Primary school skills development through integrated activities

Loredana Sofia Tudor*

University of Pitești, Pitești, Tg. Din Vale street, no.1, România

Abstract

Evolution of pre-school educational reforms have resulted in a continuous and dynamic revival of concepts in terms of achieving instructional approaches. It is necessary that students undergo learning experiences to build skills, to have a wide range of knowledge/acquisition. The purpose of this study is to determine the effectiveness of integrated teaching activities measured against school age students competencies, as they are provided for educational finality provided in the National Curriculum. The results of the study highlight the achievement of integrated activities is effective teaching in terms of training / skills development specific to school age children.

Keywords: curriculum integration, integrated curriculum, integrated instruction, integrated design, integrated learning situation

1. Theoretical framework

To the trend of extrapolation of curricular approaches, experts in sciences education have responded positively by defining new ways of approaching curriculum at all levels of education by adopting integrated organizational models of teaching-learning-assessment.

Curriculum integration allows to cover breaks between disciplines, namely avoiding their isolation, by exploiting the correlations between content, promoting the convergence of disciplinary fields, both in research and in the curriculum and teaching (Ciolan, 2008). In the current vision, experts believe that curricular integration of pedagogical components targets at least two levels: the articulation of all components of the educational process,

* Corresponding author. Tel.: 0745662196.
E-mail address: tudor_lori@yahoo.com
such as the objectives, content, methods and means of education etc. and integration of subject areas and/or curriculum areas, integrating disciplines in varied designs of integrated teaching (transdisciplinary) (Bocoș, 2012).

Defining the concept has seen a rapid evolution from teacher Humphreys' initial approaches, who said: "An integrated study is one in which students explore in a global way knowledge from many academic disciplines, but are subordinated to particular aspects of the living environment." (Humphreys, Post, & Ellis, 1981, p. 11). In Shoemakers conception (Shoemakers, 1989) teaching and learning are seen in a holistic perspective, reflecting the real world, which is interactive. So, the integrated curriculum represents the organized education is in a way that intersects the main thematic areas of several disciplines, building a interactive perspective of the real world. "Romanian teaching literature, integrated curriculum suggests correlation, putting in relation, the integration of content in an educational approach whose starting point is the purpose/objective, by which are chosen the other components of the educational process (Cretu, 1998; Chis, 2001). Lucian Ciolan (Ciolan, 2008), making a critical analysis of concrete implementation strategies in the school curriculum of integrated design, considers that the integrated approach to curriculum remains a disciplinary alternative curricular approach, the few cases where the approach of the curriculum in an integrated manner has become the dominant paradigm in the design and implementation of curriculum. An essential component of the integration process is the integrated teaching, a concept that also spawned multiple approaches, being a unique approach to teaching fundamental action. Integrated teaching is the action that makes to interrelate various items to build a harmonious whole, of a superior level, the higher level integration, the integration of the parts leads to a product that exceeds the sum of the parties (Ciolan, 2008). It proposes a constructivist approach to curriculum which aims by establishing different degrees of integration to the objectives, content, methodology, concepts or values, achieving complex results for which are not enough the boundaries of a certain discipline (Bocoș, 2012).

The accent lies on teaching activities organization and on learning and extrapolation of certain methods that ensure both amnesia retention and transfer of learning to other situations or contexts. The quality of teaching is assessed by transforming virtues that it produces through organizational behavior, assessment, development, customization, performance, feedback, embodiment, control and expression of affection, be it verbal/nonverbal. (Tudor, 2011). From these facts it is necessary a multi-, inter- and transdisciplinary approach of the educational processes. Lucian Ciolan (Ciolan, 2008) reveals that the integrated design of the curriculum requires a combined approach involving together students and teachers, while curriculum designers focuses mainly on producing support materials and advising. The multi-, inter- and transdisciplinary projection did not lead to "dissolution" of the disciplines, they will continue to exist in the curriculum but "permeable" and interconnected. Integrated design is centered on methodological and strategic formative objectives without neglecting the cognitive objectives as educational aims in training courses.

In the opinion of specialists for preschool and primary education, integrated design provides progressive organizational contexts of activities based on children's development, their interests and awareness of the proposed theme, integrated projects presumes approaching reality in a globalized way, holistic in which the boundaries between the categories and types of activities disappear, melt into a single approach, in which the issue can be investigated by means of various sciences. (Paisi, Tudor & Stan, 2009).

