhorter, 1992) is one of the ontological keywords in Heidegger.

2) Destined to control

Second, writing becomes connected to the act of control. While writing with a computer, we use commands such as cut, copy, paste, insert, and save. This has benefited us a great deal in the productivity aspect of writing, gathering information and communicating, but in this way, words are controlled as objects. In handwriting, the written words are more a part of the writer. They are “together” with you, appearing on the paper and being fixed there with the movement of your hand. Personal care is attached to the words rather than in controlling them. By writing digitally, we are participating in the culture of control, in the practice of management. Again this has enhanced the productivity in writing. Modules or fragments of the texts are always re-usable. They are easily edited to produce another text. This is supported by our culture, which values productivity and speed. Texts are circulated through the networks, some of which are copied and used again. “Inflation” of texts occurs. Like economic inflation, it degrades the value of texts and makes it difficult to distinguish the extraordinary from the ordinary.

A sense of abundance is next to a sense of almost nothing. Large databases are distributed from hand to hand and around the world on CD-Roms. The tendency to “know something” is gradually being replaced by having easy access to “that thing.” Everything is somewhere. Some people become greedier for more information in the so-called “Having” mode of knowing (Fromm, 1976). At the same time, a sense of everything being possible would brings a sense of nihilism. Everything is possible, so why should I put so much effort into this? Moreover, knowing what we can do with this new tool would help us decide what we should do. Upload and download music on the Net, not because you need that music, but because you can do it. This is just another kind of nihilism.

3) Destined to copy

Thirdly, digital writing is essentially copying. It inevitably copies texts in the process of digital transformation. It reduces symbols into digital codes and reprocesses them into symbols. Due to this nature of transformation, writing and communicating using the computer makes limitless copying possible. Because of this copying power, writing becomes more situation-free, disjoined from particular times and places. This was already true when manual writing had begun, but computerized writing has extended its scope. Due to its perfect duplicability, a digital being can exist at multiple locations simultaneously – that is, it defies normal spatiotemporal constraints (Kim, 2001). In computerized writing, you can easily copy your own texts, which improves the productivity of writing, but you can also copy texts that someone else wrote somewhere, sometime. In episodes of copying after copying, that somebody would become nobody, and that somewhere would become nowhere. This is a negative aspect of ‘collaboration.’ This phenomenon resembles the 'theyness' (English translation by Steiner, 1992)

of human beings, one of the inauthentic conditions of 'Dasein' analyzed by Heidegger. Moreover, in continuous copying, borrowing that does not require returning is possible. In other words, it becomes difficult to distinguish sharing from stealing. This is the loss of originality, and the loss of identity. In handwriting, however, the same letters appear slightly different from time to time, but we understand that it is the same person who wrote them. More typically in Eastern calligraphy as an art form, where people use brushes to write, originality and authenticity is crucial. That is not the case in the typified figures of letters in computerized writing.

Dasein and 'Cyberspace'

Let us now turn to Heidegger. The German word 'Dasein' is one of the most important words in Heidegger's thinking, and he examined this word with utmost care in his 'Sein und Zeit' (1927; English translation 'Being and Time' in 1962, hereafter quoted as BT). According to Steiner (1992), "Dasein is 'to be there' (da-sein), and 'there' is the world: the concrete, literal, actual, daily world. To be human is to be immersed, implanted, rooted in the earth" (p. 83). Dasein is thus being-there and being-in-the-world. We live in the world. We are here, in this actual world, nowhere else. This is the basic ontological condition of human beings.

An equally important aspect of Dasein is its "openness to Being". Only man, as Dasein, can question Being. By this questioning and thinking, man can be an open place where Being reveals itself. Although it is sometimes difficult to logically understand what Heidegger is saying, at certain rare times, such as when things around me are quiet, or when I am reading a poem or looking at a picture, I feel – somewhat illogically – that, for a moment. I am feeling "Being." Yet Dasein is also a 'thrownness'. Man as Dasein is "thrown" into the world. We do not start our existence, but the fact is, we find ourselves as already existing, having already "started." In this thrownness, we meet and experience things and others. We are, therefore, we think. Still another aspect of Dasein is its 'togetherness.' We live in this world inevitably with others. Dasein is, therefore, a co-Dasein, or to-be-together-in-the-world, and the world of Dasein is a co-world.

This "being-withness," however, has also its negative components, and it is at this point, in following Heidegger's analysis of inauthentic conditions of Dasein, that we find critical viewpoints towards the nature of our behavior in so-called Cyberspace. The first such component is Dasein's 'theyness'. We live our daily lives, with others, thrown among others. Through this, we come to exist not just in and on our own terms, but in reference to others. In other words, we are not ourselves. We are they. This is the recession of true Dasein into averageness, publicness, and irresponsibility. It is like a soap opera on television. A typical mindset of the characters in those dramas is how they look from other people's viewpoints, that is what other people think of them. I am almost them, or "they." It is also like this in so-called cyberspace, especially in some role-playing games, including sexual ones. In such situations, you can be anyone, and people like you can also be anyone. Anyone can do anything without any responsibility. It is the world of anyone and no-one.

