

Students' Readiness to implement an Integrated Discovery Study Model for Early School Age Pupils

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Abstract: A successful advance in education to a great extent depends on the experience obtained in primary school. The proficiency of both a teacher and a future teacher will determine if a pupil will learn with pleasure, develop life activity skills, or lose the natural inquisitiveness. The study process in primary school should be based on the cooperation between teachers and pupils, the development of critical and creative thinking. The findings of research work have proved that an integrated study model in primary school allows to implement the mentioned conditions. Based on all that, the aim of the article is to analyse students' skills, theoretical knowledge about an integrated discovery study model, implement it in educational work with pupils, create theoretically grounded integrated study content and select pedagogical means for its implementation. The research base comprises 96 4th year students who are acquiring the qualification of a primary school teacher. The research was performed over the period from October 2011 to December 2013. The methodology of discovery learning is based on constructivism theory, emphasizing that a child builds knowledge individually and forms understanding about processes in nature. The readiness of future teachers to implement an integrated discovery study model for early school age pupils is basically sufficient in order to work independently. At the same time a problem is posed for students that at schools there is only a partial support and desire to change something in the organisation and planning of the traditional study process. In the further research work it would be useful to identify students' specific skills to be developed in this model.

Key words: higher education, discovery learning, integrated teaching/learning process, cooperation.

Introduction

The implementation of humane paradigm in the study process in primary school imposes conditions on the teacher: the study process is focused on a pupil, it provides pupils' active participation and emotional experience developing the skills of cooperation, critical and creative thinking.

The mentioned conditions require from a future teacher a particular professional training, a well-considered planning and analysis of pedagogical process and choice of pedagogical means. According to the analysis of theoretical statements and observations in practice, an integrated discovery study model, based on theoretical approaches in action theory and discovery study, provides the opportunity to plan a flexible study process, take into account students' interests, meet their needs.

The integration of contents of various study subjects in order to develop life skills performed by pupils themselves in teaching/learning process discovering, discussing, offering ideas, provides that:

- in educational process a real link between studies and everyday life is formed;
- the educational process is meaningful and interesting, therefore, pupils' academic achievements grow;
- the development of creative thinking is an integral part of teaching/learning process.

The Aim of the article

To analyse students' skills, theoretical knowledge about an integrated discovery study model, implement it in educational work with pupils, create theoretically grounded integrated study content and select pedagogical means for its implementation.

Methodology

The scientific article analyses pedagogical and psychological theories which provide the basis for the integrated study model. In order to explore empiric experience pedagogical observations, partly structured interviews with 4th year students have been carried out.

The research base comprises 96 4th year students who are acquiring the qualification of a primary school teacher. The research was performed over the period from October 2011 to December 2013.

The methodological base of the research comprises conceptual expressions of action theory, the essence of a self-regulated study process (Леонтьев, 2005; Леонтьев, 2007; Bruner, 1999; Давыдов, 1996; Zimmerman, 2002).

According to observations in practice and literature analysis, a pupil's development, in compliance with the inner logics of his/her development, is promoted by a meaningful action chosen, perceived and understood by himself/herself.

The entire knowledge and skills obtained during activities are embedded in pupils' habits and are used in various situations of the action (Špona, 2001).

A unit of the action is the pupil's behaviour which involves the motive of his/her action. The behavioural motive is external, however, the action motive is inner for each subject. The awareness of the motive in the integrated study model is the inner driving force of the action, a subjective component, individual and different for everybody.

The result of integrated study and pupils' benefits in many ways depend on the quality of the implemented integrated study process. In its turn, the quality is affected by the teacher's understanding of the essence of integrated discovery study. Otherwise, instead of the expected progress the teacher can experience a serious disappointment.

The integrated approach to study process has been analysed by scientists from various countries in the context of different periods of time. In the 1980ties and 90ties a concept in integration of programmes – multidisciplinary, interdisciplinary and transdisciplinary approaches – was started to be used.

