

INTEGRATION AND CORRELATION CONCEPTS IN PHYSICAL EDUCATION

(Preliminary communication)

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Abstract

Considering the tendencies in the contemporary education and the requirement to respect the holistic approach in the pedagogical work with children, one of the requirements established in front of the teacher refers to the possibilities to establish integration - correlation relationships between the educational contents from different teaching subjects in primary education. In this regard, we take the physical and health education curriculum as a starting point considering its overall aim - the influence toward development of complete personality as well as the connection between the motor development and other segments of development in children. Based on this, the aim of this paper is to establish integration-correlated connections between the curricula subject physical and health education, and other subjects, as the Macedonian language and literature, Mathematics, Arts, Music education, Science and Society, learned in third grade in primary nine year compulsory education. The theoretic analyses of the curricula for third grade was realized. The analyses included comparison on following items: the representation of the subject, goals and objectives, thematic units, the specific content based on these possibilities and examples for correlation and integrative approach. The general conclusion is that many correlations and integrative relations could be established between the PE contents and the contents from other teaching subjects. This from one side will produce emphasized mental, and on the other side, physical load. The forms of realization of these relations are different and depends mainly on the teachers' creativity and preparedness to work on this goal.

Keywords: *holistic approach to pedagogical work, teaching contents, physical and health education, school teaching subjects, children's motor development*

INTRODUCTION

One of the fundamental imperatives on which are insisted in recent years in this contemporary, modern, primary education, is the realization of correlation and integration of teaching lessons in different subjects, particularly important imperative for realizing the idea for a holistic approach to the education of young generations. The holistic approach in the education leads to understanding of the world as a whole, leads toward respect and development of all segments - motor, cognitive, emotional and social as mutually conditioned and equally important, leading to rationalization of the teaching process, contributes to utilization of the teaching lessons, leads to greater motivation and activity of the subjective factors in the learning process.

The innovation that introduced in the last, especially the part about planning, year planning, in which 70% of the content from a specific teaching subject should be correlated with the contents of other teaching subjects which in turn, is a function of the integral development of children, wholeness in their knowledge, is another leverage in the above mentioned imperative - integration

and correlation.

What are we understanding by integration-correlation connection?

The need for the establishment of an integration-correlation connection between the contents of different teaching subjects, and between the contents of the same subject, comes from the fact that all teaching subjects are interrelated, that correlate with each other. Integration (lat.-integer - untouched, objective, an overall) joining of some parts as a whole; connecting, uniting refers to the wholeness, the totality. The integration of teaching, integration of school means numerous integration processes and procedures in the teaching and school relating to integration of the teaching content, integration of students in the educational group, integration in regular education of children with developmental disabilities, integration of education and upbringing and other. Besides the term "integration classes", it's been used other terms: integrity, uniqueness of teaching. The integration implies generation of the principle that all elements of the educational process should be in functional connection and to make harmonious whole, and to establish

mutual functional connection with the contents, which have their own meeting points. For this the best leverage for us is the explanation of Gestalt theory according to which the mental processes cannot be broken down into small parts, because the organization and the integrity are the most important parts of the mental process.

The key question that arises is what kind of integration we want to establish, whether to focus on full or on partial integration. Complete integration refers to the merging of different content into a whole, and partial integration refers to the choice of teaching material on the parts where there are similarities, and joint processed the related ones. Within the teaching process is necessary to determine whether to focus toward the integration of the subject or integration between different subjects.

Correlations (lat.- interrelationship, interdependence, connectivity into one place) refers to a connection, but in function of integrity, namely, the achievement of a holistic approach. The same in the teaching practice can be achieved such as correlation of learning contents within the subject; correlation among the subject and correlation of students' knowledge with environmental reality and practice. To a great extent, the student's development through complementary, toward related development domains, so that, the progress who student makes in one domain influence on the development and progress that makes the student in another development domain. The complementary connection and mutual conditioning of all domains requires a holistic, as quite a significant approach in the development of young individuals.