In the 'theyness' mode of Dasein in everyday life, idle talk or chatter occurs easily. Heidegger contrasts this to 'real speech.' Idle talk enfolds not only the vocal rush of trivia, gossip, and

jargon, "but even spreads to what we write, where it takes the form of 'scribbling'" (BT, p. 212). Here we are reminded of such talk and writings as happening in 'cyberspace' in the forms of cybertalk, on-line chats, and various discussion groups. Such talk will be motivated by curiosity or lust for novelty, which is another negative component of Dasein's everydayness. Curiosity fosters the illusion of understanding something without genuinely grasping it. It obscures critical inquiry by making us busy seeking novelty. "It seeks novelty only in order to leap from it anew to another novelty" (BT, p. 216). Isn't it this kind of drive that is attached to the use of hypertext, multimedia, and the World Wide Web? The catch phrase of hypertext is 'as you may think', but this is questionable and it might just as well be 'as your mindless curiosity moves around.' On the screen of the WWW, I click this button and that button simply because it looks new and interesting. 'Technonerds' and writers of articles in computer magazines are always busy searching for what is newest. 'Forgetfulness of being' is thus developing.

Technology as Opposed and Related to Art

Technology itself needs to be questioned, then, and Heidegger's keywords for doing so are Gestell and Bestand (The Question Concerning Technology, 1954; English translation in 1977, hereafter quoted as QCT). Figure 2 illustrates the interrelated positions of these keywords. Today, we see many systems in which things are being swept together into a vast network. Within them, the only meaning of these things lies in their being available to serve some end that will itself also be directed towards getting everything under control. Heidegger calls this fundamentally undifferentiated supply of the available 'Bestand' or the 'standing-reserve.'

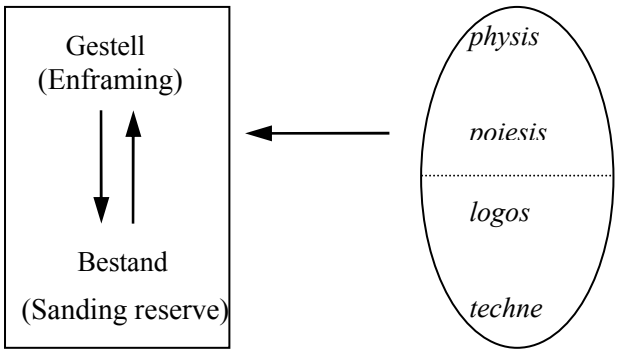

Figure 2 *Technology as deviated from art*

Parts of the system are objects to be controlled. Imagine for example, the manufacturing of a car or a television. Thousands of parts are used in the process. Each part is connected to another part in order to function in a way that meets a particular objective. That objective is connected to some other end. The car is then used for a particular purpose, for which highways were built. To build a highway, other machines are used. The “whole” is connected, controlled, and controlling. It gathers things to be readily used. This wholeness is 'Gestell.' Gestell is the mode of technology. Before a dam is built to produce electricity, water is a standing reserve. Within a

computer used to produce information, words are a standing reserve. Gestell is everywhere around us. Gestell is translated into English as “Enframing,” or a controlled framing, a managed ordering, or a challenging and provocative gathering. As such, Heidegger regards the essence of modern technology as control. Hundreds of thousands of mainframes are now linked together with connected terminals on each site. The Internet is a huge Enframing network based on the digital transformation of words. Enframing what, though? Words and languages, or our relationship to the world, our “Being” in the world.

Gestell conceals the self-disclosure of truth and conceals the appearing of Being as itself. Under the Enframing power of Gestell, we forget that there is another way of thinking than technological thinking; we forget Being. That is why Heidegger regards Gestell, the essence of technology, as the danger of all dangers. Under our Gestell mindset, or in our technological way of thinking, language is treated as information or data to be controlled by us or to control something else. However, Heidegger reveals that the word <techne>, from which the word technology came, was very close in ancient Greece to <physis> of Nature and <poiesis> of Art. <Logos> also belonged to this same group of words. He writes;

> *"There was a time when it was not technology alone that bore the name techne. Once that revealing that brings forth truth into the splendour of radiant appearing also was called techne. Once there was a time when the bringing-forth of the true into the beautiful was called techne. And the poiesis of the fine arts also was called techne" (QCT, p. 34)*