A lot of scientific research on diversity of integrated approach has been carried out (Drake, 2007; Jacobs, 1989; Fogarty, 2009). All of them have researched and interpreted diverse integrated models (interwoven, related, thematic, interdisciplinary, multidisciplinary, correlated, holistic).

Already in the thirties, in Latvia, E. Pētersons (Pētersons, 1931) spoke about the necessity to organise the study process so that a pupil could see surrounding relationships in nature and from the public point of view.

If varied integrated study models are known in both Latvia and the world, a question rises, why so few teachers use them in practice. To some extent, we can find the answer in a teachers' survey carried out in 2013. It illustrated both benefits and problems.

From teachers' point of view, the necessity of integrated studies was characterized by the following answers:

- ..Pupils cannot apply the obtained knowledge, skills in a different subject.*
- ..A large proportion of pupils still do not see a mutual link between subjects.*
- ..In order to easier apply knowledge in practice..*
- ..To unburden pupils to some extent..*

The teachers pointed out the advantages of integrated studies:

- ..Develops communication skills and learning skills.*
- ..Can see things as a whole.*
- ..Develops more children's creative abilities.*
- ..The acquired knowledge is easier to be applied in real life situations.*
- ..The skill to analyse and build relationships is provided.*

Most of the teachers consider that it is necessary to obtain both theoretical knowledge and practical assistance in order to change the usual organization and planning of the study process.

According to teachers, additional knowledge, pedagogical assistance and support are necessary to implement the mentioned approach.

Pedagogically enriched varied action provides both teachers and students with the opportunities to more efficiently develop their human potentials, the ability to decide on their action competently and responsibly (Jurgena, 2002).

Regarding the research topic, it is necessary to reveal the most essential theoretical concepts for organizing integrated discovery studies to early school age children. As it was already mentioned, the methodological base for implementation of integrated study model was determined by conceptual statements of action theory.

In accordance with observations in practice and analysis of literature, a pupil's development is guided by his own chosen, comprehended and understood meaningful action in conformity with inner logics of his development. The entire knowledge and skills obtained during activities are embedded in pupils' habits and are used in various situations of the action (Špona, 2001). A unit of the action is the pupil's behaviour which involves the motive of his/her action. The behavioural motive is external, however, the action motive is inner for each subject. The awareness of the motive in the integrated study model is the inner driving force of the action, a subjective component, individual and different for everybody.

Moreover, the motives and stimuli of the action are closely connected since stimuli in action can become a motive. This procedural connection is determined by action theory (Леонтьев, 2007).

The rational estimate of action result in terms of satisfaction makes sense for both the motive and action result (for reaching the aim). The possibility for a pupil to engage in planning thematical units, a thoughtful analytical activity facilitate the awareness of sense.

The resulting motive reveals a certain need for a pupil to set the aim of his action, thus, transferring it into an interesting and exciting activity (Леонтьев, 2005; Maslo, 2006).

The aim set by a pupil is an intellectual action component of the motive which is closely connected with the pupil's personal beliefs. However, a motive comprises also feelings and aspirations (Birkerts, 1923).

The methodology of discovery learning is based on constructivism theory, emphasizing that a child builds knowledge individually and forms understanding about processes in nature (Bruner, 1999), but W. Klafki (Klafki, 1995) gives a critically constructive explanation. The concept "critical" points out the pupil's self-determination process in a study model. In its turn, interaction with each other in discovery learning process, self-evaluation and self-discipline are a precondition of communicative didactics and humane paradigm.

A pupil's abilities to enjoy the first discoveries acknowledge the need as an action motive. A pupil as a discoverer in an integrated study model is characterized by the ability to apply various models and schemes, the ability to alter norms and benchmarks, the ability to interact and cooperate. A pupil is active in the situation of a new task, he can ask himself, the teacher and his classmates the questions which have to be solved.

The obtained skill to discover facilitates the acquisition of the integrated study content providing an active participation in exploring various relationships.

The creation of an integrated study *content* envisages the reflection of the unity of educational and study content both in planning and implementation.

