

## Deconstruction of Paradigms for Teacher Training: A Transdisciplinary Perspective

Maria das Graças Viana Bragança<sup>1</sup>, Zélia Maria Freire de Oliveira<sup>2</sup>

(1. Universidade Católica de Brasília, Brazil; 2. Centro Universitário Euro-Americano, Brazil)

**Abstract:** We reflect on the necessary changes in paradigms for teacher training programs, based on bibliographical research and on three empirical studies. It is necessary to go from a conservative paradigm, where reproduction of knowledge predominates, to an emergent or innovative paradigm, where knowledge is produced. The holistic approach to education has become more important, as it can confer quality to teacher training programs, since teachers are agents of transformation. The higher education institutions play a decisive role in teacher preparation and training. However, in most of these institutions, teaching is distributed into disciplines; sometimes they adopt a multidisciplinary approach; but they rarely adopt an interdisciplinary one; and a transdisciplinary perspective is a challenge. Without a systemic, interdisciplinary perspective, teacher training fails to approach sustainability, to a desirable extent. Research on teacher training shows efforts aiming at innovations. However, many obstacles remain, since anything new is perceived as a risk, so, many people prefer not to leave their comfort zone. The three pieces of research analyzed showed that, although many professors wish for a more efficient performance and a pedagogical and didactic improvement, they do not reach those goals while being trained. There still is the predominance of syllabi divided into countless disciplines, making it difficult to have a transdisciplinary perspective of the current global reality.

**Key words:** teacher training, conservative paradigm, emergent or innovative paradigm, transdisciplinary perspective, sustainability

### 1. Introduction

According to many authors, among them Delors (2001) and Tedesco (2012), we live at a time when the amount of knowledge and information grows exponentially, and there are deep changes in society, a rupture of traditional political identities, and a globalization of the economy. Hence, one expects that higher education institutions meet the educational needs of an ever growing and varied audience. It is of utmost importance to introduce changes in the educational systems, since educational institutions are responsible for training professionals for a demanding job market and for an ever-changing and evolving world, where the flow of information only gets bigger and faster each day. It is also necessary to point out that the educational institutions play a decisive role in teacher training, in the establishment of a close relationship between these institutions of pedagogical training and those that are not of

---

Maria das Graças Viana Bragança, Master in Political Science, Centro Universitário Euro-Americano; research areas: affirmative action and multiculturalism. E-mail: [mgvb10@gmail.com](mailto:mgvb10@gmail.com).

Zélia Maria Freire de Oliveira, Doctor in Education, Universidade Católica de Brasília; research areas: creativity and teacher training.

higher education, in the preparation of teachers. The educational institutions must also open their doors to professors coming from the economic sector and from other areas of society, in order to facilitate the exchanges between those sectors and education (Delors, 2001). However, according to Orrú (2004), universities have been facing challenges to adjust themselves to the current reality, to the world's characteristics and to the demands of current societies.

The change is necessary in education, states Tedesco (2012), both in developed countries and in developing ones, and to both centralized systems of school management and decentralized ones. Every country is concerned with renewing their pedagogical methods, surpassing the obsolescence of the syllabus and revitalizing management practices. However, the change has differentiated goals: some due to the deficits from the past, some due to the challenges of the future. In the developing countries, the educational transformation is directly tied to the need to overcome a range of problems caused by the failure in the achievement of the goals related to the universal approach adopted for the basic education: to increase the access and to decrease the indexes of failure and withdrawal. In the developed countries, these problems are relatively resolved, and the need to change is justified by what is expected in the future: to better articulate education and the demands of the job market, to adjust educational supply to the necessity of being constantly adjusted throughout life, and to train professionals to become citizens (Tedesco, 2012).

With this situation in mind, the same author states that the role of professors is not separated from the discussion about the role of education in society and that, in order for this long required change to happen in education, it is important to understand and recognize the relevant difficulties to effectively produce such changes. Among them, it is vital to revise teacher training syllabi, so that this professional adopts a transdisciplinary perspective while performing his/her work.

