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**PhD THESIS ABSTRACT**

**INTEGRATED CURRICULUM DESIGN  
FOR FIRST GRADE ACTIVITIES**

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## KEYWORDS

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Educational process; Monodisciplinary approach; Integrated approach; Integrated curriculum; Curriculum design; Integrated activities; Curricular integration; Levels of curriculum integration; Curricular models; Pedagogy focused on student; Pedagogy focused on competencies; Integrated activities thematic unit; The project method.

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## INTRODUCTION

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The changes in society at the turn of the millennium have generated changes in education, which could not remain passive to the challenges in all spheres of existence. Since real life issues that must be solved every day have an integrated character, their solution, whether they have a lesser or greater complexity, involves the call to knowledge, skills, competencies that can not be put in a strictly defined object of study or another.

Contemporary educational systems make it possible to define new paradigms paying an increasing attention to the approach of training models. Thus a transition is made from a monodisciplinary model as generator of a segmented training, organized in different disjoint dimensions, where transfer is favored by the very well defined structures operation located within the "territories" disciplinary models of such transdisciplinary / integrated teaching-learning-evaluation.

According to the traditional paradigm, knowledge is a process that takes place in a well-defined (universities, laboratories, research institutes, etc.) and in clear theoretical frameworks, roughly determined by formal classical disciplines and their subjects subdivisions.

The new way of producing knowledge is based on transformations and major issues facing contemporary society. This framework allows the production of a new type of knowledge: a pragmatic, focusing on problem solving and strong socially engaged one.

In the context of developing a new educational paradigm, during the last decades, one of the trends in the development of didactics is part of a new grid of concepts and approaches, which brings with it major changes in contemporary education, in shaping the access to knowledge. This is the interest in curriculum integration, the integrated curriculum.

The theme of this approach is part of the contemporary trends of the holistic approach to scientific knowledge and aims to provide relevant educational solution, viable for the efficiency of the national curriculum.

Our intention is that the obtained results provide the interface between recent integrated curriculum theory and educational practice-oriented towards developing curriculum school projects, a not very developed practice in our country.

The theoretical foundation of the research is the trans-disciplinarity paradigm, perceived by Basarab Nicolescu as “science and art of finding bridges between disciplines” and the areas that we intend to exploit refer to curriculum integration as a solution to make the educational process more efficient regarding the integration of content disciplines, teaching in an integrated manner to develop disciplinary and especially transversal skills of learners and the use of projects in the organization and development of integrated activity.

The paper entitled "Integrated curriculum design for first grade activities" is the scientific approach made in order to obtain a PhD title.

First, we presented fundamental theoretical guidelines for understanding the paradigms with which we operated, the used concepts, followed by the definition of the curriculum project for integrated activities and its description and we presented the methodological parts of the curriculum design, focusing on the first grade.

The last two chapters of the paper contain the experimenting strategy of the curriculum design for integrated activities, the research design, the presentation, the analysis and the interpretation of experimental data, the conclusions detached and prospects for development, and the limits of the paper.

During our scientific approach in designing and conducting the research, I intervened with a series of summaries and proposals that are personal contributions in addressing the raised matter.

We have grouped these personal contributions according to their nature into two categories, as following:

*1. Theoretical contributions in the field of curriculum integration issues:*

- Since the teaching, learning and assessment process is a main pillar of education, I proposed a different representation of it, starting from the educational process system components, as identified by many pedagogical literature authors.

- For a better understanding of the concepts, we conducted a brief analysis of the terms of mono / multi / multi / inter / transdisciplinarity, attempting a synthesis of views expressed by different pedagogical literature authors and we performed a comparative overview of typologies of curriculum integration.

- Based on the ten ways of curriculum integration (representing different types of integration and configuration options to design an integrated curriculum), whose foundations

were laid by H.H. Jacobs (1989) and Fogarty R. (1991), our contribution consists in proposing concrete ways to design themes using these theoretical models.

- We made a classification of the models of curriculum design after reporting to the Tylerian model, on one hand, and to the dimensions and aspects that it would imply, on the other hand.

- The unitary vision on the curriculum design through integrated activities (PCAI), gives a general scheme of it, which we made by doing an analogy with a cybernetic system, and for a better understanding of the connections made between components we have developed a scheme operation.

## 2. *Contributions in the field of practical-application of curriculum integration issues:*

- PCAI is the way to materialize the proposed curriculum that we developed, is a pedagogical tool, an orientation guide for teachers, a concrete action, coordinated, dynamic and progressive which intends to facilitate the personal development of students. It can be seen as a possible flexible approach of adapting to situations and new needs in socio-economical and cultural fields, characteristic for the current educational context, as a curricular proposal with open, flexible, and prescriptive character.

- We introduced the thematic unit of integrated activity as a tool for integrated design, making connections between content, excluding the lesson as a spatio-temporal unit and using learning experiences developed during one or two weeks, using the main methodology the project method and as a training model, the student-centered one.

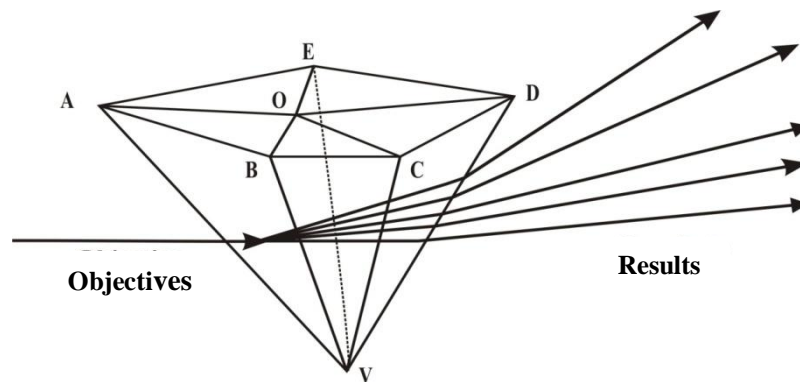
- Within the curriculum design we planned two thematic units of the integrated activity: 1) *The nature* and 2) *Real and imaginary*, materialized in the “Spring Symphony”; and “World stories” themes. To illustrate the over/ subordinate relationships concepts identified we realized conceptual and operational maps, corresponding to each theme.

