

Integrating E-learning and E-teaching Technology into Transdisciplinary Methodology

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Abstract: In this paper we have tried to address two of the major challenges that the education system of the 21st century is grappling with. These are, the shift in the cultural paradigm and the ever evolving information technologies of communication of the cultural paradigm and the amazing evolution of the informational technologies of communication. Keeping these in mind, there is a need to acknowledge the challenges, find the solution and blend them in the current public education system.

Therefore, this paper talks about the consequences that can arise from the amalgamation of these information technologies and the transdisciplinary methodology, that are specific to the new paradigm. An attempt has been made to define learning/knowledge/understanding in a way that highlights the positives and negatives, the limits and the perspectives of e-learning when it is integrated with trans-disciplinary methods in the field of education.

Keywords - transdisciplinarity; e-learning; e-teaching; knowledge; understanding; learning; teaching; technology.

I. INTRODUCTION

All the hypothesis made in this paper is based on the idea that world today is facing two of the major challenges that need to be addressed. First, the continuously changing cultural paradigm and second, the radical evolution of information and communication technologies. As per our understanding, a cultural paradigm stands on three pillars that are interrelated: the vision on the world, the vision on the knowledge, the vision on the human being (society, culture, education, etc.). The 21st century cultural paradigm – as Basarab Nicolescu has already affirmed – is the paradigm of cosmodernity, based on transdisciplinarity. Basarab Nicolescu defined the term “cosmodernity” as being different from postmodernity and also from transmodernity (Muresan, 2010).

Hence, a change in the cultural paradigm leads to a change in the field of education. Any autonomous approach on education (independently of the three pillars of the paradigm) is irrelevant, random, noxious and without any real efficiency. As a result, the educational paradigm has to be changed in correlation and to be considered related with cultural paradigm. The second major challenge staring us in the eyes is the fast paced and continuously evolving informational technologies, the development of the internet. The “digital era” represents one of the most important revolutionary changes of our times. It offers a lot of educational openings or affordances which cannot be ignored by the sciences of education. New opportunities for the teaching-learning process have been achieved. One of the most well known is the e-learning. Considering the differences between vis-a-vis learning and e-learning, appropriate instructional designs should be developed for the later one.

Taking into account all these presumptions the main idea of this paper is to analyse how the transdisciplinary methodology (the core of cosmodernity) and the e-learning could be combined in the benefit of education, how the new technologies can transform education according to transdisciplinarity approach. There are some unanswered questions, that we will try to answer in this paper. Like, is the integration of e-learning and transdisciplinary methodology the true solution to the problems facing the education system of the 21st century? What does it really mean and imply? Is there any compatibility between the two? What are the consequences of this Integration?

II. TRADITIONAL EDUCATION VS TRANSDISCIPLINARY EDUCATION

Some conceptual clarity is needed to understand the above stated concepts correctly. First of all, we have to explain what does transdisciplinarity really refer to and what are the differences between traditional and the trans-disciplinary education. Transdisciplinarity is an emerging term that is being used across fields all around the world. The word has many meanings associated with it that leads to much confusions and deviation from the true essence of the word. The term is used so ambiguously that the scientific community is to arrive at a consensus in the terminological and conceptual meaning of the word. There is also some confusion between the terms interdisciplinary and transdisciplinary and the relation between them.

Therefore, we do consider that a minimal updating of the concept of transdisciplinarity is absolutely necessary, taking into account the given definition in Basarab Nicolescu and CIRET group view. According to this view, transdisciplinarity is a methodology. The three axioms the transdisciplinarity is based on are (Nicolescu, 1985, 2002a, 2005, 2006a, 2006b, 2008):

- a. ontology - Levels of Reality and the Hidden Third,
- b. the Logic of the Included Middle,
- c. epistemology-knowledge as an emergent complexity

Transdisciplinarity cannot be understood and applied without considering the above mentioned axioms. Ignoring or eliminating one of them has a potential of arriving at a false result or understanding of the transdisciplinarity concept. We have to point out that transdisciplinarity is not different discipline. Nicolescu's state that, "Transdisciplinarity concerns what is at the same time between disciplines, inside various disciplines and beyond any discipline. Its aim is the understanding of the current world and one of its imperatives is the unity of knowledge" (Nicolescu, 2002b, p. 232).

