

Transdisciplinarity in education

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Abstract: The present paper sets itself to analyze the definitions of the concept of trans-disciplinarity and to highlight the need for applying it, for the man of today and of the future, to point out its relation to education and the mutuality of that relation, and to suggest a number of ways and exigencies in a transdisciplinary approach to teaching and learning of modern languages departments, including computer assistance.

Keywords: transdisciplinarity, education, modern languages departments

Transdisciplinarity

Transdisciplinarity is a relatively recent concept, involving a principle of scientific research and interdisciplinary behaviour and practice that presupposes the application of scientific approaches to matters that lie between, across and beyond the boundaries of traditional, conventional academic disciplines. Its aim is the holistic understanding of this world and the unity of knowledge needed for this.

Basarab Nicolescu, one of the key promoters of transdisciplinarity, has defined it via three **methodological postulates**:

1. the existence of different **levels of Reality** in Nature and in our knowledge of Nature and, correspondingly, of different levels of perception governed by different types of logic.

2. the **included middle logic**, which ensures the passage from one level of reality to another. The included middle is the relational,

mediating medium that facilitates “communion” across multiple mechanical systems and multiple systems of rational proportions.

3. the network of levels of Reality and perception is a **complex structure** and interrelationship of environmental, economic, social, political and technical systems and also of a diversity of voices existing among cultures, race, religion, ethnic groups, geographic and intergenerational populations (Nicolescu 2002; *Charter of Transdisciplinarity*, 2002).

Transdisciplinarity, a term coined by Jean Piaget (1972: 144), has come to crown the earlier research fields of **multidisciplinarity** and **inter-disciplinarity**.

While **multidisciplinarity** studies a topic not in one but in several disciplines at the same time, whereas **interdisciplinarity** is concerned with the links and the transfer of knowledge, methods, concepts and models from one discipline to another, **transdisciplinarity** is concerned with what is **between** the disciplines, **across** the disciplines and **beyond** the disciplines, within the dynamics of the simultaneous action of several layers of reality (Nicolescu 1997, Marinova, Mc Grath 2004).

Transdisciplinarity studies the isomorphisms between the different domains of knowledge; it considers the consequences of a flow of information moving between the various branches of knowledge, allowing unity amidst diversity and diversity through unity. It aims at revealing the nature and specificities of this flow of information, with a view to working out a new language, a new logic and new concepts that support a real dialogue between the specialists in the different domains of knowledge (Nicolescu 1987: *Moral Project Page*).

Basically, “knowledge means the acquired ability of surviving and transcending” (D’Ambrosio – <http://perso.club-internet.fr/nicol/ciret>) that leads man onto attaining his plenitude, reaching humanity, taking possession of his self in an enhanced three-dimensional reality: that of the material reality (two-dimensional) and that of essentiality going beyond reality.

Transdisciplinarity and Education

The continued expansion of the capitalist ethic of mass production and consumerism has been carried on in parallel with the evolution for many decades of that “spiral of decline” (Calder and Clugston, 2003) illustrating global environmental and human well-being. The new

concept which involves a new approach to knowing and understanding, doing, relating and being, is that of **sustainability** (Marinova, Mc Grath, 2004). Sustainability is a practical philosophy that supports a systematic analysis and determination of solutions for the development of a more just, equitable and peaceful global order. This framework of principles, this philosophy of practice harnesses various levels, places and cultures in a systematic approach, with a view to achieving better environmental and social wealth, alongside of allowing supportive economic improvement. It stresses the local knowledge and action within a broader global perspective that recognizes interrelationships.

As one analyst puts it, the global environmental and social challenge is a “crisis of values, ideas, perspectives and knowledge and is thus primarily a crisis of education” (Cortese, 2003). An education in sustainability has the capacity of increasing awareness of the complexity and interrelationships of environmental, economic, social, political and technical systems. This can be achieved via a **transdisciplinary** approach to teaching and learning, which could provide transdisciplinary skills that cross disciplines, cultures and institutions.

Transdisciplinarity in education for sustainability should be based on the **four pillars of education** in the 21st century, according to reports to UNESCO of the International Commission of Education for the Twenty- First Century, chaired by Jacques Delors (UNESCO 1996 and 1998), namely **learning and teaching to know, to do, to live together and to be**. This is to be achieved in Universities, whose role in society is to discern truth, to impart values and to prepare students for stimulation of social progress and advancement of knowledge and to, thus, build a sustainable world.