- We expanded the reference framework by presenting a set of proposals for the thematic units that could be included in the design activity, each of the four levels of classes at the primary level, noting that thematic units corresponding to first and second grade were implemented by me in my class during the school years 2008-2009, 2009-2010 respectively, and they represent the practical-applicative base of our approach acting.

**PROCESS OF TEACHING AND LEARNING. FROM  
MONO-DISCIPLINARY TO INTEGRATED APPROACH**

First, we wanted to present some conceptual clarification regarding monodisciplinary organization versus transdisciplinary/ integrated organization of teaching and learning and give a short description of the evolution of the concept of curriculum.

Given that the teaching, learning and assessment process is the principal mean by which our society educates and instructs new generations, I proposed a different representation of it, starting from the system components of the educational process, as identified by many teachers (I. Cerghit, 1986; T. Rotaru, 1990; M. Ionescu, I. Radu, 1995, V. Chiş, 2001; M. Diaconu, I. Jinga, 2004).



**Fig. 1.** Diamond education

The noun "diamond" from the proposed phrase has adjectival meanings, because of the characteristics of the the material component. Like a diamond, the components of the educational process require constant adjustment, "grinding", in order to achieve a higher quality of the educational act.

"The education diamond" highlights the effect of diffraction induced by the educational objectives when acting over the the curriculum. The results of the phenomenon of "enlightment" depend entirely on the steps taken in the prism of whose sides are represented by the components of the educational process, in one temporal unit.

In our representation, the curriculum can be imagined as an experiential whole consisting of a "white light source" – the objectives, the body of the "diamond education" and of a polychromatic light assembly - expected and/or obtained results.

From the body of the "diamond education", the component which called for our attention in particular is the content of education, respectively the ways of its organization.

Within the limits provided by this framework, the forms of organization of the teaching-learning-assessment activity, in time, are going through a nonlinear evolution, from monodisciplinary teaching to integrated teaching.

For a better understanding of the concepts, we presented, to start with, the concept of *curriculum*, and of integrated curriculum, then we/I made a short analysis of the terms monodisciplinary, multidisciplinary, multidisciplinary, interdisciplinarity and transdisciplinarity.

An important part of this first chapter addresses the issue of curriculum integration described in current pedagogical literature as an innovative way of building curriculum design. In order to achieve this, we have several modern methodological solutions: multidisciplinary (thematic approach) interdisciplinarity (mainstreaming), transdisciplinarity (cross-curricular approach).

To achieve the fullest perception of transdisciplinarity, I presented descriptions offered on one hand, by the team led by Basarab Nicolescu, the Romanian scientist, physicist, president of the International Studies Center Transdisciplinare (CIRET), established in Paris in 1987, and on the other hand, by the points of view expressed by psychologists and teachers from UNESCO research group, highlighting the notable differences between them.

In the educational context, integration means the act of making various elements to interact in order to build a harmonious whole, of a higher level; it means organization, putting school subjects together, in order to avoid their traditional isolation.

In defining the levels of curriculum integration in the pre-university education is increasingly common trend to organize the contents from an integrated perspective.

In our attempt to make a synthesis of the points of view expressed by different teachers, we made a comparative overview of the typologies of curriculum integration.

In the last section of the chapter we presented the ten ways to integrate the curriculum, whose foundations were laid by HH Jacobs (1989), Fogarty R. (1991) și Stoehr J. (1995). They are the most commonly used models, representing different types of integration and configuration options to design a curriculum for integrated education.

The approach involves presenting the characteristics, the advantages, the limits for all ten models, focusing on the most commonly used in the current educational practice. Based on the details and adaptations, present in the Romanian specialized literature (Cretu, C., 1996, Sarivan, L., 2000, Kish, V., 2001, Glava A., C., 2002, and Pork, L. 2008), our contribution consists in proposing some concrete ways to design themes using one or the other theoretical models presented.



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## CAPITOLUL II

### CURRICULUM DESIGN FOR CONCEPTUAL ELEMENTS

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The second chapter continues the theoretical basis of this paper work by presenting and analysing three aspects: curriculum design and curriculum models over time, curriculum development and optimization.

In our approach we have reported to the acceptance of modern curriculum by defining the two dimensions resulted in the practice of educational development, especially in anglo-saxon literature, the two components that define the educational reforms: curriculum development and curriculum Improvement.

Curriculum design knows a variety of analyses and approaches; researchers proposing different design models, different forms of these models and eclectic designs. Based on the models proposed over the years, we made a classification in two main categories: the first one refers to the curriculum models of the curriculum design, according to certain criteria, and the second one refers to models of curriculum design keeping the loyalty of the curriculum model towards the model of tylerian Rationality.

To achieve a better overview, we have designed a table that provides a classification of the models of curriculum design following the tylerian model, on the one hand, and following the dimensions, respectively the aspects that it involves, on the other hand.

The part of theoretical foundation establishes, therefore, on the one hand, the conceptual framework - the definition and evolution of concepts with which we operate, and on the other hand, the new paradigms of education which provide a framework where the educational agents can manifest in the knowledge society in order to improve it.

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## CAPITOLUL III

### INTEGRATED CURRICULUM DESIGN FOR FIRST GRADE ACTIVITIES

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The third chapter includes a listing of general characteristics of a project (distinguishing between a project seen as an intentional educational action with an ameliorative nature, the curricular project and the project seen as a method), project definition and representation of integrated curriculum activities, presenting methodological parts of the curriculum design, with customization for first grade.

In the educational system, literature describes three types of projects: the educational project (assuming an activity of general interest, which aims at the configuration of the essential elements of education), the curricular project (it is an action with a strong applicative nature, which aims to develop skills, abilities and competencies by designing and implementation of thematic activities) and institutional project (a tool for coordinating the activities, focused on change, innovation and school development).

Because our main point of interest is the curricular project, we have presented the features that define it. Starting from the assumption that the national curriculum itself is a curriculum project, our curriculum design through integrated activities (which I referred to throughout the paper as PCAI) can be considered as a possible flexible approach to adapt to new situations and needs arising in the socio-economic and cultural fields characteristic of the educational context at the beginning of the millennium.

PCAI is a curricular proposal with open, flexible, guiding and prescriptive character.

In designing PCAI I started from a reflection on the activities that I realize with students, feeling the need to review them. Thus, this is the way of materializing the curricular proposals that I developed, it is a pedagogical tool, an orientation guide for teachers, is a concrete, coordinated, dynamic and progressive action, which aims to facilitate the personal development of students by making direct reference to what, how, when, where and whom everything is learned and assessed.

