Transdisciplinarity Exploitation of Maternal Language, Based on the Model of C.P.M.P.S Application in the Art Subject

José Alberto Martins

Abstract

The presented paper puts in discussion the dilemma of the linear supports of formal teaching and learning processes of regular school, coexisting with an inter and transdisciplinarity of the process mentioned above. In this perspective, the author wonders about the subjectivity of the students’ apprenticeship and about the way they can change, according to the methodological variants, as well as the context. So, he intents to explore the C.P.M.P.S (Creative and Participative Method of Problem Solution) in the development of Portuguese written language competence, through the art subject. In this paper, we can see the increase of different variables from the perspective of students and teachers which validates in some manner of the teaching methodology.

Keywords

Discipline, transdisciplinarity, complexity, lineally, holism

When we accept the transdisciplinarity issue and when we relate it with the teaching and learning in a discipliner subject, such as V.A.E. (Visual Art Education), there is a common critique to the teaching approach in purely disciplinary evaluation context, which puts in question some attitudes and believes, such as the efficacy and the boilable act of planning, in a compartmented vision, putting in opposition the logic of expositive linearity, with the heuristic logic, where everything is related to everything. Managing and interviewing in an active way in an approach of this nature raises an enormous number of problems which focus not only the teaching experience, but also the proper ethic context in which he inserts itself.

In this context, the investigation presented brings to the surface the dilemma which frames in the different performances related to maternal language (in this case, the Portuguese language), when students are confronted with the improvement of their linguistic competences in an artistic subject. The figures obtained, based on the association meanings (simple connections) hierarchic knowledge unrolling (hierarchy) inferences (crossed connections) and examples, leads to a subjectivity of performances, in which portrayed students present unsuccessful scene in reading, writing, interpretation, and comprehension of maternal language. The scenery presented may not be dependent on external factors concerning to scholar atmosphere, leading us questioning the viability of the

Correspondent Author:
José Alberto Martins, CIEC (Centro de Investigação em Estudos da Criança), Universidade do Minho, Instituto de Educação, Campus de Gualtar, 4710-057 BRAGA, Portugal
E-mail: josealmartins@gmail.com
interdisciplinary and transdisciplinary systems in which flexibility and teachers’ creativity is evidenced by the way they structure and apply these dynamics.

FRAMING

Nowadays, we assist to profound changes which affect the social structure of this planet and concomitantly the peoples that live in it. These changes include new ways of understanding the human being in his relationship with the surrounding environment (internal and external) as dynamic identity, individual, and collective. In this ecological approach, school can represent a transformation and adaptation space, or, on the other hand, it may represent a mental accommodation place of different levels and dominions and, in this context, the teaching and learning approaches implemented in there, influence directly the future generations. Robinson (2010: 13) told us that “Education is the system which should develop our natural skills and make us capable of affirming in this world”. But in that affirmation of autonomy, we must not forget the others, better saying our responsible relationship that will truly be our best freedom guardian.

In this intricate world of education and, in particular, in actual teaching and learning issue, in which we discuss the role of the subjects, considered fundamental and structural, (mathematics and maternal language), in basic education, Portuguese, in a slop of preparing students for the national standardized exams, that gain visibility by the rankings, remain an utopia that is considered severe conglobated in what Young (2007) called “powerful knowledge” that asphyxiates acquaintance by comprehension, by meaningful apprenticeship, creativity, and conscientious operationalization of children, in which we conjugate the learning to learn competences, leading to children’s autonomy in an interrelation scene, intimately related to the artistic areas and holistic thought (Martins 2012).

The concept of holistic or relational thought becomes fundamental to understand a contemporanian approach of apprenticeship which is organized as a net form (cerebral, collective, and virtual), and that come closer to the complex and interdisciplinary systems. The reality observed in this context raises some doubts, mainly about the way as it is understood, interpreted, and explained in the different educational dominions, mainly those who deal with creativity and art field, such as the art subject (V.A.E.) portrayed in this paper. We observe, also, that these contexts may influence the configuration as far as transversal competences is concerned, namely those which are related to reading habits, search procedures and organization of information, interpretation, and comprehension of texts and synthesis of ideas.

