The Role of Sociocognitive Conflict in Academic-type Learning

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Abstract

The present study aims to analyze the effects of educational and educational-training in the use of socio-cognitive conflict to optimise students future teachers learning. The main research methods used in the experimental research conducted were: inquiry-based questionnaire, test knowledge, pedagogical experiment, psycho-analysis of students’ work. Formative experiment consisted in the use of models and strategies for encouraging socio-cognitive conflict, in the learning of the students. To establish the statistical relevance of the obtained results, we use the Z test. The obtained values, at a significance threshold of 0.1, have confirmed the effectiveness of the proposed arrangements.

Keywords: socio-cognitive conflict; academic learning; socio-constructivism; cooperative learning

1. Introduction

Constructivist theory, applications in education and training, which is a particular concern in recent times, both for theoreticians, but especially for practitioners, are not necessarily recent. Ideas on the building of knowledge by pupils can be found at precursors, such as Dewey, Piaget, Bruner, von Glaserfeld (Joiţa, 2006). They have known, subsequently, significant adjustments or additions, through theories such as that of Bandura (1989), Vygotsky (1978). Constructivism has experienced different educational practice, called models, instructional strategies being applied within various disciplines (Zaharia, 2013; Belbbase, 2014), respective authors being concerned with and

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establish the relevance of this theory in terms of the different types of radical: constructivism (Von Glaserfeld, 1995), social (Vygotsky).

For the analysis of new issues in this study, we are interested in, in particular, the concepts of Piaget and Vygotsky in respect of the procedure for conflict resolution and cognitively. The key difference between the two writers lies in the way and the extent to which they valued or not learning interaction, role in solving problem situations.

If for Piaget, important is the individual activity, independent of the subject, overpassing, through its own resources obstacles cognitive, Vygotsky believed essential in these situations is the interaction with others, collaboration, cooperation in overcoming difficulties arising in the form of cognitive discomfort situations. In important respects, relating to the assimilation of Piaget's theory of the new and the new adaptation of already existing cognitive structures resemble Festinger's theory (1957), the cognitive dissonance. An individual who manages to overcome this discomfort cognitively or by changing the way of thinking, of attitudes and behaviors, or by streamlining their creation on all a powerful motivation.

Socio-constructivism, which promotes the idea that learning is essential, the development taking place as a result of the interaction, cooperation-based activity, pairs or small group particularly valued sociocognitive conflicts. Learning environment, interactions with other colleagues are considered as the ideal source for promoting and resolving these conflicts, absolutely necessary to ensure that development can take place (Davis & Winstone, 2011). Learning takes into account not only the current state of development, as well as, in particular, the level of potential, which can be achieved thanks to the support offered points, grace (scaffolding) knowledge (Vygotsky, apud Moll, Tomasello, 2007; Schunk, 2011).

Lately the socio-cognitive conflict is used frequently in activities with pupils/students, in order to change their concepts on various scientific concepts (Skoumios, 2008; 2009), to ensure a logical, rational teaching (Popescu, 2005; Sacco, Bucciarelli, 2008).

Recent studies (Asterhan et. all, 2010) discusses non-factors and implications, as well as motivation, cognitiv affectivity in socio-cognitive conflict resolution.

We propose, in table 1, an analysis of the role of development theory promoted by sociocognitive psychological Vygotsky (adaptation Joiţa, 2006; Mc Devitt, Ormrod, 2007; Joiţa, 2010)

**Table 1. Socio-cognitive development of individual (Vygotsky's theory)**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Characteristics of cognitive development, according to Vygotsky theory</th>
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</thead>
<tbody>
<tr>
<td>1. How it stimulates learning?</td>
<td>Through interaction, carry out transfers, additions, corrections, adjustments of knowledge, between members of the group, especially in those with a higher level of knowledge or skills training properties in question</td>
</tr>
<tr>
<td>2. Under what conditions is carried out?</td>
<td>Communicative, stimulating environment, based on cooperation, collaboration between its members</td>
</tr>
<tr>
<td>3. What are the roles of the teacher?</td>
<td>Facilitator, creating situations-issue, to ensure the necessary conditions, monitoring, mentoring, motivation.</td>
</tr>
<tr>
<td>4. What are the roles of learners?</td>
<td>Exploration, investigation, formulation of hypotheses, solutions</td>
</tr>
<tr>
<td>5. What processes, techniques, tools can be used?</td>
<td>Critical analysis of the context of the problem of mental schemes, for updating your rezolutive experience, analysis of tasks and conditions; the use of cognitive tools, such as: criteriale analysis tables, lists of questions and hypotheses, cognitive schemas, cognitive networks with route variants of solving the final settlement plan and global or partial choice.</td>
</tr>
</tbody>
</table>