In order to have unitary and overall vision on PCAI, we developed a general scheme of the curriculum design through integrated activities, by making an analogy with the scheme of a cybernetic system (equipped with devices/units of input/output - I/O), as following:

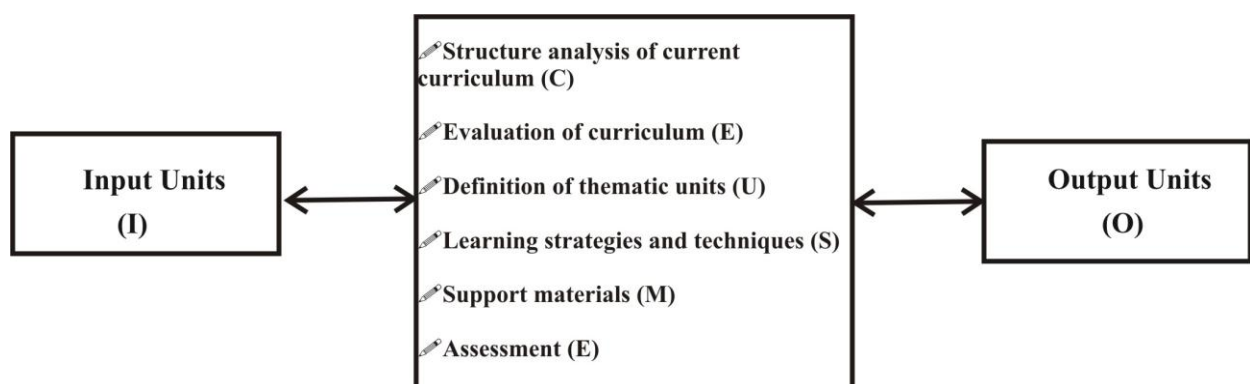


Fig. III.1 General scheme of PCAI

Input units are represented by resources such as: scientific (integrated curriculum models), human (students, teachers, administrative staff, civil society), material (the material in schools, local communities), respectively time (temporal organization of activities).

In the central block architecture there can be found all the actions taken with the scientific, human, material and time available resources. In order to develop the integrated activities, inside the central block components that offer system functionality through their interconnections, are defined.

In the case of PCAI, the resulting data is analyzed by the command-control unit (this can happen at a micro-level - teacher or board of school, and at a macro-level - other decision-makers in the educational system) who will decide, depending on the performance, if they are directed to the section "input units" or " output units".

For a better understanding of the links that are made between the components we did the following operating scheme:

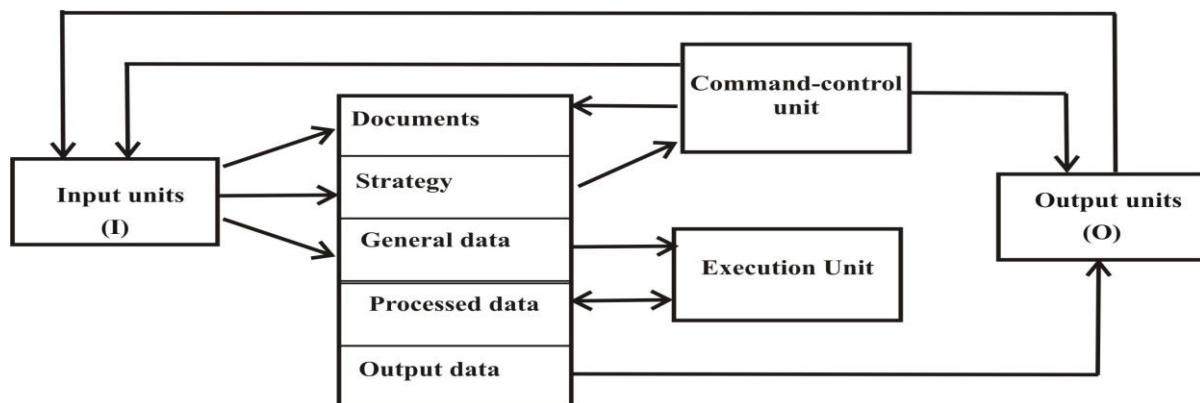


Figura III.2 Operating scheme of PCAI

Output units (output) are represented by the following resources: scientific (new models of curriculum integration, publications); human (acquisitions, pupils'and teachers' skills); materials (*student products* - portfolios, journals, another materials, *products for teachers*, teaching materials support - auxiliary staff, work sheets etc.).

Because the integrated themes develop after the rules of a project, PCAI takes elements of this philosophy, offering a model of doing an integrated activity for the first grade.

The study conducted through the questionnaire, regarding the design of SDC's primary school in Cluj and the manner in which the curriculum reflects the integration paradigm, has allowed a careful analysis on how to design school-based curriculum with emphasis on the integrated optional, the conclusions allowing us to carry out the assessment of the existing curriculum and to build better our curriculum design.

For curriculum evaluation we used the association matrix method (M. Neagu, 2008), the analysis of the relations established by the combination of benchmarks and content, helping us to formulate assessments of consistency in terms of curriculum content and objectives with consistency giving us relevant arguments for reviewing the objectives and/or list of contents.

For a better design of the integrated activity I used the thematic unit, which excludes the lesson as the space- time unit and uses learning experiences taking place within a week or more, using as main methodology, the project based learning method and as a training model, the student-centered one.