We talk about the transdisciplinarity paradigm, which presupposes the transference of a dominion, such as the development of reading and writing competences, worked normally in the subject of Portuguese, to the art subject that can be object, also, of didactic treatment, as a way of clarifying situations, solving questionings or problems, better saying, as constructing new knowledge relationships by a discontextualization and recontextualization practices. In this building process, quite recent and controversial in terms of what are considered the most important subjects in school (Ruling nº 10308/2008 of Portuguese Education and Science Ministry), there is some unanimity related to the fact that those dynamics are understood according to an interpretative structure of our body and brain. In other words, knowledge is built through a variety of contextualized situations, which are observed in a specific time and space, characterizing those explanations by a strong subjectivity component, disciplinary confrontation, and dialogue (Fonseca 2005; Fonseca 2014; Freitas, Morin, and Nicolescu 1994; Maingain and Dufour 2008; Salvador et al. 2000).

In this approach, the influences of the teaching and learning processes put in evidence uncertainties and
judges, about the reason why some didactics work well with a certain number of students, and in other situations, they do not. There are these uncertainties that question, sometimes, rigor and building weight and functionality of planning instruments and disciplinary measure, without thinking of other possibilities, which frame in an interdisciplinary and transdisciplinary logic (Alvarenga, Sommerman, and Alvarez 2005; Sommerman 2006; Tversky and Kahneman 2012). According to this line of thinking, we accept the distortion as a process that allows us to change the ability of integrating different cartographies, leading us to a better comprehension of the teaching and learning methodologies and authentic apprenticeships (Duborgel 1992; Garmston, Lipton, and Kaiser 2002; Giordan 2007; Martins, Coquet, and Marcelino 2011; Meirieu 2002; Tanabe 1994).

In this context, some studies (Csikszentmihalyi 1998; Doyle 1986; Gardner 2001; Moraes 1996; Meirieu 2002; Morin 2007) focus on this complex nature, once this does not take a mere disciplinary character, in which we continue to teach, on one hand, subjects like Portuguese, mathematics; music or science, in linear sequences, completely far away of the expressive context, moral and motricity, neglecting certain aspects that contribute, in a decisive way, to evaluate students, as well as the inclusion of the contents in meaning associations, or the respect for their cognitive performance profile.

In this scope, the most traditional teaching approaches (directive, mechanic and memorizing, based on written tests and worksheets), are in this paper also discussed, because there is a belief that they are insufficient by themselves. The new generation of individuals (students), emerge, itself, from complex systems of information, knowledge, and apprenticeship, alerting us to the importance, not only the formal, but also the non-formal and the informal (Rivoire 2006; Pinto 2006), sustaining the modern science paradigm, in which the world starts being conceived in terms of movement, flux of energy and changing process and also uncertainties, sustained an integrated vision among ideas, concepts, and objects, a net relationship of fractal nature and not a separated or linear entity.

In the specific dominion of the V.A.E., this consideration becomes quite important, mainly in the field of creativity promotion in scholar apprenticeships spaces, since human action is provoked by a kit of desires, needs, profiles of cognitive functioning, risk actions and self-criticism (Eccles 1989; Fonseca 2014; Lacan 2008; Maslow 1954; Popper 1999), not verbalized sometimes, provoking learning creative processes, having, therefore, the necessity of facing school as a dynamic space also. In other words, in this environment, the systems are constantly changed through a spiral feedback, since there are in schools non-rational stages (non-linear, contradicting actions by phases, step by step) of apprenticeship, which turn them culturally strange to teachers and also students, encircling a whole bunch of unexpectedly in this context (Cavalcanti 2011; Cvetek 2008; Doyle 1986; Guerra 2000; Morin 2003).

Too many are the models that transmit us this idea of multidimensionality of thought and human relationship which interferes, in a direct way, apprenticeship in scholar atmosphere (Alencar 2004; Candeias 2008; Gardner 2000; Guilford 1973; Maturana and Varela 2005; Pinheiro 2009; Sternberg 2005; Zimmerman 2000). This knowledge organization, we should have in mind that educative models are abstractions of the reality, done through a careful observation of practice, with the purpose of helping us to comprehend and organize empiric proves, being, because of that, vulnerable (Habermas 2009; Tracy, Araújo, and Chaves 2002). In other words, using models, we can establish a bunch of ideas of order, searching patterns in all possible paths of disorder.