According to Câmara (2001, p. 4), “we cannot forget that men are perfectible beings who dependent on education to reach the plenitude of their intelligence and wishes, in order to become themselves”. Hence, a teacher training program must go beyond knowledge acquisition and focus on the development of the personal potentialities of those who participate in the process. According to the author, for the 21st century we cannot place the simple transfer of knowledge on a pedestal. We need to consider knowledge as one of the educational elements, seeking integration between teaching and learning, balancing the theoretical knowledge to be acquired and constructed and the development of the human being in its entirety. This new perspective allows for the development of attitude and abilities, and for values such as cooperation, honesty, solidarity, respect to the differences, coexistence, and abilities to know how to control the professional's own life journey, with self-esteem and confidence in situations where decisions have to be made.

### **1.1 Conservative Paradigm X Emergent or Innovative Paradigm**

The characterization of the pedagogical practice is strongly based on paradigms that society itself has built throughout the years, states Behrens (1999). Such paradigms encompass beliefs, values and ethical opinions within a certain community. In education, especially in teacher training programs, what is noticed is an unbalance in paradigmatic advances that society has been creating, in face of an ever-changing world.

Most teachers tend to reproduce the methodologies that they have experienced throughout their professional training years. This fact could explain the difficulty that some teachers have in changing their pedagogical practices and searching for referentials in other educational paradigms, affirms Behrens (1999). In this author's opinion, the conservative paradigm brings in its core influences from the paradigm of “the Newtonian-cartesian” science, in which the pedagogical practice is concerned with reproduction of knowledge, and the teaching practice remains fragmented and based on memorization, copy and reproduction. The emergent or innovative paradigm, which is advisable in

teacher training programs of today, is essentially based on the idea of pedagogical practices that foster the production of knowledge, and that searches for a holistic/systemic/transdisciplinary perspective. This idea is strengthened by Cunha (2008), who affirms that emergent or innovative paradigm seeks a total and integrating understanding, recognizing the legitimacy of different sources of knowledge, and the integrating perception of humans and nature.

According to Yus (2002, p. 173), holistic education, proceeding from the innovative paradigm, is not possible in a fragmented educational system, since “holism demands the perception of the connections between the parts, giving room to the new realities that are impossible to be observed from the partial perspective of each discipline”; and holistic education is based on the idea that reality is complex and cannot be reduced to aspects separately approached by disciplines. Yus (2002, p. 183) points out that the “syllabus based on disciplines separates the student from the subject, and the subject from reality”.

Finally, when thinking about a new paradigm for teacher training and the training of other professionals, it is necessary to point out the development of five minds, according to Gardner (2007): the disciplined mind, the synthesizing mind, the creative mind, the respectful mind, and the ethical mind. There are two meanings for the word disciplined. The first is about the content of studies in learning a craft; going deep in a discipline; the possibility of perceiving a topic from many points of view. The second refers to the acquisition of habits that allow the individual to achieve constant progress in mastering an ability, a craft or a set of knowledge. The synthesizing mind is the one related to articulation of information coming from different sources, making up a coherent total. The creative mind focuses on creativity as part of the world’s net, and the challenges of educating the creator throughout all the age groups; the importance of lateral thinking. The respectful mind is correlated to vital topics, especially nowadays, when there are powerful nuclear weapons. The topics are: respect to others as a reasonable goal to be searched and achieved; a respectful environment and the value of a respectful attitude. The ethical mind involves an abstract attitude, that is, the capacity to reflect on the ways one fulfils — or not — a certain role; it involves thinking about oneself as a member of a profession and how one performs one’s role in an educational institution or environment.

### **1.2 Teacher Training and Transdisciplinarity**

Yus (2002) approaches the most important levels of connections among disciplines. The most common level is known as multidisciplinary, in which the syllabus keeps the disciplines separately, but there are occasional connections between them. Another — and deeper — level is achieved by means of interdisciplinarity, in which two or more disciplines are integrated by one topic or problem, which makes their boundaries momentarily indefinite. The most complex level when dealing with disciplines is transdisciplinarity, when several disciplines are integrated around a broad topic. This is the main ideal in education and in teacher training.