For a better perception of the holistic nature of the thematic unit of integrated activity I made the following graphic:

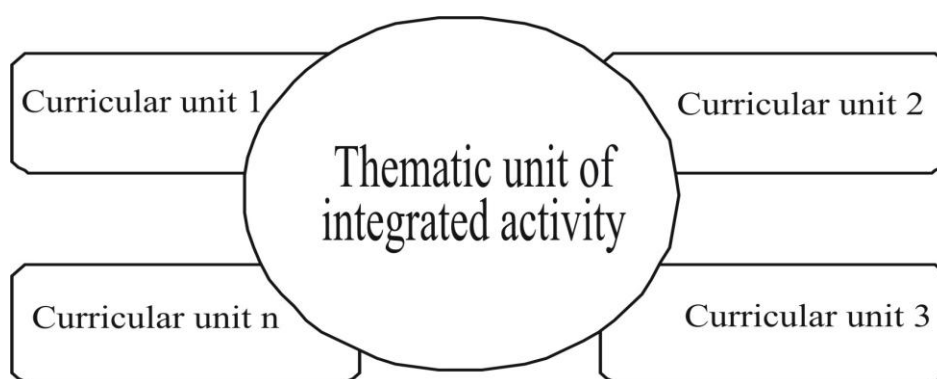


Fig. III.3 The relationship between curricular unit and thematic unit of integrated activity

A comparative analysis between the curricular unit and the thematic unit of integrated activity highlights the following aspects:

- The curricular unit includes the content, objectives, teaching-learning-assessment-specific to each discipline, from a particular class;
- The thematic unit of integrated activity includes specific content and skills appropriate to each of them, learning experiences, resources and forms of assessment, by transcending boundaries of at least two disciplines.

In conclusion, we can say that a thematic unit of integrated activity is a interconnected organization tool of the content of disciplines/subjects.

- Within the curriculum design we planned two thematic units of the integrated activity:
  - 1) *The nature* and 2) *Real and imaginary*, materialized in the “Spring Symphony”; and “World stories” themes. To illustrate the over/ subordinate relationships concepts identified we realized conceptual and operational maps, corresponding to each theme.

Next, we presented a set of proposals for the thematic units that could be included in the design activity, each of the four levels of classes at the primary level, noting that thematic units corresponding to first and second grade were implemented by me in my class during the school years 2008-2009, 2009-2010 respectively, and they represent the practical-applicative base of our approach acting.

**EXPERIENCE OF CURRICULUM DESIGN FOR  
INTEGRATED ACTIVITIES FOR FIRST GRADE**

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**The fourth chapter** is the first section where we present in detail the design and conduct of our research.

The undertaken research fits in the experimental research, practical-applicative, developmental typology that acts longitudinally and has a prospective value in class-action research conducted on large groups. In this case, we consider the use of the two-phase design, quantitative research preceding the qualitative one, highly effective.

The pedagogical research approaches are based on a methodical system composed of the: experiment teaching, conversation method, search based on a questionnaire survey, sociometric test, the study of design activity products and curriculum content of student work products analysis, direct observation, samples evaluation, statistical analysis.

The experiment was integrated in the process of education and in the teaching-learning of first grade, respecting the official curriculum, but the framework of content provided has been reorganized.

The fundamental objective of the action-research was highlighting the comparison between the effects of educational activities proposed by PCAI (models inter/ transdisciplinary materialized using the projects method) and the effects of traditional educational activities.

In writing the hypothesis of the research I started from the observation that when pupils enter the first grade, they have a certain knowledge strictly disciplinary skills and abilities that they fail to use in solving practical problems, applied in specific contexts of social life.

Corroborating aspects from the theoretical field and some personal remarks emerged the following **general hypothesis (IG)**:

**IG:** There is a positive correlation between designing and implementing a model of curriculum through integrated activities, between the organization and integration of learning in terms of inter/ transdisciplinary curricular in the first grade process and students adaptation to the specific school activity, the improvement school results and the attitude towards school (learning, colleagues, class - as a school community).

In applying PCAI to the first grade, we will see how the introduction of integrated themes, restructuring content, the use of project method will contribute to the acquisition of

effective learning techniques, to increase the union in the group of students, to the achievement of behavioral acquisitions specific to interpersonal skills.

Thus, we have outlined the following **specific assumptions (IS)**

**IS1:** Organizing the learning dimensions in terms of an inter/ transdisciplinary perspective through integrated activities and spatio-temporal reorganization of activities leads to better school results than organizing the learning dimension in terms of a monodisciplinary perspective.

By administrating the tests (pretest, posttest and recovery test), the first aspect that we want to prove is that learning organization through integrated activities has a high efficiency on school performance; it generates the accumulation of significant acquisitions corresponding to the tools and systems skills.

**IS2:** Using projects method as a main strategy in organizing the integrated activity helps in developing interpersonal relationships (student-student), in developing the index of social development in the first grade.

Through an analysis of the changing relations between students offered by the sociometric matrices, a second aspect on which we concentrated our attention was the way students prove their relationship and communication skills gained by using the projects method, an active-participatory strategy that contributes to their integration into social class group.

**IS3:** Applying the curriculum model through integrated activities helps developing positive attitudes towards school (learning, colleagues, class - as a community school).

The third studied aspect by applying a questionnaire to students participating in the experiment involved getting a feedback about the effects in terms of human relationships established between members of school communities involved in the experiment, how subjects report to the forms of organizing of the activity and, last but not least, the degree of development of self-esteem and of the capacity to take responsibility at a group level.

Starting from the general hypothesis, we set the following **variables** in our experiment (**independent- i.v., dependent- d.v.**):

**i.v.:** *the design and the implementation of curriculum design through integrated activities;*

**d.v.1:** *the level of school results;*

**d.v.2:** *the quality of interpersonal relationships (student-student), the level of social index for the first grade;*

**d.v.3:** *the attitude towards school (learning, colleagues, class).*

The assumptions will be confirmed if at the end of running the experiment:

- students prove in evaluative situations their behavior acquisition specific to the aimed competencies;

- students solve more problems related to aspects of their daily life and issues facing the micro-social level where they belong and their motivation gets a more intrinsic character.

To get a more accurate overview of the carried out research we made the following summary:

<b>Components</b>	<b>Details</b>
<b>OBJECTIVES</b>	1: Analysis of national curriculum 2: Identify possible intervention areas through curricular integration 3: Designing a curriculum project for integrated activities for first grade (PCAI). 4: Experimentation of PCAI 5: Analysis and interpretation of results from experimentation PCAI 6: Creating a set of additional material to support the approach of curriculum integration and testing their efficiency 7: Develop procedural innovations widely applied
<b>FUNDAMENTAL HYPOTHESIS</b>	Design and implement a model curriculum through integrated activities, learning organization in terms of inter/ transdisciplinary and its integration into the curricular first grade process help students adapt to the specific school activity, to improve school results and attitude toward school (learning, colleagues, class - as a community school).
<b>METHODOLOGY AND INSTRUMENT</b>	Teaching experiment Conversation Questionnaire Sociometric test Samples of oral and written evaluation
<b>SAMPLING</b>	A) The sample of students ➤ 258 students, including 127 girls (49.22%) and 131 boys (50.78%); ➤ students from 10 classes from six schools (five schools in urban and rural schools) in Cluj County; ➤ students aged between 6 years and 8 months to 7 years 11 months. B) Sample content ➤ Content areas covered range from scientific literature offered by the romanian language, mathematics, science, skills practice, art education, music education;
<b>LEVEL OF INTEGRATION</b>	➤ Integrated approach branched curriculum model and the curriculum network model; ➤ Level of integration: functional interdisciplinarity and transdisciplinarity topic.
<b>RESEARCH STEPS</b>	Stage I: December 2008 - February 2009 – work team building Stage II: March-June 2009 – initial evaluation, implementation of the curricular project, final evaluation; Stage III, Return: September 2009 – post-experimental tests. Stage IV: from October 2009 – analysis, interpretation, conclusions