There are different models of cognitive stimulation or socio-cognitive ability: ARCS (Keller apud Lee et al, 2003), REAL (Rich Environments for Active Learning) (Schott, 2001, apud Joiţa, 2006), CECERE (Joiţa, 2005; 2007).
2. Methodology

2.1. The purpose and objectives of the research

- The research-action taken to optimise learning students-future teachers, by valuing the work based on cooperation, namely the socio-cognitive conflict. The research was carried out during the academic year 2013-2014.
- Consistent with the said purpose, the objectives were: • Knowledge of the future teachers of the students on the advantages and disadvantages of collaborative learning based on solving problem situations in pairs or in small groups;
- • Testing the usefulness, effectiveness of constructivist instructional models that take advantage of the benefits of socio-cognitive conflict over co-construction of knowledge by students;
- • Recording the effects of collaborative interaction based on the results of the students.

2.2. Hypotheses of research

Research assumptions outlined major directions of research. The General hypothesis testing of tracked the idea according to which the use of the sociocognitive in learning conflict type contribute to improving academic performance of students.

In close liaison with the General hypothesis, particular assumptions there were particular Hypothesis 1: the use of training models based on solving problems in the constructivist style, on harnessing the sociocognitive conflicts (the pattern ARCS, REAL, CECERE) will lead to a better understanding of pedagogical concepts and specific issues of pedagogical disciplines.

Particular hypothesis 2: solving problem situations in pairs or in small group helps to reduce misunderstandings, errors in the definition of some concepts in the analysis and interpretation of situations etc

2.3. Participants and the research methods and instruments

The sample of subjects was made up of 123-future teachers, students are in year 2 of psycho-pedagogical training, from the faculties of letters and horticulture at the University of Craiova.

The procedure and tools used in the present study were: inquiry-based questionnaire, the pedagogic knowledge test, psycho-pedagogical experiment, analysis grids work done by students in the working groups.

The questionnaire administered to students to their opinion concerning the knowledge pursued the advantages and limitations of using socio-cognitive conflict in the learning activity. Of the 7 items of the questionnaire, 5 were of the type the items enclosed with answers to ease the collection of replies and interpret them. These questions have asked the opinion of students on the effectiveness of socio-cognitive conflict (item 1), for the better understanding of Pedagogy through an individual or group activity (item 1), how to solve problem situations, considered them more effectively (item 5) and the possible reactions that may lead to the emergence of a situation-problem in learning activities (item 6). The last item has asked respondents about the usefulness of using assessment of situations-problem in the development of pupils (this time, students has to analyze the problem from the perspective of prospective teachers). Two of the questions of the questionnaire (items 3 and 4) were items with open response type, in order to allow a better knowledge of the various opinions of respondents, asking them to mention at least three advantages and three disadvantages of minimum cooperative learning.

Teaching knowledge test followed recording performance levels of students-future teachers by solving tasks consistent with the theme of psycho-pedagogical disciplines which were the content of the research sample. Composing the test items was urging the ability of students, understanding of critical analysis, interpretation, problem-solving situations, appropriate decision-making, all of which are required and skills practiced with particular training models specific to the constructivist paradigm. For this example, we present a few tasks proposed for solving students: “a fellow college-please explain what is the relevance, macrosistem, level of systemic analysis of educational process”; “You're new teacher in a school. How articulate, reasoned in school practice, constructivist
paradigm of competencies with the behaviorist paradigm, the objectives”; “Project lesson or unit of learning project? Give reasons for your choice!”. Please note that all these tasks have been solved by the students through a cooperative activity undertaken at the group level, temporarily set up.

Psycho-pedagogical experiment consisted in placing the variables research in testing the effectiveness of constructivist instructional models based on valuing the sociocognitiv conflict in learning. Training models used were REAL (Rich Environments for Learning), ARCS (Attention, Relevance, Confidence, Satisfaction) and most importantly, the model CECERE, theorized and experimented by Prof. dr. Elena Joiţa, during an investigation, it will propose a variant of learning as 6 steps: preparation of Context; realizing direct Exploration of the material-support database; Collaboration/cooperation in pairs or in small groups; Elaborate of generalizations, the synthesis; formulation of personal Reflections; Summative Evaluation (Joiţa, 2005).

In the research we used different instruments for registration of new arrangements introduced efficiency, such as analytical grids, whose indicators have followed the method and degree of involvement of students in solving problem situations, through collaboration with other members of the group. Here are some examples of indicators: Watch video “communicates with other colleagues for solving tasks of a group”; “Formulate questions, auxiliary aids, understanding”; “Complete, correct answer provided by ajsteză, a fellow”; “Offers variants of solving situations, tasks” etc.