In that temporary order, the presented change of scale (inter and transdisciplinar) may provoke
different scenarios, detaching, on one hand, the repetition of a same structure, or, on the contrary, the discovery of new structures, influenced by the time and the space which are, without any doubt, human notations. We cannot forget that, beyond the biological watch adjusted to the brightness and darkness rhythm, the human being has got another kind of time dimension “the mental time” (Damásio 2011) that is related to the way we experiment time passage and how we organize our own chronology and information. Time becomes, according to this point of view, useful, because it is the element where we do and create something (Cvetek 2008; Ferreira 2011). In this context, we defend the construction of a fluid, flexible curriculum adapted to a certain context and the return of the project concept, without strict territory, which allows a better articulation and integration of knowledge, methods, and teaching models as well as learning, issue that have been neglected in the Portuguese education context.

**METHODOLOGY**

According to the described framing, the methodology used analyzed the impact of the teaching and learning apprenticeship in the art subject, redesigned by Martins (2009) and Martins et al. (2011), in the development of the cognitive structure of concepts, better saying, in knowledge techniques used and child’s thought abilities (see Figure 1). So, we worked these different specific contents of the art subject, including, also, other subject, such as maternal language (in this specific case, the Portuguese subject), comparing the obtained results from two independent studies in time and space, in the same curricular subject, corresponding the second cycle of the Portuguese basic teaching.

The first study turns back to the school year of 2008/2009. In this first experience, the only aspect we had in mind was the perspective of the teachers’ evaluations, (two teachers). In this context, two different times of investigation were compared (T1 and T2), within a break of eight months, which corresponded to a situation of pre-test and post-test. It was used the Mann-Whitney test for repeated samples, in the significant statistic analysis, for one \( \alpha \leq .05 \). In these two moments of evaluation, the author evoked to the system of knowledge organization defined by Novak and Gowin (1984: 53). This reflexive method makes part of a wider instrument, the project worksheet (Martins 2009; Martins et al. 2011), in which the student writes down his own learning process.

The second study was developed in year 2011/2012 with a different sample of students, using however, the same classroom and the same time break of comparison. Besides these procedures previously described, it was added a comparative analysis of the students’ perspective, as well as an evaluation of the significant learnings and procedures of accomplishment in the teachers’ perspective of this subject, who worked in pedagogic pair. In this study, students were taught to evaluate conceptual maps, using the same criteria used by the teachers of this subject. When the comparison of initial and final results of the second study was made, we ran over to the t-test to repeated samples to \( \alpha \leq .05 \). This paper was written based on the programme SPSS version 19.

The purpose of these two studies was to investigate if there was, or not, increment as far as central tendency of each variable is concerned related to the two investigation moments, in the conceptual maps context, as well as in the accomplishment of significant learning and proceeding contents.

**PRESENTATION, ANALYSIS, AND DISCUSSION OF THE RESULTS**

Both results correspond to repeated samples and they were developed in the same school, with students of the 6th grade, second cycle of the basic teaching. The first study sample (see Table 1) was constituted by 15
Figure 1. Holistic Model of Teaching and Learning That Part of the Creative and Participative Method of Problem Solution (MCPRP) Used in EV Discipline.

Table 1. Analysis of the Conceptual Maps Variables in Two Different Moments of the Investigation in Which T1 Correspond to the Pre-test and T2 Correspond to the Post-Test