The experimenting activities took place during the second semester of the 2008-2009 school year and the beginning of the first semester of the 2009-2010 school year. They were preceded by an ascertainment, preliminary stage during which we applied two types of questionnaires: one for the responsables of the Methodical Commissions of teachers (or Boards of Directors) of Cluj county, other for teachers in the county of Cluj (May-October 2008).

The research has been conducted as following:

- December 2008 - February 2009 – gathering the team, meetings with teachers who teach the first grade, the initial students' evaluation, analysis of the official curriculum, planning the integrated activities, determining the teaching strategies and the curriculum support used;
- March-June 2009 - initial evaluation, implementation of the curricular project to the 10 classes, the final evaluation;
- September 2009 - post-experimental tests.

The working relationship with the teachers and the experimental classes was achieved by: presenting the project and getting approval to develop the experimental program, selecting and establishing cross-content issues.

Regarding the chosen themes with the students, interdisciplinary integration was discussed based on correlations between the specific concepts and content disciplines involved, illustrated in the tables of summary.

The pedagogical research approaches will be based on a methodological system which will be have as components: experimental teaching, conversation method ,based on questionnaire survey, sociometric test, the study of design activity products and curriculum content analysis of student work products, direct observation, evaluation samples, statistical analysis. The research will involve a representative number of subjects: teachers and students.

Regarding the sampling, the parallel group/equivalent technique was used, operating with the independent samples (whole classes of students, as established in school).

The first two questionnaires were used in the inspection stage and the last at the end of the research, as follows:

The first questionnaire was applied in April-May 2008, to 179 schools in Cluj County who have primary cycle (from a total of 348 schools) and aimed to analyze how the School Decided Curriculum is designed and how it reflects the paradigm of curricular integration.

The second questionnaire was applied between May and October 2008, to 114 teachers in Cluj County, from both urban and rural enviroment, and aimed at the prospectual analysis of practical aspects of curricular integration.



The third questionnaire, applied in September-October 2009, to 128 students in Cluj county, from both urban and rural environment, of the project participants, aimed at obtaining feedback about the effects in terms of human relationships established between members of school communities involved in the experiment, how subjects report to the forms of work organization and, last but not least, the degree of development of self-esteem and the capacity to take responsibilities of the group (IS3 hypothesis verification).

The Sociometric test applied to the subject-students before starting the project implementation, doing the sociomatrix and the election/rejection sociograms gave us a clear picture of the relationships between students, giving us the chance to organize the working groups in the project so as to facilitate as many cooperative and acceptance relationships as possible, to take certain students out of isolation etc.. Applying it afterwards, in the beginning of second grade, I noticed if the integrated activities had the desired effect (hypothesis verification IS2).

The evaluation exercises were intended to register as objectively as possible the development of each student.

Through the initial assessment test, the general level of the surveyed classes was identified and information about the skills and the competencies of the students were acquired.

There were also administrated tests of summative evaluation (Final1 test- sample posttest and Final2 test- test sample return), comparing their results with the results of the pretest.

The Aim of the tests was to follow up students in the training/development of skills/competencies, to achieve a deeper approach of students to real life, after the design and implementation of learning experiences in an integrated manner, using the projects method as the basis for a cross-curricular teaching (IS1 hypothesis verification).

The administration of these evaluation tests allowed the configuration of the extent to which the performance of students was due to the introduced experimental variable (i.v.) and, also, the validation of this experimental variable.

Our entire theoretical approach, supplemented by the experimental intervention in the classes involved in research, is trying to prove the necessity and effectiveness of integrated curriculum design and planned organization of integrated primary activity, as a continuation of this approach in the existing pre-school cycle.

RESULTS. INTERPRETATION. COMMENTS

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The last chapter includes a presentation of the quantitative and qualitative data, their interpretation using the statistical unit. As an end of the experiment, of the interpretation of data obtained in pretest, posttest and recovery stage, and of the targets, at the end of this complex approach, we made several value statements that can be seen as conclusions.

**The questionnaire for teachers** in ascertaining stage referres directly to the issue of curricular integration. The responses analysis emphasized the fact that about half of the teachers surveyed have correct theoretical knowledge about curricular integration issues. A very small number of teachers identifies correctly just one of the three curricular models. Instead, many teachers do wrong all the pairings/associations. This can be a not very positive reality, namely that the romanian education does still not have the necessary training to carry out a in-depth reform. As a consequence, a broader information and formation of teachers is a necessity.

Regarding the subjects' opinion on the utility of the curriculum approach in an integrated manner, it was noted that 88.60% of them have an affirmative answer, some of them offering the motivation to their positive response.

**The Analysis of data collected by applying the pretest**, through arithmetic mean of the distribution of scores obtained reflects a great diversity of the students' teams characteristics.

Regarding the impact this situation has on the experiment, We believe that it does not represent a negative or disturbing factor. To verify the hypothesis We believe that the most important data are provided by the questionnaires for students and by the sociometric tests, combined with data recorded in the three tests.

Making a classification of items after the types of procurement of learning (instrumental, interpersonal and systemic skills) (Chiş, V., 2005, p. 153-154) I noticed that most items require mainly tools and systems skills of students. Interpersonal skills can not be assessed by such a test. The questionnaire applied to students (in September) and the sociometric test are the tools with which we examined the existence and quality of such skills.

**The Analysis of sociometric tests** enabled us to achieve a cross research in order to capture the evolution of team relations by making sociometric tables and collective socio-grams of the elections, respectively the rejections.