Recommendations have been made for Universities to have one trans-disciplinary department and for each other department to allot 10 percent of time to transdisciplinary work. Teaching and learning sustainability would then go beyond the disciplinary level but would be stimulated by and would stimulate individual disciplines. (Nicolescu 1997)

What do the four pillars of education for altruistic and ecological behaviour in the context of transdisciplinarity for sustainability involve?

1. Teaching and learning to know concerns interpreting knowledge following processing it by the head (intellect), heart (emotions) and body (physical acts), that is, going beyond knowing into

developing understanding. It also involves tying up theory and practice through reflection, thought and action.

2. Teaching and learning to do concerns dialogue on equal terms- excluding ideas of position, personality and power- collective participation, cooperation and coordination between the institutions of some given society, empowerment of others, moving from a personal level onto a collective one.

3. Teaching and learning to live together concerns, besides tolerance for other cultures, genders, opinions, animals and plants, “the creation of a universal understanding of shared values and ethics needed for inter-species and inter-generational global justice, equity and peace, for the higher purposes interpretations of sustainability” (Marinova, McGrath, 2004). A sense of solidarity, collective values and ethics leading to collective action and reflection and reinforcement of this ethic in individual practices is to be built with the aid of a critical consciousness.

4. Teaching and learning to be concerns, besides mastering knowledge, mastering one’s sense of self (Davies et al., 2003) by learning and reflecting upon the reasons for our life (mark the interplay of noun and verb meanings in “being”) on the planet and in the cosmos and the right of others to existence.

Today there is consensus about “the promotion of sustainability in all disciplines; research on sustainability issues; the greening of university operations; engaging in academic cooperation; forming partnerships with government, NGOs and industry, and the moral obligation of universities toward sustainability” (Corcoran et al., 2002, Calder & Clugston, 2003)

Transdisciplinarity and Modern Languages Departments

The relation between language and knowledge and its consequences for foreign language teaching and learning programmes needs further exploration by scholars in both literary cultural studies and language learning (Byrnes and Kord 2001, Byrnes 2002). The interdisciplinary approach is hardly rewarding as, in it, professionals in each field discuss a certain phenomenon, while what is of infinitely more importance is that professionals in literary cultural studies learn about language acquisition, and that language teaching specialists

develop rich understandings of issues in literary cultural studies. This project has been referred to as **trans-disciplinarity** (Martin 2000).

M.A.K Halliday's functional approach (1985) to language (how it is used), emphasizing a symbiotic relation between human activity and language (the ideational, interpersonal and textual ways of meaning-making), as well as J.R. Martin's genre-based approach, stressing how things get done when language is used to accomplish them (the genres ranging from poems and narratives through lectures, seminars, recipes to service encounters, news broadcasts, etc.) point to the fact that "language and semiotic praxis (...) should be seen unequivocally, as a construer of reality, not just as its representer" (Hasan, 1995).

This treatment of language, knowledge and culture directly accommodates and greatly supports the central concerns of literary cultural studies. This approach is language-based and, concurrently, culture-based.

In language learning, transdisciplinarity appeared first in socio-cognitive studies and is more and more pregnant in CALL (computer-assisted language learning).

Theories that are relevant to CALL can fall into three categories:

1. Theories at discipline level, including pedagogy (curriculum development, teaching and learning), linguistics (grammar, quantitative linguistics), software engineering (software architectures, artificial intelligence and expert systems, information theory), psychology (cognitive psychology), and sociology.

2. Theories in sociolinguistics, distance learning, applied linguistics, computational linguistics, language data processing, educational psychology, educational/instructional technology (programmed instruction, instructional design), machine translation, speech technology, courseware engineering, neural networks (systems theory, cybernetics), language testing, courseware evaluation, discourse processing theory, schema theory, and socio-cultural theory.

3. Language-learning disciplines such as: SLA (Second Language Acquisition), language teaching and learning methodology (e.g. cognitive and constructivist approaches), ESL (English as a Second Language), FLE (French as a Second Language), and the proficiency movement (Colpaert).

Most project leaders constitute a multidisciplinary research team consisting of a computer scientist, a linguist and a language teacher or SLA researcher.

Conclusions

Looking into the future

Transdisciplinarity is very likely to play a significant part in the applicability and validity of theories in CALL. It can turn out to be a new way of communicating among researchers in different disciplines based on a common conceptualization of reality. So what is needed, besides interdisciplinary, or multidisciplinary teams, are trans-disciplinary concepts to unify the knowledge applied, coming from areas that lie beyond traditional disciplinary boundaries (Checkland 1981).

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