An integrated study content can be defined as a whole of certain knowledge, skills, attitudes, creative experience necessary for a pupil to reach the set aim in developed thematic units, to find answers to the issues raised.

The creation of thematic units envisages an active teacher's professional work when selecting the knowledge to be gained in various subjects, creating the unchangeable part of integrated study content which is aligned with the standard requirements of study subjects (Petere, 2003). The final content is created by pupils' interests and needs identified as a result of teachers and pupils' cooperation. These interests and needs are summarized in thematic units and in order to meet these interests and needs, the knowledge, skills, attitudes to be obtained in various subjects are defined.

For example, theme of the lesson is (3rd grade pupils) Hosting guests from Estonia.

In order to draft a plan of events and plan activities, the necessary expenses, pupils acquire both content of social sciences - the skill to take an economically grounded decision- and content of mathematics –the skill to calculate all the expenses for food and cultural activities, if we know that 5 pupils from Estonia are coming and are going to spend 4 days in Latvia. The pupils have to apply multiplying with a 2 digit number and mathematical notions –“ more and less”

In its turn, when putting forward a problem – what pupils could make to leave the memories from Latvia to the guests – in a common discussion which comprises the content of social sciences, they come to conclusion that it could be a greeting card comprising both Latvian and Estonian ethnographic patterns. As the learning process for pupils is organized according to the above mentioned statements of action theory, then the pupils themselves search, analyze both Latvian and Estonian ethnographic patterns and justify which of them could be appropriate for formatting the postcard. During the analysis pupils implicitly learn about the elements of both their own national art and that of the other country. In its turn, the design of the postcard, analysis and justification comprise the content of visual art. The greeting card will not have any value if there is no text in the middle. Which folk songs to choose, how to format them, where to find the folk songs – it is up to the pupils. A searching process takes place, pupils learn to find and justify, on the other hand, they implement the content of the Latvian language. All mentioned pupils' activities include active work of the pupils themselves: the necessity to judge, analyse, evaluate, draw conclusions which, on the whole, make the elements of both their own culture and also the cultures of those countries from which the guests are coming from.

According to the observations made, if the integrated model is based on a teacher's high professional competence in planning an integrated study content, then pupils' academic achievements, motivation, a positive attitude enhance.

The planning of integrated study content contains certain didactic conditions. One of the most important principles is the principle of wholeness and interrelation. It can be explained as a connection of the chosen educational modules - man and nature, man and society, man and culture – with the proposed thematic unit. Each integrated thematic unit is formed by the contents of subjects to be acquired by a pupil which also comprises pupils' interests.

Apart from the mentioned condition, we have to take into account the structuring of the study content from general to specific (Давыдов, 1996).

Concentrate principle determines the arrangement of study content providing a pupil with the opportunity to gradually obtain specific knowledge and skills developing and updating them continuously, the principle of succession, in its turn, ensures reliance on a pupil's previous experience, knowledge, understanding (Anspoka, 2008). In case of disregarding the principle, the integrated study content can develop chaotically, disassembling a certain logic which causes difficulties for a pupil's active participation and understanding of the obtainable curriculum.

The national, local, regional component determines that for the acquisition of study content it is vital to incorporate exploring the specific environment, existing objects and events in a pupil's living place.

Undoubtedly, for prospective basic education teachers to acquire and implement the mentioned approach is both a challenge and an important examination of the obtained professional competence.

In order to assess the knowledge and skills of future teachers to conduct an integrated discovery study model, the criteria and indicators were defined. They were applied in both observations during the qualification exam and question formulation in semi- structured interviews.

The criteria and indicators are shown in Figure1.