<table>
<thead>
<tr>
<th>Connections</th>
<th>Research times</th>
<th>N</th>
<th>Mean</th>
<th>L.Bound</th>
<th>U.Bound</th>
<th>dp</th>
<th>σ</th>
<th>μ</th>
<th>W</th>
<th>Z</th>
<th>σ Sig*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple connections</td>
<td>T1</td>
<td>15</td>
<td>13.17</td>
<td>9.03</td>
<td>18.43</td>
<td>8.48</td>
<td>30.00</td>
<td>56.50</td>
<td>176.50</td>
<td>-2.33</td>
<td>.020*</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>15</td>
<td>18.80</td>
<td>15.16</td>
<td>22.43</td>
<td>6.55</td>
<td>20.00</td>
<td>67.00</td>
<td>187.00</td>
<td>-1.96</td>
<td>.050*</td>
</tr>
<tr>
<td>Hierarchies</td>
<td>T1</td>
<td>15</td>
<td>13.33</td>
<td>9.75</td>
<td>16.90</td>
<td>6.45</td>
<td>20.00</td>
<td>67.00</td>
<td>187.00</td>
<td>-1.96</td>
<td>.050*</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>15</td>
<td>18.33</td>
<td>14.46</td>
<td>22.20</td>
<td>6.98</td>
<td>25.00</td>
<td>67.00</td>
<td>187.00</td>
<td>-1.96</td>
<td>.050*</td>
</tr>
<tr>
<td>Crossed unions</td>
<td>T1</td>
<td>15</td>
<td>13.33</td>
<td>3.81</td>
<td>22.84</td>
<td>17.18</td>
<td>50.00</td>
<td>63.50</td>
<td>183.50</td>
<td>-2.09</td>
<td>.036*</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>15</td>
<td>26.66</td>
<td>11.91</td>
<td>41.41</td>
<td>26.63</td>
<td>100.00</td>
<td>63.50</td>
<td>183.50</td>
<td>-2.09</td>
<td>.036*</td>
</tr>
<tr>
<td>Examples</td>
<td>T1</td>
<td>15</td>
<td>3.20</td>
<td>1.43</td>
<td>4.96</td>
<td>3.18</td>
<td>10.00</td>
<td>105.00</td>
<td>225.00</td>
<td>-31</td>
<td>.77</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>15</td>
<td>3.66</td>
<td>1.88</td>
<td>5.45</td>
<td>3.22</td>
<td>10.00</td>
<td>105.00</td>
<td>225.00</td>
<td>-31</td>
<td>.77</td>
</tr>
</tbody>
</table>

Note: *—is significant at the .05 level (2-tailed).
Sociology Study 5(5)

376

elements (N = 15), eight boys and seven girls. The ages of the sample vary between 11 and 13 years old.

Looking at Table 1, we can observe that, excepting the examples, the rest of the variable of the conceptual maps present important statistic results. Better saying, in the first study, the use of the MCPRP gave signs of efficacy, which made us to comprehend that the treatment of information techniques components used by the student in art subject through the organizer, Project Worksheet (Martins 2009), produced a particular increment in the way his thought abilities, namely as far as reflexive and metcognitive thought.

Table 2 represents the results of the second study. Such as the previous situation, the sample was repeated, being constituted by 60 individuals, being 35 male and 25 female. The ages vary within the same break of the previous sample, between 11 and 13 years old.

We observed once more, that there are results with statistic meaning, but in the second essay, not only the teachers’ point of view, but also the students’. It is particularly interesting the performance raising in students’ perspective (p < .01) in every variable of conceptual maps. These results reinforce the efficacy of the programme developed in the art subject, and the consequences it has in the curricular contents development and mental strategies of the transversal organization of the information in those children.

In both studies, it is absolutely important to emphasize the raising of students’ performance as far as his skills to establish crossed relations is concerned (first study p < .05 and second study p < .01), demonstrative aspect of cognitive thought evolution, associated to it the ability of evocating and relating words and concepts, divergent and distant many times.

The organization of the information through conceptual maps, which work mainly with keywords, may constitute, according to some authors (Kintsch 1974; Kleinsmith and kaplan 1963; Novak and Gowin 1984; Pringle 2013), a strategy of propositional thought of significant material, helping to evocate the idea of what there is behind of those words. That retention capacity can, also, be influenced by the cooperative environment, participation, and students’ excitement when they do their task in the art subjects. Reminding this stage of learning process in the art subject, corresponds to the reflexion stage of the project worksheet, where it is included the conceptual map construction allowing children experimenting distinct phases. In this stage, the child has to evocate (imagine mentally) all the learning process individually (Phases 1 and 2 of Figure 2), sharing it with his colleagues (Phases 3 and 4 of Figure 2), walking inside the classroom and evaluating his own map, sharing his punctuation with his pairs/class (Phase 5 of Figure 2).

Having in mind that the way how and where the student studies, we may relate it to the way he can evocate and remind different matters, once they interferes with mental processes inside brain subjacent to perception, attention, action planning and thought, as well as apprenticeship and memory (Jensen 2002; Squire and Kandel 2002), we can say that the different ways of teaching and learning, which mix diary inside the child, may, also themselves, interfere in a positive or negative way in his own process of memorizing, evocation, and recognition. In other words, the way how a child integrates dynamically his learning and his learning-doing according to a trilogy, content, context, processes (Neto 2001; Schunk 2001; Anderson 2005; Zimmerman 2000), possibly constitutes, something that we do not believe it can be real, but complex instead.