Also, there is one pinning fact to be kept in mind here that is the transdisciplinarity is not a method but a methodology. Method and methodology are sometimes used synonymously but they aren't same. Methodology is the study of methods and deals with the philosophical assumptions underlying the research process, while a method is a specific technique for data collection under those philosophical assumptions. A system of methods and principles for doing something is termed as the methodology, for example for teaching or for carrying out research.

Consequently, we can firmly state transdisciplinarity to be the conclusive factor in changing of the knowledge paradigm for the 21st century. New methodological keys are hence offered by the recuperation of the Subject place in knowledge, by the logic of the included middle, by a new understanding of Reality – according to the ontology of reality levels and the Hidden Middle - and by the realization of the incompleteness of knowledge. These outcomes open a large opportunity for many applications in various fields: education is a privileged one. In our opinion, transdisciplinarity can offer a sustainable solution to the educational crisis mankind is facing nowadays.

In a nutshell, transdisciplinary methodology is the best way to understand transdisciplinary education. The below mentioned scheme can help identify the changes that a transdisciplinary educational approach will bring along compared to the current education system.

| | Traditional education | Transdisciplinary education |
|---------------------------|-----------------------|--------------------------------|
| Learning to know | Knowing | Understanding |
| Learning to do | Doing/acting | Creating |
| Learning to live together | In society | In society and in the universe |
| Learning to be | Existing | Being |

TABLE 1: Following pillars of education from traditional and transdisciplinary perspective:

Above issue is substantially explained in Mirela Muresan’s article (Muresan, 2013).

Now, after understanding the above mentioned facts we can sum up the following conclusions:

- Learning is an experience that involves the mind, body and soul and leads to an inner as well as outer experience. The whole process is quite complex.
- Learning results in knowledge that includes information, competence and value.
- There's more to Learning and knowledge and attempt should be made to understand all their dimensions.

Understanding of the meaning of knowledge

Transdisciplinary education makes one understand the reasons and meaning of existence- both his own and of the world in general. The complex crisis faced by the human race today can be 'cured' through transdisciplinarity only: “the loss of meaning and the universal hunger for meaning” (Nicolescu, 1999). At this point we can already anticipate that e-learning is only a part in the holistic approach of an integral trans-disciplinary education.

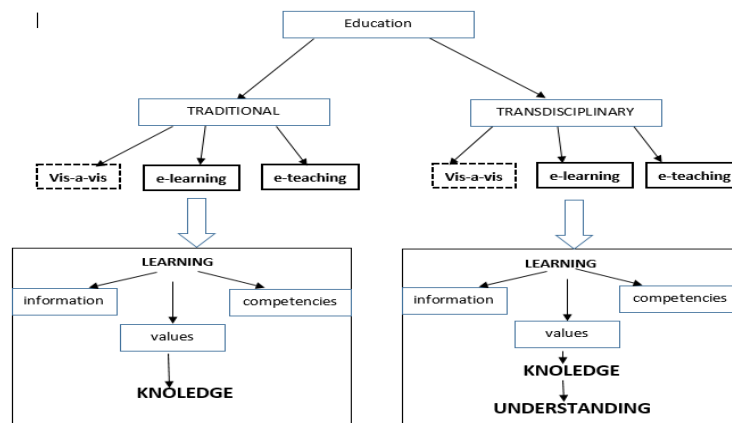


Figure 1: E-learning & E-teaching integration in traditional and transdisciplinary education

III. LEARNING VS VIS-A-VIS LEARNING

With the development of internet and communication technologies, education could not remain indifferent; it had to change for good. The cybernetic revolution led to a different form of education: the e-learning one. Even though there are many definitions of e-learning advanced by various authors, its essence can be captured as “training delivered on a digital device such as a smart phone or a laptop computer that is designed to support individual learning or organizational performance” (Clark and Mayer, 2011, p. 7).