The original meaning of techne was thus the unconcealed “Nature,” the way something is in “itself” and it was also with “Poesie” of art and poetry. Even the word <logos> meant gathering in, recollecting, and naming. This word was very near to creating poetry. And suggesting our way of overcoming the danger of Enframing, Heidegger continues;

> *"Because the essence of technology is nothing technological, essential reflection upon technology and decisive confrontation with it must happen in a realm that is, on the one hand, akin to the essence of technology and, on the other, fundamentally different from it. Such a realm is art" (QCT, p. 35).*

Turning back here to the question about writing, handwriting using brushes is still a highly regarded art form in the East. Japanese poems (haiku and tanka) have been written, and are still written, by the poets themselves on tanzaku (long narrow poem cards) and shikishi (square poem cards). As an example, at least three tanzaku cards of the same haiku poem written by Buson (1716-83) have been preserved to the present day. Buson was a poet-painter during the Edo era of Japan, and is now considered one of the greatest artists in the literati style. Although the three calligraphy works look slightly different, experts agreed that they are authentic Buson works. This is a profoundly different phenomenon from the digital processing of words. The poem is about a peony flower in early summer and reads;

> *(botan chirite uchi kasanarinu nisan ben)*
> *Peony having scattered, two or three petals lie on one another.*

One might feel, at first sight, that this is trivial. But imagine the tranquil image of a few petals that have fallen on the floor. I feel a movement of <physis> here, especially in the overlapping strokes of the soft characters of Japanese kana, which signifies the petals' falling and lying on one another. A movement of appearing and disappearing, concealing and revealing is there at the same time. I find here the genuine meaning of writing.

Educational Implications

How can we then draw educational implications from what has been argued? This is a rather difficult task mainly because my work is incomplete, but also because Heidegger was not very practical. In fact, he states "it (philosophy) cannot be directly applied or judged by its usefulness in the manner of economic or other professional knowledge" (An Introduction to Metaphysics, 1953; English translation in 1959, p. 7). He only suggests that Care (German word Sorge) is needed for us to overcome the inauthentic conditions of Dasein, and that art is required to reflect on ourselves about technology.

Information technology is now a necessity in our lives, and it is not practical to deny it. However, it at least seems clear that we have to be deliberately reflective about the use of information technology in education in both instructional and managerial processes. Thinking about the Internet, it will be all right if we can still come back frequently to this living world from that floating world and reflect about the experiences in that world. But what would it be like if the experience with that world became so widespread, beyond the critical mass, that we might lose our sight in and of this world of living and still things? Education has responsibilities. What follows are only provisional visions to respond to these responsibilities concerning education in general, rather than distance education specifically.

We could first put more emphasis on the nature of language, not only on the use of language. In this sense, instruction in poetry is important. As an instructional material for this, haiku is significant because it is short enough to be appreciated and is related, in many cases, to different aspects of nature and existence of things. Reflections about literacy or the meaning of writing words could be introduced as curriculum content. At the same time, in the teaching of information technology itself, our students should go beyond the so-called computer ethics. In teaching IT, we should also evaluate the quality of our experiences when we do not have a computer at hand. Moreover, the orality that Ong analyzed is still in our culture, as well as literacy and digital literacy. It seems necessary to look for the co-existence of these three modes of our language experience and to find a good balance among them in educational settings. Careful listening, oral dialogue, and writing by hand should not be lost in our educational practice.

Sensitivity to the past and to the classics is also important in terms of the students' chances to reflect upon human existence. As Heidegger suggests, art is indispensable for us to be reflective about technology. We have to have more input from the area of art education, and should place more emphasis on such areas as painting, calligraphy, creating poetry, playing music, and dancing. Students' activities in these areas use hands and living bodies, through which we could expect students to have closer relationships with things and to create experiences that are

possibly 'open to Being.' Through these activities, the learner would also have a chance to think and feel in a different style from technological thinking. Moreover, environmental education is important in this sense, but to practice it only from a scientific or ecological approach is not enough. It must also include ontological contemplation about the Earth, things living and still, and human beings. A sense of belonging to the Earth should be fostered among students. For this purpose, chapters of McWhorter's "Heidegger and the earth" (1992) is a rich source of insights for instructional design in this area. Lastly, we need time, a slow and quiet sense of time in our learning environments, to possibly free ourselves from inauthentic conditions of Dasein. Through this slow sense of time, students would possibly experience Being-centered thinking rather than human-centered thinking which is brought by technology.

It seems difficult to achieve all these at once and even more difficult when we think that education alone is not enough. We must at least have a mirror that reflects the negative consequences of our enthusiasm for information technology in education. The last sentence of Birkerts' Gutenberg Elegies is "From deep in the heart I hear the voice that says, 'Refuse it'" (p.229). Since I am not that strong, my limited conclusion to myself is, "you may occasionally use it, but reserve yourself and preserve it in different older ways."

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