To determine the relevance of the results recorded, we used the Z-test to determine the statistical significance between the two environments.

3. Results

Following the questionnaire applied to students, we recorded their views on the role and importance of the sociocognitiv conflict, regarding the advantages and limits of its recovery in the business of learning.

According to the responses provided, most of the students (62%) believes the sociocognitive conflicts effective learning, only 21% opting for their ineffectiveness, while the remaining students could not appreciate. The same option is highlighted and the 2 students applied, almost half of these (46%) felt that the work based on cooperation is more effective in understanding pedagogy, compared to self-employment (33%). Also, students-future teachers are of the opinion that the problem arising in situations of learning Pedagogy can be better and more easily resolved in the Group (57%) than individually (26%). For most of the students (63%), the emergence of a situation-problem determines training, mobilization in its resolution, the appropriate motivation, the rest of the others (37%) feeling discouraged, unmotivated in such situations. The majority (74%) students, as future teachers appreciate the usefulness of socio-cognitive conflict in the development of the students.

Two of the questions of the questionnaire requested the opinion of students on the advantages (item 3) and disadvantages (item 4) activity based on cooperation by solving socio-cognitive conflict.

Mention a few of the advantages: facilitation of learning; correction of one's own point of view, through the confrontation with others; practice the skills of communication and persuasion; a better knowledge of their colleagues; improving your own learning style, by taking over from fellow models. Among the disadvantages, such as: risk of taxation/take-over of views of colleagues, which is not necessarily their own option; insufficient involvement of students, because of timidity or disbelief in itself; risk control takeover talks by some of the members of the Group; the risk of tensions within the grouping; different degrees of involvement of all members of a group in dealing with resolving the problem; "sharing" the same note or to the same score, although the contribution of members of the group is different.

To determine the effectiveness of the proposed learning models have been applied to pedagogical knowledge tests, whose results have confirmed the efficiency. They do their pricing for the statistical relevance of the difference between the average values obtained from the initial and final tests, we applied the test Z here. In table 2, the values obtained.
Table 2. The statistical relevance of the difference between the pre-test and post-test

<table>
<thead>
<tr>
<th>Stage</th>
<th>Average (a)</th>
<th>Deviance ((\sigma^2))</th>
<th>Number (N)</th>
<th>Value of Z</th>
<th>Significance threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>7.12</td>
<td>2.24</td>
<td>123</td>
<td>5.65</td>
<td>p&lt;0.01</td>
</tr>
<tr>
<td>Post-test</td>
<td>8.25</td>
<td>2.71</td>
<td>123</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As can be seen from table no. 2, the value of Z is significant at a threshold of significance of 0.01.

4. Discussions

The results obtained through the application of methods and tools for research mentioned they highlighted, in the general preference of students-future teachers for the creation and, in particular, solving the problem-situations of cognitive conflicts through an activity carried out in pairs or in small groups. Socio-cognitive conflict helps students better understand concepts, to build their own knowledge basis, say others representing an effective way of correcting, completing or confirming the correctness of the relevance of their own ideas or points of view.

Their effectiveness has been confirmed not only by the answers given to the questionnaire applied to students, but also of the results of these tests applied. Experimentally it has been demonstrated that the conditions under which they are commonly created socio-cognitive conflict, students improve their results within the discipline of pedagogy. Compared to the initial test, the results recorded on the post-test were significantly better statistical relevance, this difference being determined by applying a Z-test.

Also, the results have demonstrated the effectiveness of constructivist instructional models that promote the socio-cognitive conflict and cooperation-based activity. We are referring here not only to models already enshrined in literature (such as ACTUAL models or ARCS), but, especially, the contoured pattern and CECERE, applied for the first time as part of a research carried out on students-future teachers, in an attempt to demonstrate that constructivist instruction is a serious alternative to traditional classical training.

Beyond the many benefits mentioned, harnessing the cognitive conflicts can present risks or drawbacks. They were reported as students in their answers, as well as during the experiment. Most important, from the perspective of students, were those relating to the manner and extent of "rewarding" work, especially under the conditions of different members of the Group's involvement in solving the task in question.

5. Conclusions

Constructivist instructional models, based on addressing the socio-cognitive conflict particularly emphasizes the role of context in learning, social interaction, and the inter-communication. They come to adjust and complement the theories and models that work and learning, knowledge building is one mostly alone. Socio-constructivists promoted the idea of co-construction of teaching-learning knowledge each other. In the process of building knowledge through interaction with others, creating and solving cognitive conflicts has major benefits on the development of cognitive capabilities, meta-cognitive, personality development as a whole.

We tried to show the formative potential of some examples of socio-cognitive conflict in the initial formation of future teachers, their skills training is essential for subsequent process, through which they can, in turn, others.

References