Curricular content of PE and possibilities for correlation and integration with curricular content from other subjects in class tuition.

Contemporary physical education through the planning and realized curricular content enables normal physical and mental development and adoption of certain motor knowledge, skills and habits as well as theoretical knowledge of physical culture that students can successfully apply in everyday life. The overarching goal of the PE can be defined as satisfying of the bio-psycho-social needs for movement as a way of enhancing adaptive and creative abilities in contemporary conditions of life and work (Findak, 2006). The same is realized through content that enable students to acquire new knowledge, skills, motor habits and enables the development and improvement of motor abilities. Involvement in the process of physical exercise and the application of contents of PE have a positive impact on overall health and development of children, i.e. influence the functioning of the bodies, organic systems, socio-emotional and cognitive development. The imperative of physical and health education is that the implementation program should take place through games and integration with other curricular areas.

Physical and health education through the program enables to realize integral content and to realize the goals

and objectives of the other curricula subjects. All these has its own physiological basis in the functioning of the CNS where the centers for logical thinking and problems solving are integrated with the centers for motor activity and motor learning (Malina, Boucharde & Bar - Om, 2004). The speed of processing data and information, i.e. the speed of cognitive processes is directly related to the speed of the motor reactions. These results has been confirmed in numerous studies which confirmed the direct relationship between the cognitive functions and results of certain motor tests, primarily the tests for coordination and speed of reaction (Tirre & Raouf, 1998; Planinšec, 2002; Bonifacci, 2004; Pišot & Planinšec, 2005). The relation between children's motor development, related mainly on their motor abilities development and PE contents noted in PE curricula are confirmed in several studies that analyses the Macedonian national PE curricula for the first cycle of studies (Popeska & Mitevski, 2016; Popeska, Klincarov, Mitevski & Nikovski, 2013). Several studies also emphasize the possibilities for correlation and integration relationships and benefits from them between the physical education and music (Nasev, 2013; Milanović & Tošić, 2012; Cicović-Sarajlić, Pavlović & Popović, 2013), physical education and nature (Zrnzević & Lakušić, 2016), math and physical education (Milanović, Marković & Ignjatović, 2012).

The integration of PE teaching content with the content from other subjects arises from the fact that the teaching of PE implies a unity of influences of students in all segments of the anthropological status of motor skills, functional, psychological, sociological, and cognitive. From methodical and educational aspect the connection of the curriculum material is justified and desirable between the subjects which from one side produced emphasized mental and, from the other side, physical overload. The bases for integration correlation connection of the PE teaching content with other subjects in teaching classes in primary education we identified in the nature, the manner of knowledge adopting, as well as in the set of objectives from the different teaching subjects in primary school classes.

METHODS

The aim of this paper is to establish the integration-correlated connection between the curricula subject physical and health education and other subjects as the Macedonian language and literature, Mathematics, Arts, Music education, Science and Society.

A theoretical analysis of programs has being used as a basic working method, the curricula for physical and health education for third grade in the primary education developed by the Bureau for Development of Education of the Republic of Macedonia as well as the educational programs for all other subjects in the third grade (Curriculum for thirty grade ... (Наставана програма за трето ...) (2007). We decided intentionally to analyze the program from the third grade because it is a program that is in the middle of the primary education (1-5 grade), i.e.

it is at the end of the first of three cycles of the nine-year education, the period of transitions from concrete to abstract thinking.

We analyzed and compared the following items: the representation of the subject, goals and objectives, thematic units, the specific content and so on. Based on the analysis, we identify the opportunities for correlation and integration among the subjects of physical and health education, each subject separately, and given are examples of specific activities or games across the presented relations.