Through the sociometric test we could determine the status of students in the field of interpersonal relationships (leader, popular, isolated, ignored, rejected, etc.), the global

psychological structure of the group, the group perception to a certain group membership, the group cohesion.

The raw data from sociometric test and written in the matrix allow us to say that:

- Carrying out the integrated activities type in which the organization of the group of students was mainly in small groups and where the teaching strategy has been the project method is beneficial in developing positive relationships inside the group, thus contributing to the development of inter-personal skills;

- Collaborative learning that took place during the experiment favors the formation of new connections between group members who had not been interested before in each other. Working together, solving new problems in new contexts and with other colleagues than those who they were accustomed to relate with, most students had the opportunity to develop new links based on cooperation and mutual assistance. The received roles inside their groups have contributed to increase the sense of responsibility, to develop the capacity to work with others, to increase the ability to lead groups of people.

Regarding the collective sociograms (made by each teacher), these give us the opportunity to know the preferential structure established within each group, the chart being a tool that tells us who interacts with whom in terms of affinities. They led to the formation of the working groups.

**The analysis of collected data by applying the final test** (1- Posttest and 2- Test return) outlines the increases that have been unanimous. From this perspective, all classes showed higher scores at the posttest compared to the pretest, except the control class, that showed almost zero growth.

The analysis of the results of the experimental classes at both pretest and posttest reveals an asymmetric distribution. This requires the use of statistical non-parametric procedures, called statistical independent techniques of data distribution.

The advantages of these techniques consist of the diversity of data that can be processed both qualitatively and quantitatively. In our analytical approach, from the non-parametric methods we used:

- the technique of  $\chi^2$  -Chi-Square;
- the Wilcoxon test of pair-rank - equivalent ANOVA repeated measurements or t-dependent (where there are comparative studies between two dependent groups that do not meet parametric conditions) ;with the Wilcoxon test we can determine the size of results differences (eg, before and after action) , ordered by rank;
- The Friedman test similar to ANOVA repeated measurements.

Following the statistical analysis using the Wilcoxon test we can see that, in each class, there are significant differences between the pretest-posttest results, meaning that after the implementation of the program, posttest performances are superior to those of the pretest. There is a steady increase in the posttest results within each quartile (25, 50 and 75), which shows the efficiency of the program for all three performance categories: low, medium and large.

Therefore, after the program implementation all experimental pupils show progress at posttest, fact that is attested by the value of z.

In order to study the effect size, for each experimental class we have turned to a comparative analysis of results obtained in three distinct periods: pretest, posttest, and test return. The applied Statistical procedure was the Friedmann test for more than two sample pairs. The following results were found:

Following Friedmann test application, there are found significant differences in pretest-posttest- test return results, the results of the posttest were significantly higher than the pretest and even lower in the test return, but compared to posttest they remain significantly higher than the pretest ones. This is attested by the value of Chi-Square.

Calculating the difference of the means ( Posttest Mean – Pretest Mean), we obtain a mean average of 4.51 points differences. Comparing this value with the difference obtained by the control class (0.16) we can say that after the implementation PCAI, the experimental classes scored much better. Between the 10 experimental classes only one records smaller differences than the unit, similar to those of the control class (this experimental class had a high average since the pretest- 97.20).

It is interesting to note that the largest increases were registered in the classes that started with the lowest scores (less than 74.55 points). Corroborating these data with the results of the questionnaire applied to pupils (see p. 310-317 of the PhD thesis), we can say that the design, organization and implementation in integrated learning experiences has a much higher efficiency than if they respect the division imposed by disciplines.

Regarding the questionnaire for students, it was aimed at obtaining feedback about the effects in terms of human relationships established between members of school communities involved in the experiment, about how subjects report to the forms of work organization and, last but not least, the degree of development of self-esteem and capacity to assume the responsibilities of the group level as a result of the integrated activities developed.

256 students responded to the questionnaire from the 258 who participated in the experiment.

Given the nature of the questions, I considered that an interpretation of frequency is an effective way to analyze the degree of development of communication and networking skills, the level to assume the tasks in the group, the capacity and availability of collaboration and mutual assistance. The analysis answers made possible the following observations, that can be found in the conclusions of the paper.

Following the registration, analysis and interpretation of the results achieved in experimenting the PCAI we can say that the integrated curriculum approach,( through which attention is switched from the learning centered on the accumulation of information to that defined by the gradual building of capacities and skills one; from the directive content to integrated content )is not just a trend for the renewal of curriculum, designed to ensure high quality in preparing students, but it is also a necessity that students feel to be happy to come to school and leave happy as well. It is gratifying that most students enrolled in the experiment were stimulated by their activity at school and beyond and, thus,positive changes in their daily work have been seen.

Following the experiment, the interpretation of data from pretest, posttest and test return, and targets, at the end of this complex approach, we can make some value statements that can be seen as conclusions. They will be presented by grouping them by their degree of generality and taking into account the social category involved in the education system, following the configuration generated by the formulation of objectives.

#### **a) General conclusions**

##### *1. The analysis of the national curriculum in terms of identifying the facts and curriculum development initiatives and existing design*

✓ The current national curriculum provides a relatively narrow range of integrated approaches, its present structure allows to achieve an integrated design at a micropedagogic level.

✓ There are no disciplines that share independent and transdisciplinary optionals that exceed 50%.

✓ The way the optionals are designed reveals the need for a reorientation to integrate knowledge and applications, eliminating the learning divided by subjects and objects of education.

✓ In the romanian school monodisciplinary structure is practiced with predilection.

The observations on coherence of contents resulting from the association matrix analysis can be summarized as follows:

✓ Benchmarks form a coherent system and they are essential in the relation with the framework objectives.

✓ The volume of objectives is balanced and appropriate for the students' age, and the formative and informative objectives' report is mainly formative.

✓ The objectives cover a wide range of procedural acquisitions, that ensures a coherent resolving approach.

✓ Most reference objectives can be associated with explicit contents/ themes.

✓ Most topics have explicit links with benchmarks appropriate objectives correspondig to the framework objectives, which ensures the formation of knowledge, skills and attitudes.

✓ The curriculum design process, as a dynamic one, is open to analysis and intervention with the goal of optimization, which allows teachers to adapt and regroup the proposed contents of the curriculum in order to achieve activities with an inter/ transdisciplinary character.