We verify similarly to this process, having as a reference the second study, that children developed significant apprentice shipments, in teachers’ perspective (p < .05), not presenting statistically significant gains in interiorization in the procedures of this discipline. This fact can be related to the routines that were introduced, as the implementation of the
Table 2. Results of the Second Study Between Time T1 and Time T2 of Investigation With the Use of the t-test to Independent Variables of the Conceptual Maps

<table>
<thead>
<tr>
<th>Second study 2011/12</th>
<th>N</th>
<th>Mean</th>
<th>Descriptives</th>
<th>Independent samples test</th>
<th>95% confidence interval for mean</th>
<th>Min.</th>
<th>Max.</th>
<th>t</th>
<th>df</th>
<th>Sig. (a &lt; .05)</th>
<th>Std. error difference</th>
<th>95% confidence interval of the difference</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Learning outcomes and procedures for achieving significant</td>
<td></td>
<td>Lower bound</td>
<td>Upper bound</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant learning</td>
<td>T1</td>
<td>60</td>
<td>66.39</td>
<td>50.1</td>
<td>72.68</td>
<td>.00</td>
<td>100</td>
<td>-2.42</td>
<td>118.00</td>
<td>.017*</td>
<td>-9.51</td>
<td>-17.27</td>
<td>-1.75</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>60</td>
<td>75.91</td>
<td>71.22</td>
<td>80.59</td>
<td>32.79</td>
<td>100</td>
<td>-2.41</td>
<td>118.00</td>
<td>.017*</td>
<td>-9.51</td>
<td>-17.27</td>
<td>-1.75</td>
<td></td>
</tr>
<tr>
<td>Accomplishment   procedures</td>
<td>T1</td>
<td>60</td>
<td>60.64</td>
<td>53.45</td>
<td>67.83</td>
<td>.00</td>
<td>100</td>
<td>-1.34</td>
<td>118.00</td>
<td>.181</td>
<td>-6.37</td>
<td>-15.76</td>
<td>3.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>60</td>
<td>67.02</td>
<td>60.83</td>
<td>73.2</td>
<td>17.5</td>
<td>100</td>
<td>-1.75</td>
<td>118.00</td>
<td>.017*</td>
<td>-9.51</td>
<td>-17.27</td>
<td>-1.75</td>
<td></td>
</tr>
</tbody>
</table>

| Teachers’ viewpoint | Simple connections | T1 | 60     | 15.08     | 12.55 | 17.61 | .00    | 36 | 2.16 | 118.00 | .032*          | 1.75 | -7.26 | -3.3 |
|                      | T2 | 60     | 18.88     | 16.45 | 21.31 | .00    | 43 |   |     |     |                             |     |       |     |
|                      | Hierarchies        | T1 | 60     | 16.91     | 15.15 | 18.68 | .00    | 30 | 2.38 | 118.00 | .019*          | 1.12 | -5.03 | -0.46 |
|                      | T2 | 60     | 19.66     | 18.18 | 21.14 | .00    | 30 |   |     |     |                             |     |       |     |
|                      | Crossed unions     | T1 | 60     | 11.66     | 8.47  | 14.86 | .00    | 40 | 2.97 | 118.00 | .004**         | 2.07 | -10.27 | -2.05 |
|                      | T2 | 60     | 17.83     | 15.18 | 20.48 | .00    | 40 |   |     |     |                             |     |       |     |
|                      | Examples           | T1 | 60     | 1.06      | .54  | 1.58  | .00    | 8  | 3.57 | 118.00 | .001**         | 0.63 | -3.52 | -1.00 |
|                      | T2 | 60     | 3.33      | 2.17  | 4.49  | .00    | 20 |   |     |     |                             |     |       |     |