In its introduction, the Letter of Transdisciplinarity (1994) presents a series of considerations, that is, a set of basic principles defended by the community that advocates transdisciplinarity. This Letter constitutes a moral contract between its signatories. Among these considerations we point out the one that focuses on the proliferation of disciplines that stimulate the exponential growth of knowledge, making it impossible for human beings to have a global perspective of the current world problems.

There are countless articles that compose this Letter. However, we have selected only the ones that focus on the importance of transdisciplinarity:

#### **Article 1**

Any attempt to reduce human beings to a mere definition and to dissolve them into formal structures, whatever they may be, is incompatible with transdisciplinary perspective.

### Article 6

In comparison to interdisciplinarity and multidisciplinary, transdisciplinarity is multidimensional. Taking into account the concepts of time and history, transdisciplinarity does not exclude the existence of a trans-historical view.

### Article 9

Transdisciplinarity leads to an open attitude that respects myths and religions, and those that respect them, in a transdisciplinary atmosphere.

### Article 11

Authentic education cannot give privileges to abstraction in knowledge. It must teach to contextualize, to make it concrete, and to globalize. Transdisciplinary education reevaluates the role of the intuition, the imagination, the sensitivity and the body in the dissemination of knowledge.

### Article 13

Transdisciplinary ethics rejects any attitude that refuses dialogue and discussion, no matter their nature — ideological, scientific, religious, economic, political or philosophical. Shared knowledge must lead to a shared understanding, based on the total respect to differences among people, who are joined by a common existence, on the same and only Earth.

Teacher training still follows the traditional paradigm in detriment of an innovative one, and it still fails to contemplate transdisciplinary education. According to Magalhães (2009), despite all the fight for changes and a break in paradigms, education remains “sick”. Among the problems in the educational context, especially in higher education, there is the excessive fragmentation and compartmentalization of knowledge in syllabus elaboration at institutions of higher education and in teacher training programs. Transdisciplinary education can be the solution to the current educational problems. Its goal is:

[...] to raise people's awareness by promoting a life experience that allows and stimulates people's re-connection to each other and to events; such experience also recognizes the submission to the dynamics that emerges from the interaction with reality, and from the power over this reality, the power to search for sustainability for people's lives and for the life on this planet, in a committed and ethical way (Magalhães, 2009, p. 7).

### 1.3 Teacher Training and Sustainability

Within the transdisciplinary proposal also lies the concern with sustainability. We now face the challenge of stimulating changes in attitude and behavior of the world's society, since our intellectual, moral and cultural capacities impose responsibilities in relation to every individual and to nature; hence, providing education for a sustainable development is essential (Wherthein, 2005). Similarly, Boff (2012, p. 1) emphasizes that education needs to include the four major ecological trends: environmental, social, mental and integral. In addition, he affirms that teachers must work under this perspective of “educating to better live, which is the art of living in harmony with nature; it is also necessary to be willing to share equally the cultural and sustainable development resources among men”.

Education for a sustainable development is broader than environmental education, as UNESCO (2005) stated, since while the latter emphasizes the relationship between men and the natural environment, the ways to conserve the environment and manage its resources appropriately, the first — education for sustainability — besides encompassing environmental education, also relates to sociocultural factors, socio-political issues concerning equality, poverty, democracy and quality of life.

One cannot simply introduce corrective measures to the system that has caused the current ecological crisis, but to provide education for its transformation. At this point, the essential role of teachers comes into play. This role must leave the paradigm of a reducing and mechanical perspective and aim to reach an emergent and innovative paradigm

that considers the culture of complexity, allowing to see the inter-relations of a world that is alive, and humans' eco-dependence.

The program "Education for Sustainable Development" (UNESCO, 2005, pp. 18–19) basically deals with topics like the respect to individuals, to the differences and to diversity, to the environment and the existing resources. Some of the characteristics of this education are: to be interdisciplinary and holistic; to aim at the acquisition of values; to develop critical thinking and the capacity to find solutions to problems; to appeal to the multiplicity of methods; to stimulate a cooperative process of decision-making; to integrate the learning experiences into one's personal and professional life; and to be related to local life. The United Nations General Assembly, in its 57th meeting held in December 2002, declared the period between 2005 and 2014 as the Decade of Education for Sustainable Development, emphasizing that education is an indispensable element in order to reach this development (UNESCO, 2005).