| vis-a-vis learning | e-learning & e-teaching |
|---|---|
| Specific space and time | Ubiquitous learning -anywhere, anytime |
| Receiving meanings (passive) | Designing meanings (active) |
| Traditional codes and channels (text and image) | Multimodal meaning -different codes and channels (text, image, sound, data) |
| One feedback – normative assessment | Recursive feedback -formative assessment |
| Individual intelligence -knowledge consumers | Collaborative intelligence -knowledge producers |
| Cognition | Meta cognition - thinking about thinking |
| Homogenizing teaching | Differentiated learning |
| Focused on teaching – teacher centered | Focused on learning – student centered |

Table 2. A comparison between vis-a-vis learning and e-learning

It is because the differences between e-learning and vis-a-vis learning are not considered much and not given much thought, the implementation of e-learning in educational systems is faced with so many challenges. Based on e-learning affordances discussed by Cope and Kalantzis (2013a, 2013b), we present the main particularities of e-learning and compare them with their vis-a-vis learning counterparts.

Ubiquitous learning: E-learning is time and space flexible. While vis-a-vis learning requires a specific time and space (usually the classroom), the participants of an e-learning course can be anywhere and anytime. This offers time and space flexibility extremely important for individual timing and the globalized world.

Designing meanings: In traditional vis-a-vis education the source of knowledge was represented by an authority - the teacher, a book author or an expert. Knowledge was a given. In today's knowledge society learners have access to multiple sources, some of which could have different perspective on the same subject. Therefore, the learner must actively search the information, analyze it and attach a specific meaning to it: "Knowledge is something that must be actively made, discovered through process of navigation, sifted through processes of critical discernment, and reformulated as one's own" (Cope & Kalantzis, 2013b, p. 3).

Multimodal meaning: Until recently, the main way of attaining and transmitting information in vis-a-vis education was textual. E-learning allows multiple means of formulating and transmitting knowledge, from text to image, sound and video, which facilitates learners to supplement the classic textual information.

Formative assessment: E-learning is based on media environments that help in recursive feedback. The assessment process in e-learning is formative and not normative as done in classical vis-a-vis learning.

Collaborative intelligence: Classical teaching depends upon transmitting information and knowledge from a authorized source and the person learning it merely consumes someone else's concepts and ideas. Whereas in e-learning & e-teaching environment, the need to depend on an authorized source is eliminated and one does not need to reciprocate similar information by learning it by heart. As information being readily available, the learner can access and anything anytime.

Metacognition: Empowering the learner, e-learning emphasizes self-reflection in order to determine the learner to think about the nature of the tasks and to assess the degree the learning goals are achieved. Thus, e-learning goes beyond vis-a-vis learning which focus on cognition.

Differentiated learning: Vis-a-vis education is mainly interested in hunting the best teaching, while e-learning is mainly focused on best learning. Obviously, traditional education entails homogenized teaching and e-learning is concerned with differentiated learning as a function of learner's needs, individual rhythm and potentials.

Summarizing at this point, we can say that the main difference between vis-a-vis learning and e-learning & e-teaching arises from their focus upon teaching and learning process. All the other differences emerge from this focus. Even there are important differences between vis-a-vis learning, teaching, e-learning and e-teaching, all still belong to more step in necessary: the integration of e-learning and e-teaching technology in the trans-disciplinary methodology.

IV. CONCLUSIONS

Keeping in mind the above mentioned challenges that face the education system in the 21st century, we can conclude the following statements:

- It is imperiously necessary to change the educational paradigm according to the new cultural paradigm of trans-disciplinarity in the 21st century society is facing on
- The integration of new and upcoming information technologies should be done properly into the public education sector in order to adapt a transdisciplinary approach
- E-learning and e-teaching needs to be recovered and mixed with transdisciplinary education. This can help in making use of all the affordances and opportunities that will be generated
- Valorisation of these benefits is necessary
- It is important to be aware of the restrictions and losses that this amalgamation may result

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