In achieving concrete educational approach, integrated design requires configuration based on the objectives of an integrated learning situation. This is a pedagogical context specific to integrated approaches, as defined by Bocoș (Bocoș, 2012, p. 40): integrated activity objectives drawn from the whole framework targets/ reference targets of involved curricular areas, in integrated contexts in correlation with targeted learning experiences and in strong correlation with targeted learning experiences, valued contents are selected, processed and harmonized closely related to the core of curriculum integration, so as to ensure interaction of subjects and internal consistency of the approach, the task of learning has integrated character, that requires the student to make efforts to interrelate different content items so as to constitute a whole, harmonious and functional; the frame of learning is built around significant problems of real life, so it will allow to live the beneficial experience of life and correlate learning outcomes with real situations cut from everyday life; the methodology of teaching, learning/ self-learning deals with disciplinary skills training and/or grantable, providing students opportunities for individual/collaborative reflection, communication, cooperation, investigation, flexibility in time school management, in harnessing and combining forms of organization of students activity. Paisi, Tudor, Stan (2009) considers that an integrated learning situation allows students that from life experience and prior knowledge learned from various fields of knowledge to solve
faced "problems", to reflect on the learning content. Teaching approach is always done in the context of improving learning. To fulfill this role, the teacher is not only a source of information for students, at the same time he serves to select, organize, structure the information so that it can be assimilated, he provide conditions for transmitting information through an optimal organizational learning environment, guide students to various sources of information, with the acquisition of new knowledge, teaching the techniques to acquire them, to investigate and discover them (Tudor, 2011).

2. Design of Research

2.1. The Purpose, objectives and hypothesis of study

The purpose of this study is to determine the effectiveness of integrated teaching activities measured against school age students competencies, as they are provided for educational finality provided in the National Curriculum for this level.

The methodological objectives consist in determining the effectiveness of the development of integrated teaching activities in classes I, II of the primary, in relation to the framework objectives/ performance standards of academic disciplines, and given the linear structure in planning curriculum content.

The Hypothesis of research starts from the assumption That mainly using some forms of curriculum integration of inter-and transdisciplinary model in designing, organizing and teaching activities in subject areas Language and Communication, Mathematics and Sciences, Arts has positive effects in terms of students developing competencies (ability of oral expression / written expression, operating capacity in limits of natural numbers 0-100, without crossing order, capacity of applying information in problem solving).

2.2. The Methodology of Research

The experimental research has been effected during a school year, at primary school level, including 56 subjects – pupils from the I and II-th form (in the control group 25 pupils, in the first experimental group 31 pupils). Thus: 37,2% boys and 62,8% girls; 58% from the urban background, 42% from the rural one.

Based on integrated curriculum design models whose foundations were laid by HH Jacobs (1989), R. Fogarty R. (1991 a, b) and R. J. Fogarty and Stoehr (1991), which provides practitioners didactic models for carrying out the educational design in curriculum integration conditions (see Chiș, 2002; Ciolan, 2008), teachers in the experimental group built integrated learning situations for the following topics included in the syllabus of the objects from the curriculum for I grades: addition and subtraction of natural numbers in 0-30 limits without crossing order, addition and subtraction of natural numbers in 0-100 limits without crossing order (Mathematics) alphabet period – capital and small letters of the alphabet (Language and Communication), The Phenomena of Nature, Seasons, Man and Environment, Observable Components in Plants, Animals Observable Components (Environmental Knowledge), Songs for Children, Songs with Animals (Art). For second grade teacher in the experimental group built and implemented integrated learning situations for the following topics: The Phenomena of Nature, School, Family (Language and Communication) and addition and subtraction of natural numbers in 0-100 limits with and without crossing order (Mathematics), Natural phenomena, Plants, Elements of the natural environment (Environmental Knowledge), Songs for Children, Songs with Animals (Art).