Sustainable development has been defined and described in various ways, but the most accepted one derives from the concept of ecodevelopment, originated in the World Committee on the Environment and Development, created by the United Nations. Such definition states that sustainable development is what provides progress and brings satisfaction to individuals, without compromising the capacity to fulfill the needs of future generations (Gonçalves, 2005). Other definitions included the notion of equity between the present and the future, the equality among countries and continents, races and classes, gender and generations. "Sustainability refers to the ways of thinking about the world and the social and personal practices" that lead to "environmental practices that value and support biodiversity and ecological processes that support life" (Hill et al., cited by UNESCO, 2005, p. 30).

According to Reis (2007), sustainable development is based on five pillars: financial (resources directed to each sector, investments and consequences of expansion); economic (impact of economic growth, limits and challenges, society's commitment, and the levels of consumption of the populations); social (society and its elements, institutions, its role in the transformation and in development); environmental (the environment and the effect of human activities and decisions); and cultural (culture and its elements, values, diversity, knowledge, languages, people's education).

It is important to point out that sustainable development suggests quality in its pillars, instead of quantity, with reduced consumption of raw-materials and their replacement, increased reutilization and recycling, a balance and common sense in the use of technologies, and harmony with the ecological limitations. All of this requires a revolution in education.

Due to the great need of cultivating sustainability, it is essential to reflect how this environmental education is being approached in teacher training. Certainly teachers, as most people, have the immediate and intuitive sensation that it is necessary to create a sustainable future, but the question lies in what is being really done to foster this education, and how teachers are being prepared to act in the promotion of a sustainable development, how they are educating the citizens for the future.

As Yus (2002, pp. 240–241) affirms, we still are far from training holistic educators who act in education for sustainability. The author re-states Miller's ideas, which say that some topics must be approached in the ideal teacher training courses:

- a concept of learning that is more like art than technical science; more like a commitment than a profession;
- teachers should have a deep understanding and respect towards the miracle that is human development;
- a holistic program should emphasize the radical meaning of "educative foundations", that is, the social, cultural and philosophical implications of teaching practices;
- training teachers holistically should provide the students with a broad set of philosophies and approaches, some

possibilities by means of holistic education, from the research about learning styles to the global language, the wild rites of the past;

- Finally, a holistic program should provide a solid intellectual training, that is, a preparation in the disciplines.

It is education's responsibility to introduce positive changes in a global scale, as education is the most important means of transformation for a sustainable development, and to strengthen the capacity of reflection targeted to the future. UNESCO (2005) emphasizes that it is through education that the necessary values, behavior and lifestyles can be motivated to achieve a sustainable future. In order for sustainable development to happen, it is necessary to have an integration of several disciplines. Sustainable development should not be taught as an independent discipline, due to its reach. Thus, a transdisciplinary, critical and creative perspective is needed.

Education aiming at sustainability demands a series of attitudes and actions, such as: a re-examination of education policies in all levels; a revision of the objectives and contents of syllabi to develop an interdisciplinary understanding of social, economic, environmental and cultural sustainability; a change in the pedagogical methodologies, and in the methodologies of teaching, learning and assessing; a promotion of abilities related to critical and creative thinking (UNESCO, 2005). However, this will only be possible with a thorough change in teacher professional training, so that this training can be clearly focused on the development of abilities, perspectives and values related to sustainability, and not only focused on knowledge acquisition.

## 2. Some Research on the Subject

Numerous researches demonstrate gaps in teacher professional training. We present three of them as examples.