✓ The analysis of the first grade curriculum has shown us that there are contents that can be addressed across, fitting in the typology of the major issues covering areas such as environmental education, entrepreneurial education, citizenship education, intercultural education, education for health, peace education.

✓ Knowing the weaknesses that exist in the curriculum promotes the development of relevant interventions, as in modifying pedagogical tools for intervention and implementation of the interdisciplinary educational act.

## 2. *Identifying the possible areas for intervention through curriculum integration*

After this comparative study of ten ways about how to integrate curriculum the following conclusions have been drawn:

✓ The success of integrated content delivery in the primary cycle, depends a lot on the degree of structuring the designed content, in a unified vision aiming at certain finalities.

✓ There are several ways of introducing the new types of content in the educational plans and programs, each method having its advantages and disadvantages: the infusion approach (new types of specific content of either education are dispersed, based on logic and affinities in the range of different disciplines), the integrated methods (modular organization of content), the interdisciplinary syntheses (team-teaching).

✓ Developing the interdisciplinary education content requires a structural-informational approach (the content of the disciplines reflects the levels of development of particular sciences from which they come from) and a operational-functional approach (interdisciplinarity aims at training and development of fundamental thinking operations, using activating methods, having as a starting point an operative informational content;the used teaching strategies will aim at

developing the students' abilities to analyze the systemic structured information, to compare the integrated information systems, in this way, discovering scientific truths.

✓ For the pre-university education there can be identified three points of entry of interdisciplinarity: levels reserved for pedagogical designers, teachers, through non-formal or extra-curricular activities.

✓ The analysis of the proposals made by the surveyed teachers led us to shape some patterns of grouping the subjects, the model with the most options being the model that consists of romanian language and literature, science, art and music, followed by the model consisting in romanian language and literature, history/ geography and music.

### 3. *Designing a curriculum project for first grade integrated activities*

The designing approach of the curriculum model through integrated activities gave rise to the following remarks.

✓ Thematic teaching involves the integration of different disciplines by exploring an interesting idea that links several areas.

✓ Thematic teaching is done so that students see connections between different disciplines and their connection to life.

### 4. *Experimenting the PCAI through its implementation within the educational activities performed in the first grade*

✓ The developed model was implemented in the context provided by PCAI for exploring its applicability and its practical relevance.

### 5. *Analysis and interpretation of results from experimenting PCAI*

The ascertaining aspect of the research was directed towards the systematic collection of information, then processing them to reach their significance.

✓ The first aspect that we wanted to prove, that of the efficiency of inter/ transdisciplinary learning organization through integrated activities and reorganization of space and time to teaching activities (IS1), was conducted by recording and analyzing the results obtained by administering some tests (pretest, posttest and return test).

✓ The second aspect that we followed, about the efficiency of using projects as a strategy in organizing the teaching of the integrated development of interpersonal relations, the integration of pupils with specific problems of adaptation to school work, concluded that the organization of teams of students in work groups, taking into account the relationship of acceptance, rejection or isolation highlighted by the sociometric test, is of great importance in defining the formation of networking and communication skills that contribute to the integration of pupils with adjustment problems in the social class group.

✓ The third issue followed, demonstrating that the application of the curriculum model through integrated activities helps developing positive attitudes towards school (learning, colleagues, class), allowed us to get a feedback about the effects on the human relations made between school community members involved in the experiment; how subjects reported to the forms of work organization and, last but not least, the degree of development of self-esteem and the capacity to assume responsibilities at a group level.

6. *Creating a set of additional materials to support the curriculum integration approach and to test their effectiveness*

To increase the applicability of the PCAI model we made a set of support materials for the curriculum integration practice.

✓ From the support materials we mention: educational projects, curricular design sheets, tools for evaluating the effectiveness of curricular integration, records tracking progress in learning, graphic organizers, etc.

We believe that this objective was not achieved at the parameters that we have designed our practical-aplicative approach. During the experiment some situations arose that required the reconsideration of additional materials.

7. *Developing procedural innovations widely applied in primary education in Cluj county*

In order for products derived from the performance of scientific research and validated from achieving statistical analysis to have a strong impact, at least at the county level, need to:

✓ the organized meetings with teachers in Cluj-Napoca offered the possibility of presenting our conceptual and experimental intentions, demonstrating, through practical activities, the importance and effectiveness of implementing a curriculum model as the paradigm of integration curriculum;

✓ publishing articles on topics addressed in the paper, in reference publications for the teaching literature in Cluj, increased the awareness of teachers regarding the studied issue and they provided models (theoretical and practical) of curriculum integration;

✓ dissemination of theoretical information and ascertaining research and experimental results on the Yahoo group during in some events held at the ISJ Cluj, respectively CCD Cluj, had an effect on teachers, some of them wanting to be part of a team to continue the concerns in this area.

**b) Conclusions on learning agents (teachers and students)**

✓ There are optionals which do not take into account the particularities of students' age (ICT – first grade, writing text in sem.I, first grade; modern language to first and second grade: expressing in writing).



✓ There is still a need for change of mentality, primarily of the teachers as main agents of the education reform, because there can be noticed a reluctance in the design and implementation of integrated activities.

✓ The integrated type approach is highly effective in motivating students and fostering higher operations of thinking, because the learning based project means research action and practical action at the same time.

✓ Depending on how the teacher intervenes, interdisciplinarity can be made by: required and minimal correlations specified in the curriculum or imposed by the logic of teaching new knowledge or systematic and developed disciplinary connections, which are the expression of a bi-or multi-disciplinary vision.

✓ Teacher training is needed for organizing interdisciplinary content in the sense as the most viable will be working in teams of teachers will collaborate to develop and conduct a class curriculum, and the dimensions of content (through plans, programs, manual), creating real insights for interdisciplinary vision.

✓ Teachers' responses to the questionnaires allow us to say that the integrated curriculum approach is useful at least for the following reasons:

- It is action oriented, it has an applicative and useful character of knowledge/ skills which students form; that required daily;
- A thematic organization of the content can be made, they are more attractive;
- Students become more motivated, show greater interest for learning;
- It is very important to use teamwork as the predominant form of organization of learning experiences;
- a more effective training of the group of students can be achieved;
- collaboration and social abilities can be developed;
- The integrated approach is a facilitator in the transfer and the ability to solve problems in new contexts, based on experience;

The teachers' comments analysis gave us the opportunity to shape the following comments:

✓ The integrated approach of curriculum is a difficult endeavor, it requires prior training of teachers and a greater willingness on their part in terms of volume and duration of activities in the curriculum design stage.