3. The Analysis and Interpretation of Results

To measure students' skills were analyzed three indicators suitable purpose and performance standards of primary. For each indicator were given scores, measured by scores obtained from subjects at pretest and posttest. Evaluation tests were interdisciplinary content, being constructed in accordance with school programs in vigor. For the indicators referring to oral and written expression ability, the ability to operate with natural numbers 0-100 limits without crossing order, percentages are higher in posttest as compared to the pretest. Also, a much higher percentage is recorded at the end of the experiment as concerns the ability to apply information to solve problems.
Table 1 Scores obtained for each indicator in the stages of PRETEST – POSTTEST for the control group and the experimental group

| Group            | N   | Mean    |
|------------------|-----|---------|
| Control group    |     |         |
| Pretest-oral/expressed writing ability | 25  | 3.0636  |
| Pretest-ability to operate with natural numbers | 25  | 2.2091  |
| Pretest-ability to solve problems | 25  | 1.2818  |
| Experimental group |   |         |
| Pretest-oral/expressed writing ability | 31  | 2.7061  |
| Pretest-ability to operate with natural numbers | 31  | 2.3740  |
| Pretest-ability to solve problems | 31  | 1.3874  |

Analyzing the scores obtained at the docimological tests for the indicators oral and written expression ability, ability to operate with natural numbers 0-100, ability to apply information to solve problems, we have identified significant rises of the average for each indicators at the subjects belonging to the experimental group. The results obtained by the subjects from the control group show rises of the average from the pretest to the posttest at all indicators, but these are not significant and can be explained by pupils’ progress from one evaluation period to another, due to the assimilation of information, to maturing or to other factors which influence school results. The results obtained by the subjects from the experimental group show a greater increase in indicators ability to operate with natural numbers s and ability to solve problems (Table 1).

Table 2 Mean difference in pretest-posttest control group and difference control group - experimental group

| Group                | Mean | Std. Dev. | t     | df  | Sig. (2-tailed) | Mean Difference |
|----------------------|------|-----------|-------|-----|-----------------|-----------------|
| Group control        |      |           |       |     |                 |                 |
| Pair 1 oral/expressed writing ability | 3.0636 | .84330 | 2.397 | 184 | .018 | .35753 |
| Pair 2 ability to operate with n.n | 2.2091 | .96677 | -1.076 | 184 | .284 | -1.6495 |
| Pair 3 ability to solve problems | 1.2818 | .35044 | 1.768 | 184 | .079 | -1.0559 |
| Group experimental   |      |           |       |     |                 |                 |
| Pair 1 oral/expressed writing ability | 2.7061 | .96151 | 4.049 | 184 | .000 | .48851 |
| Pair 2 ability to operate with n.n | 2.3740 | .94938 | -7.197 | 184 | .000 | -9.1960 |
| Pair 3 ability to solve problems | 1.3874 | .38005 | -6.548 | 184 | .000 | -3.4403 |

In order to identify if there are significant differences pretest - posttest we have calculated for paired samples t-test for the control group and the experimental group (Table 2). As shown in Table 2, for each indicator it can be observed mean differences from pretest to posttest phase. To identify whether there are differences between the control group and the experimental one for the measured indicators it has been calculated t test for independent samples (see Table 3). To obtain a correct measure, at the pretest should be no statistically significant differences between groups, and at posttest they should occur. It is noted that at the oral indicator /written expression ability there is a significance group lower than the accepted value, which means that at this indicator in pretest phase there were significant statistically differences between the control group and the experimental one. At the other indicators, the value of sig is greater than 0.05, indicating that there is no significant difference between the two groups measured indicators. In the post-test phase the value of sig is 0.000 (less than 0.05), indicating that there are significant differences between the two groups.
Table 4 it is observed that in the control group, the level of sig is normal, indicating an increase of the results for each indicator, but the value of this is very small compared with the values of the experimental group, the increase may be explained by natural development of student outcomes as a results of intellectual development (t value indicates the statistical significance of the difference). Regarding the experimental group sig value indicates significant differences in all indicators and the value of this is very high at the indicator ability to solve problems, the results showing a significant increase in these indicators.

4. Conclusions

From the presented data, especially the use of some forms of curriculum integration of inter-and transdisciplinary model in designing, organizing and teaching activities proves effective in terms of significant indicators. For example, an increase in the ability to operated with natural numbers, existing significant differences between pre- and posttest, which means the progress made by the subjects in the experimental group. The results shows the verifying of the hypothesis of the study and the ability to solve problems. Instead, it could not be proved a growth of the indicators value for oral / written expression ability, the highest average of the results for this indicator being at the control group. In this case, there is progress, if working under traditional teaching activities (designed, organized). Based on the study and the conclusions we have reached as a way of designing, organizing and conducting educational activities in primary in the current curriculum, we believe that the development of integrated activities is effective to increase students progress in terms of ability to operate with numbers and the pointer ability to solve problems. Building lessons on a research-based foundation of integrated activities, adding appropriate models of integrated activities should help ensure high-quality instruction that has the potential of maximizing student achievement.
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