The results of a study coordinated by researchers from the Carlos Chagas Foundation, Bernadete A. Gatti and Marina M. R. Nunes, in 2008, on "elementary school teacher training: institutions and their syllabi" outlined an overview of what is being proposed as educational disciplines in higher education institutions, identifying the emphasis that is being given to these disciplines and their adjustment to meet the teaching demands in elementary education. The researchers analyzed, by a representative sample, the syllabus structure and the summaries of 165 on-site courses of higher education institutions in public and private universities in Brazil, where elementary teacher training courses are held. The courses covered in the research were: Pedagogy — 71 courses, Letters (Portuguese Language) — 32, Math — 31, and Biology — 31. Among the outcomes, it was evidenced that:

- the syllabus proposed to the courses of teacher professional training for the first years of schooling is fragmentary and presents a dispersed set of disciplines;
- there is a great variety in the nomenclature of disciplines in each course, including in Pedagogy;
- each institution has its own project and this project focuses on different aspects of knowledge, which reflects on the name of the disciplines;
- the disciplines projected in transversal subjects, suggested by the National Syllabus Parameters, are optional, that is, they will only be attended if they raise the interest of future teachers, which demonstrates that there is no concern in teaching professionals to meet the demands of a transdisciplinary education.

Another piece of research, conducted by Rocha (2010), aimed at studying the necessities of teacher training, according to the perspective of teachers from the 1st cycle, and related to the abilities nowadays considered as essential for the teaching profession in Portugal. It was a quantitative research, performed by means of questionnaires applied to all teachers, ranging from 25 and 55 years of age, from three groups of schools pertaining to the Council of Cascais, district of Lisbon. The results were obtained by analyzing 89 questionnaires. The teachers in the sample

showed motivation in attending courses of continuing education, and they were interested in reflecting on various competences and in developing them. This fact led the researcher to conclude that those teachers are willing to introduce changes in the educative routine (by means of planning classes for students with special needs, and broadening their knowledge regarding activities that foster the students' global progression). Also, those teachers probably felt discrepancies between the teaching they received and their perspective of the current training courses; and also between their current work and the kind of work that it should be; between the practices that are comfortable to them and the ones that bring dissatisfaction or frustration; the contrast between the kinds of teacher training perceived as useful and those seen as useless or inefficient; and, finally, the difficulties and problems that emerge every day. This research was very interesting because it showed that problems related to teacher professional training do not happen only in Brazil.

The research by Ferreira, Carpin and Silva (2008), conducted with 21 university professors who attended the discipline called "Contemporary Paradigms in Pedagogical Practice", aimed at reflecting on the conservative and innovative paradigms of Education. The researchers came to some conclusions: one of them shows that teachers perceived the necessity of receiving in their training a basis for overcoming conservative paradigms and a fragmentary pedagogy. They need the basis that allows them to search for a new paradigm for their teaching practices, so that they can catch up with the learning characteristics of the students in this globalized world. It is necessary to change in order to reach the interconnection between students, learning and production of knowledge. This change must be a transforming, reflexive and paradigmatic one, leaving the traditional paradigm and going towards an emergent paradigm. This new paradigm presents innovative paths, by means of a reflexive, communicative and holistic methodology, making the emergence of a new pedagogy in universities and for the educator possible.

Oliveira (2010) states that the mission of Education is arduous and challenging: to train citizens who search for the constitution of a sustainable society, citizens with proactive and creative attitude that provides means to preserve and improve life on the planet. This idea is backed by Yus (2002), to whom the new role of education is to stimulate and to favor a more complete development of the human abilities, not for the benefit of corporative or political interests.

Once again, the conclusion that emerges is that teacher training needs to provide better conditions to teaching practices, and that the pedagogical procedures need to include creativity to stimulate innovative thinking among the students. Creative people value changes and facilitate the emergence of new solutions. Craft (2006) affirms that education has a dynamic relation with the world in transformation in areas related to jobs and global economy. Everything that was considered relevant in terms of school accomplishment is now changing, and today it is not enough to be excellent and to be broadly knowledgeable.