✓ To understand the specificity of this approach of curriculum, teachers want to see more model activity and participate in trainings on this topic.

✓ The products made by students are outstanding, are closer to the learning of everyday life.

✓ Evaluation knows more varied forms and it is focused on developing skills and competencies rather than accumulating knowledge.

✓ Highlighting the results of the activity is possible by making portfolios, posters, models, parties, fairs, etc.

✓ For a better organization of such integrated activities support materials for teachers are necessary.

✓ There are teachers who are looking with reserve and suspicion at this new way of approaching the educational activity. They mention that not all knowledge can be accumulated like this, that we need to keep a balance between classical, traditional and integrated activities.

✓ Other teachers were interested in making the learning experience through the project method.

✓ Thematic teaching, regarding several disciplines, requires cooperative planning and teaching. This allows teachers to organize the curriculum around themes, some of the problems that the student finds interesting, exciting, it offers the possibility to organize the work differently than on a single discipline by grouping the content on thematic units.

Experimenting was, on the one hand, a way of testing the effects that the projects method has in cross-skills training, on the other hand, a way of measuring the interest and availability of educational institutions, students' and teachers' for practical implementation of curriculum integration.

Teachers participating in the experiment considered that:

✓ The applicant's Handbook (with references on how to apply and evaluate the test ) was a very effective material.

✓ Using the information provided by the sociometric test (the sociometric matrix and sociogram) has proved to be a defining element for the concrete organization of teams of students in integrated activities.

✓ The Do's and Don'ts list that was sent to the teachers favored a better coordination of activities and ensured the realization of similarities in the methodology used (teaching strategies, support materials, etc.) of all participants in the experiment.

✓ The use of the Yahoo group as a means of communication has proven to achieve a rapid and timely exchange of queries, information and suggestions, to illustrate some milestones in the project.

✓ The project activities have as a result the student products and performances related to the tasks performed by them.

✓ The teaching strategies create a richer learning environment and promote a higher level of thinking skills.

Regarding the group of students who participated in the experiment as subjects, we can say that:

✓ Students are given the opportunity to use the acquired knowledge and work techniques in multiple disciplines.

✓ Being a student-centered activity, it gives them the opportunity to assemble in a personal vision their knowledge.

✓ Students at the center of learning, being involved in authentic tasks, with open ends.

✓ The tasks of the project gave students the opportunity to make decisions and use their own topics of interest and things they like to get products and to achieve performance.

✓ Students work in groups, taking on roles that use their personal skills and qualities, they are challenged to explore more deeply the subject with the help of the questions of content.

✓ The projects are relevant to students' lives and may involve community representatives and experts from outside, providing a context for learning.

✓ Students can present what they have learned to a real public, can make contact with community resources, demonstrate their knowledge and skills through the products and the performance achieved.

✓ Students have access to different types of technology, can go beyond the classroom, collaborating with other students from distance, presenting their learning results using multimedia tools.

✓ The introduction of integrated themes, restructure of the content, the use of projects method in the first grade contribute to the acquisition of effective learning techniques, to increase cohesion in students group, to achieve specific behavioral social skills acquisition, cooperation in adaptation to the specific activity of school students, improving attainment and the formation of a positive attitude towards school.

✓ The use of some statistical correlation indices allows us to state that the implemented independent variable (model curriculum design and implementation of the integrated activity) and the dependent variable identified vd1 (achieving better school results) confirm the initial expectations, demonstrating that the realization of educational activity through integrated activities is an effective framework for the student's manifestation and for forming the necessary skills for a better integration in the existing social realities.

Next, we present observations that allowed us to say that the application of the model curriculum through integrated activities helps developing positive attitudes towards school:

- ✓ More than three quarters of the students participating in integrated activities prefer to work in pairs/ groups compared with the students in the control class, whose preferences are almost equivalent, related to individual activities versus activities in pairs/ group.

- ✓ In terms of space (formal or informal) where the activity of the subjects reporting forms of work organization, subject students are more open to collaboration, to new places in which to perform their work.

- ✓ Integrated activities and organization of the collective of students per group facilitates team communication and relationship skills, capacity and availability of collaboration and mutual assistance.

- ✓ Control group students prefer to work alone, while the experimental group students prefer to work in a team, clearly showing the orientation of the two distinct groups to a particular type of activity.

- ✓ The opening to collaboration and cooperation to any colleague, that students who worked on integrated activity have is confirmed, compared with the relatively individualistic and discriminating character of the relations of collaboration that show students in the control group.

- ✓ Regarding the degree of accountability of students, the experimental group has a uniform distribution of increasing frequency, compared with the control group, that varies irregularly.

- ✓ Since the students participating in integrated activities enjoy others' win in double proportion than those in the control group, we can say that integrated activities help develop fair-play, students accepting failure more easily and realizing the need to solve the tasks better in order to be successful.

As expected, the development of experimental research has generated the ability to foresee new insights, to outline other possible (sub)topics, to set new goals, other work hypotheses, new assessment tools and other analysis statistical data techniques and the collection process and data analysis has enabled us to refer to limitations of the research. These are listed in the last paragraph of the paper.

After a review of the possible development directions of the research, it is easy to spot what the limits would be.

Of these, we believe that the most important are those aimed at how to achieve the statistical analysis of data. Thus, instead of using a nonparametric statistical techniques for data distribution, maybe it would have been a more suggestive use of parametric statistical

techniques, which starts from a series of normality and homogeneity of dispersion conditions on subjects' distribution results.

Another limit of the study is that the time markers limited implementation of the experimental approach only to the first grade. This limit we consider to be, somewhat, removed, because our concern in designing a PCAI resulted in the organization of integrated activities with the same principles to second and third grade, which have led so far; next year I will try to end a cycle and to analyse it in a different scientific context.

The thesis contains a list of the 100 tables and the 61 figures, a reference list that includes 177 titles (romanian and foreign authors), a rich list of online sources and a total of 14 annexes (including: lists of targets, information leaflets, projects, checklists, protocols of cooperation, sociometric matrix, tests, questionnaires).

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