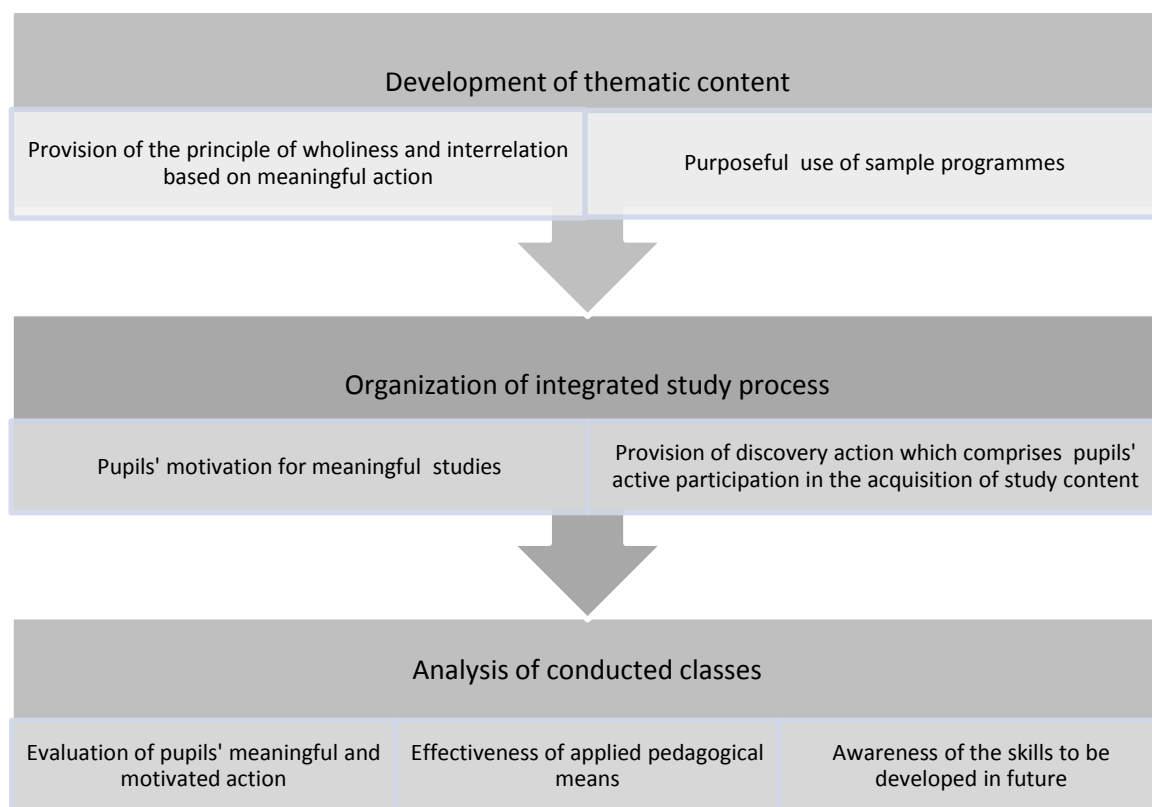


Figure 1. Criteria and indicators for an integrated study model.

Results and discussion

As it was mentioned, during the research we observed 96 students' professional readiness to work out an integrated study model for early school age children and implement it collaborating with pupils during the internship. During the qualification exam in various Latvian schools, students conducted an 80 minute long integrated class by combining the content of 3 school subjects in one whole.

Taking into consideration the research results, we can conclude that out of 96 4th year students, 32 students' knowledge and skills could be assessed as high level. They understood the essence of implementing an integrated discovery study model well, were able to apply theoretical knowledge obtained during the classes, understood what is crucial for implementation of the meaningful study process, could orientate in didactic conditions of study content design. They understood the essence of the principle of wholeness and interrelation and its implementation for both design of thematic units using the content of 3 subjects and planning the integrated study process.

It was testified by both the observations during integrated classes with pupils and the answers to the questions of a semi- structured interview.

For instance, when exploring the issue on abandoned pets, they successfully incorporated the acquisition of skills for both reading numerical charts and the design of charts. In its turn, a conscious reading of analytical text shows pupils the emotional experience of the abandoned pets, while obtaining the skills of sewing, they produce mats for pets and later pupils take them to the nearest animal shelter. Also, in this case sample programmes were applied in order to specify the knowledge, skills, attitudes, creative experience to be obtained.