### **3. Final Considerations**

After performing an analysis of the paradigms that guide and/or should guide teacher professional training, we confirm the thought of Moraes and Novas (2010, p. 14), who affirm that "the education we have been getting, and which is the heir of a mechanistic and Cartesian paradigm, has separated the soul from the body, reason from feeling, knowledge from affection [...]". According to UNESCO (2005), is not only through education that we can face the contemporary problems, but education is the most efficient means that society has in order to face the current difficulties, and the important aspect is that education has the power to shape the world of tomorrow. "Certainly, instincts and educated minds are not only necessary in laboratories and in research institutes, but also in every aspect

of life; and the access to education is a sine qua non issue for an efficient participation in all levels of life in the modern world” (UNESCO, 1999, p. 35).

[...] education is our best chance of promoting and giving roots to the values and behaviors that sustainable development demands. As some thinkers affirmed, a transforming education is needed: an education that contributes to turn into reality the essential changes demanded by the challenges of sustainability (UNESCO, 2005, p. 43).

We need to work in favor of the establishment of a new and innovative educational paradigm. To do so, a change in teacher professional training is urgent. We need to adopt the principles of transdisciplinarity, sustainability and holism. Moreover, as Moraes and Novas (2010) affirmed, by adopting transdisciplinarity as an epistemological principle for the reconstruction of knowledge it will be possible to overcome the disciplinary boundaries, in the attempt of acquiring a more global knowledge and a better understanding of reality and of what is beyond the limits of what is known or beyond the established boundaries.

More research on teacher training is relevant and it is also a concern in the United States, as Zeichner (2009) points out. In the USA, teacher trainers and managers recognize the importance of making decisions regarding the teacher professional training courses and the policies that affect teacher training, since this professional training contributes to the realization of educational results. This recognition is based on research.

With this new approach in teacher training and by deconstructing the traditional paradigm for the emergence of a new, innovative one, teachers will be able to change themselves and change the world. They will be able to produce and apply their knowledge in the community, in search for a better world, and not only to pass on knowledge to students. The characteristics of the current world, such as globalization, cultural globalization, a web-connected society, new sciences and areas of knowledge, unlocalization and defragmentation of production, demand that higher education institutions, which train professionals — including teachers — for a new trade context, be aware of the importance of stimulating creativity in order to search for solutions to the 21st century problems, and to reformulate their role so as to meet the new demands, such as the planet sustainability. To conclude, we are reminded of the words by Hawken, Lovins, A. and Lovins L. (1999), when they state that educational institutions form citizens, company managers, architects, engineers, those who make the world. They have the capacity to change the thought; therefore, it is vital that they actually do this, so that the future inhabitants of this planet are engaged and responsible in relation to the environment and to society as a whole.

## References

- Behrens M. A. (1999). “The practice and the challenge of the emerging paradigm”, R. Bras. Pedag. Est., Brasília, 80/196, pp. 383–403, retrieved on 05 March 2010, available online at: <http://emaberto.inep.gov.br/index.php/RBEP/article/viewFile/167/166>.
- Boof L. (2012). “Sustainability and education”, *Journal of Brazil*, Rio de Janeiro, May 7, 2012, retrieved on 02 April 2013, available online at: <http://www.jb.com.br/leonardo-boff/noticias/2012/05/07/sustentabilidade-e-educacao>.
- Câmara J. (2001). “New perspectives of education and teacher training”, in: *XI World Congress of Comparative Education*, Korea National University of Education, Gyeongju, South Korea, 2-6 July.
- Craft A. (2006). “Creativity in schools”, in: N. Jackson, M. Oliver, M. Shaw & J. Wisdom (Orgs.), *Developing Creativity in Higher Education*, London: Routledge, pp. 19–28.
- Cunha M. I. (2008). “Pedagogical innovations: The challenge of reconfiguring knowledge in university teaching”, Notebooks Pedagogy University, São Paulo, available online at: <http://www.prgp.usp.br/pt/pdf-formularios/CadernosEPP/Caderno6.pdf>.
- Delors J. et al. (2001). “Education a treasure to discover”, *Report to UNESCO of the International Commission on Education for the Twenty-First Century*, São Paulo: Cortez; Brasília: MEC, UNESCO.
- Ferreira J. L., Carpin L. and Silva M. V. G. (2008). *Reflective Paradigm Shift in Teacher Education*, retrieved on 06 March 2013, available online at: [http://www.pucpr.br/eventos/educere/educere2008/anais/pdf/380\\_378.pdf](http://www.pucpr.br/eventos/educere/educere2008/anais/pdf/380_378.pdf).