| Point of view of students | Simple connections | T1 | 60     | 15.5     | 12.65 | 18.47 | .00    | 45 | 4.29 | 118.00 | .000**         | 2.26 | -14.24 | -5.25 |
|                          | T2 | 60     | 23.31     | 21.83 | 28.8  | .00    | 60 |   |     |     |                             |     |       |     |
|                          | Hierarchies        | T1 | 60     | 16.51     | 14.04 | 18.99 | .00    | 35 | 3.80 | 118.00 | .000**         | 1.58 | -9.19 | -2.90 |
|                          | T2 | 60     | 22.56     | 20.57 | 24.56 | .00    | 42 |   |     |     |                             |     |       |     |
|                          | Crossed unions     | T1 | 60     | 13.5      | 9.29  | 17.7  | .00    | 100 | 2.93 | 118.00 | .004**         | 2.86 | -14.07 | -2.72 |
|                          | T2 | 60     | 21.9      | 17.99 | 25.8  | .00    | 60 |   |     |     |                             |     |       |     |
|                          | Examples           | T1 | 60     | 1.83      | 1.1   | 2.55  | .00    | 11 | 2.48 | 118.00 | .014*          | .54  | -2.42 | -0.27 |
|                          | T2 | 60     | 3.1       | 2.37  | 3.99  | .00    | 13 |   |     |     |                             |     |       |     |

Notes: "— is significant at the .05 level (2-tailed); ""— is significant at the .01 level (2-tailed).
organizer or mobility inside the classroom by students, not existing significant differences between the way they fulfill the phases, in both times of investigation, once there was a share and the learning of those procedures, valuating socioconstructive apprenticeship (Ausubel, Novak, and Hanesian 1976; Kozulin 1994; Madruga 1991; Miranda 2005; Piaget 2002; Santos 1977; Vygotsky 1979). The use of the previous organizer and the sharing of different point of view among children may seem to constitute one of the key factors, facilitator of the apprenticeship.

In this context, it seems to us correct questioning in this empiric study, the reason why a great part of the students reveals a real improvement in his internal narrative (significan learning \( p < .05 \)), vocabulary and the ability of relating contents in verbal and writing ways, (present in crossed relations \( p < .01 \), not only in the teachers’ perspective, but also in the students’), while in other contexts, those capacities seem not to happen with the same intensity, being, many times, criticized because of the lack of working habits and methods. Will it be just one teacher or one context, sufficient variables to make such a meaningful difference in the students’ learning and teaching process? If this is true, the interdisciplinary nature of those processes may be related, revitalizing the importance of the net thought, with an integrated structure and practice and, many times non-disciplinary fused (non-formal or informal), with the didactic transdisciplinarity which are divided by the
socioaffective, metacognitive, and creative competences.

Maybe this ensemble of the teacher’s variables, context, students, and too many others: Disciplinary contents, didactics, or cognitive functioning profile interfere in a more profound way that we can imagine. If that happens, such as we had said in the frame of this paper, scholar learning will identify much more with the non-linear profile and, for this reason, submitted to the interaction of different realities, contradicting, this way, the pure and dogmatic disciplinar approach of the educative system.

CONCLUSIONS

This empiric study intents to debate the linearity of the educative system, bringing to the surface the irregularity of the educative structures, compartmented in terms of disciplines. The complexity of the human evaluation and specifically the child’s one, do not be reduced, having as main references, only constructive or fundamental areas (such as mathematics and maternal language), once those competences and knowledge may have different expressions or results, depending on the context. Therefore, the presented facts in this article evidence, on one hand, the subjectivity of the students’ performance: How can we justify the low performance in the linguistic competences of a student in maternal language subject, if the same student shows a good performance in the same competences in other subjects?

On the other hand, this paper alerts to the possibility of existing a meeting of regularities, but these orders or patterns are sensitive and embrace a huge number of variables, provoking dilemmas on teachers in the way how the teaching process is appropriated and managed by children.

The attractors associated to this dominion are very complex and intricate, making us thinking about its integration in terms of an interdisciplinary approach, in which the didactic context may be approached in a transdisciplinar perspective. For example, the use of a cooperative learning strategy, or the simple mobility of children inside the classroom, described in this study, can change completely their performance. We believe, this way, that the encounter of a pre-established order in the teaching/learning process, as well as evaluation, not very well thought and too far away of this reality, constitutes a risk of distortion, prejudicing his main function that would be the promotion of the total child development.

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Bio

José Alberto Martins, Ph.D., invited assistant professor, Education Institute of the Universidade do Minho, didactic of visual and plastic education, and teacher in regular middle school in the grouping schools of Moure and Ribeira do Neiva; research fields: education and holistic learning processes, chaotic systems of learning and transdisciplinarity of artistic education.