The findings of the interviews proved that also these students had difficulties in substantiating verbally several aspects of the conducted classes. For instance, when asking questions about the characteristics of pupils' discovery action during the class, the answers sometimes did not give the expected result. On the other hand, while observing the conducted class, we could conclude that during the class the teacher used the tasks corresponding to the characteristics of discovery action.

However, the skill to carry out a substantiated reflection on their pedagogical activity caused difficulties also for these students. For instance, it was hard to analyse pupils' action, purposefully linking it with further lesson planning, also, to specify what should be changed in their pedagogical work in order to improve the conducted lessons in future.

According to the results of the analysis of the conducted classes, 43 students needed pedagogical assistance, encouragement to organize integrated discovery studies. It was hard to follow the principle of meaningful wholeness and interrelation in planning classes, understand about a pupil as a subject of the action in study process and the essence of discovery action. We could state that students had difficulties to implement theory into practice. For instance, when designing the integrated study content, it often revealed the research problem superficially, there was a lack of skill to purposefully select the knowledge and skills to be obtained, to ensure emotional attitude.

These students often chose the easiest way, to use the tasks from the course books without analysing their usefulness in connection with the problem to be investigated.

The results of the the conducted classes and interviews testified that there are difficulties in comprehension of meeting certain didactic conditions in both planning the integrated content and organizing it. The application of theoretical statements for the implementation of discovery study model was not observed. It was good that these students understood that integrated discovery study model facilitates the dynamics of pupils' development, motivation to acquire the study content, understanding relationships existing in nature and society. As the students admit, it is necessary to invest a great job in order to obtain particular skills high-quality at early school age, to implement integrated studies meaningfully.

The research established that the implementation of the above mentioned pedagogical model demands special competencies of the future teacher.

The described education model can be implemented only by the teachers who truly believe in the necessity of the emphases being changed in education, based on intelligence, holistic approach to pupils' development, who are truly devoted to it.

A summary of semi-structured interviews allows us to judge the students would be psychologically ready to implement the described model, yet, the fear of making mistakes, discipline problems, uncertainty hinder them, as well as awareness that the implementation of such a model demands a lot of time, because it is not possible to take up a book and conduct the lesson based on the frontal class work. The fear is inherited from the normative education paradigm, guiding us from our sub-consciousness. We have to admit that it demands a very great pre-lesson work, also, the teacher must be bestowed with very good communicative skills and deeply love children. Additional problems are caused by the lack of teaching/learning aids, which could facilitate the development of the education contents based on the pupils' needs, simultaneously ensuring the acquiring of the knowledge, skills demanded by the subject standards.

It is necessary to:

- integrate content and skills with process,
- provide opportunities for interaction nad co-operation with others,
- engage and interest the learner in what be/she is learning,
- integrate values, actions, skills, knowledge toward a common purpose,
- build a partnership between the teacher and pupils.

The content of an integrated discovery study model can be packaged in the form of particular topics around which units of work are developed.

The findings of the research enabled Riga Teacher Training and Educational Management Academy (RTTEMA) academic staff to evaluate the efficiency of their conducted classes and look for new techniques to link theoretical knowledge about the implementation of an integrated discovery study model with practical pedagogical work.

Conclusions

The readiness of future teachers to implement an integrated discovery study model for early school age pupils is basically sufficient in order to work independently. However, when organizing the study process at RTTEMA, it is vital to strengthen the opportunity for students to link theoretical statements with practical activities as well as develop students' analytical skills.

While observing and analysing the integrated discovery model conducted by students, we could conclude that students actively discuss and give their opinions, substantiate which teaching/learning tasks would be effective in order to reach the planned aim and implement the common tasks.

At the same time a problem is posed for students that at schools there is only a partial support and desire to change something in the organisation and planning of the traditional study process.

In addition, when organising the study process at RTTEMA, it is necessary to reinforce the opportunity for students to link theoretical statements with practical activities as well as develop students' analytical skills to understand the results of both a pupil's and his/her own educational activities.

In the further research work it would be useful to identify students' specific skills to be developed while implementing an integrated discovery study model in educational process at school.

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