- Gatti B. and Nunes M. M. R. (2008). "Teacher training for primary education: Educational institutions and their curricula", Report pesquisa/2008, São Paulo, SP, Educational Studies, Victor Civita Foundation, retrieved on 30 March 2013, available online at: <http://www.fvc.org.br/estudos-e-pesquisas/avulsas/estudos1-3-formacao-professores.shtml?page=6>.
- Gonçalves D. B. (2005). "Sustainable development: The challenge of this generation", *Magazine Academic Area*, retrieved on February 28, 2007, available online at: <http://www.espacoacademico.com.br/051/51goncalves.htm>.
- Gardner H. (2007). *Five Minds for the Future*, Translation: Roberto Cataldo Costa, Porto Alegre: ARTMED.
- Hawken P., Lovins A. and Lovins L. H. (1999). *Natural Capitalism — Creating the Next Industrial Revolution*, São Paulo: Cultrix.
- Magalhães S. M. O. (2009). "To think the education of the future: A transdisciplinary perspective in teacher training", retrieved on 03 April 2013, available online at: [http://www.ceped.ueg.br/anais/IIIedipe/pdfs/2\\_trabalhos/gt09\\_didatica\\_praticas\\_ensino\\_estagio/trab\\_gt09\\_para\\_ensinar\\_educacao\\_futuro.pdf](http://www.ceped.ueg.br/anais/IIIedipe/pdfs/2_trabalhos/gt09_didatica_praticas_ensino_estagio/trab_gt09_para_ensinar_educacao_futuro.pdf).
- Moraes M. and C. New Batalloso J. M. (2010). "For an educational paradigm from complexity and transdisciplinarity", in: M. C. & J. M. Moraes Batalloso New (Eds.), *Complexity and Transdisciplinarity in Education Theory and Teaching Practice*, pp. 7–19, Rio de Janeiro: Wak.
- Oliveira Z. M. F. (2010). "The link between creativity, education, sustainable development", retrieved on 30 March 2013, available online at: <http://www.rioei.org/deloslectores/3022Freire.pdf>.
- Orrú S. E. (2005). "University Institutional commitment to the training of teachers", *Iberoamericana of Educación Magazine*, retrieved on June 30, 2005, available online at: <http://www.rioei.org/deloslectores/872Orru.pdf>.
- Reis C. F. A. (2007). "Economy of culture or creative economy? Putting the record straight", retrieved on 02 March 2007, <http://www.culturaemercado.com.br>.
- Rocha S. V. C. G. (2010). "Training Needs of Teachers in the 1st cycle of basic education: A contribution to its study", retrieved on 01 April 2013: [http://repositorio.ul.pt/bitstream/10451/2828/1/ulfp037546\\_tm.pdf](http://repositorio.ul.pt/bitstream/10451/2828/1/ulfp037546_tm.pdf).
- Tedesco J. C. (2012). *Quality of Education and Educational Policy*, Sao Paulo: Liber Book.
- UNIPAZ (1994). "Charter of transdisciplinarity", retrieved on 30 March 2013, available online at: <http://www.unipazparana.org.br/conteudo.php?id=92>.
- UNESCO (1999). "Education for a sustainable future: A transdisciplinary vision for shared actions", retrieved on 30 March 2013: available online at: <http://unesdoc.unesco.org/images/0011/001106/110686porb.pdf>.
- UNESCO (2005). "United Nations decade of education for sustainable development (2005–2014): Final document of the international implementation scheme", retrieved on 30 March 2013, available online at: <http://unesdoc.unesco.org/images/0013/001399/139937por.pdf>.
- Yus R. (2002). *Comprehensive Education: A Holistic Education for The XXI Century*, New York: Guilford Press.
- Zeichner K. (2009). "A research agenda for teacher education", *Brazilian Journal of Research Training Professore*, Vol. 1, available online at: <http://formacaodocente.autenticaeditora.com.br/artigo/exibir/1/8/1>.