RESULTS AND DISCUSSION

According to the curriculum for the nine-year basic education for the school year 2016/17 in the third grade, the students have the following nine compulsory subjects: Macedonian language, Math, English language, Art, Music education, Natural sciences, Society, Physical and Health education and Working with computer and basic of programming. The complete number of compulsory subject in the third grade as well as the number of classes per week and the annual number of classes are presented in the Table 1.

The subject *Physical and health education* is represented with 3 hours per week, i.e. 108 hours per year. According to the program as the main objectives which should be achieved by this subject are:

- To be trained for proper holding and symmetrical development of the body through the appropriate exercises;
- To be practicing correctly and coordinated natural movements with arms, legs and other parts of the body for optimal function of locomotion;
- To participate in the games and to encourage of collaborative and competition collective games;
- To develop locomotor motor coordination and orientation in space;
- To be practicing and accomplishing new motor elements of the basics of athletics, gymnastics and other sports;
- To participate equally and to cooperate in team performance of exercises and games;
- To develop the capacity for positive emotional expression through play and adequate physical activity;

- To create incentives to participate in activities of their choice.

In the curriculum of PE are set concrete sections, specific objectives, content, concepts, activities and methods.

We have identified the following thematic areas:

- Exercises for organized setting and movement;
- Exercises for shaping the body and movements (are performed every hour);
- Basics of athletics;
- Basics of gymnastics;
- Games

The program implementation implies respect of the developmental needs of the child. The motor activities are conducted mainly through mobile games, with effort to meet the student's interests, realization of positive emotional effects, respect to their friends, to help and to develop collective and group solving tasks, to develop a culture of respect, the knowledge of beauty and nurturing patterns. Established goals from the PE program, specific sections, content, enabling integration between the subject content and correlation of contents of all subjects that students have in the third grade. All contents from the PE curriculum from the third grade, more or less could be put in correlation with some content from the other subjects. These relations are mainly in use of some already learned facts and their repeating in some form of movement games or fast check of knowledge from other teaching subjects. We present the correlation and integration between the PE and other subjects.

Macedonian language - The curriculum of Macedonian language provided numerous educational objectives:

- To be able to read and write text with printed and handwritten letters;
- To use the correct order of words in a sentence;
- To recognize nouns, adjectives, main and ordinal numbers and verbs and to distinguish them as types of words;
- To be trained for using the elementary grammar and spelling norms in reading and writing;
- To be trained to read and retold orally and write literary works from artistic and folk literature according to their age;

Table 1. Number of classes per week and annual

Teaching subject	Number of classes per week	Annual number of classes
Macedonian language	6	216
Math	5	180
English language	3	108
Art	2	72
Music education	2	72
Natural sciences	2	72
Society	1	36
Physical and health education	3	108
Working with computer and basic programming	2	72

Table 2. Example of integration – correlation relationships between PE and the Macedonian language

Teaching subjects	Aims	Integration correlation connection
Macedonian language Initial reading and writing (Latin)	To be trained to read and write words and text in block letters in Latin; To be trained to write words and short sentences with handwritten Latin letters.	<ul style="list-style-type: none"> ▪ Using written letters from the alphabet in movement games (create the sentence as fast as possible) ▪ Realization of some story with movements
Physical and Health Education	To be encouraged to perform exercises with neck, head, arms, trunk and legs (right and coordinated); To be encouraged; To carry out exercises for strengthening, stretching and loosening.	<ul style="list-style-type: none"> ▪ Exercises for writing words in Latin for improving the writing block letters in the Latin alphabet; ▪ Exercises for correctly writing and for connecting the letters in the word and in the sentence as the end of certain movement game.

Table 3. Example of integration – correlation relationships between PE and Mathematics

Teaching subjects	Aims	Integration correlation connection
Mathematics	<p>Count and tells numbers in a row to 100, 1000; distinguishes odd and even numbers (Numbers).</p> <p>Identification, description and drawing of 2D forms including Differentiating of 2D forms by number of sides, vertices and makes Identification, differentiating, drawing 2D and 3D forms pyramids, prisms, investigate how to make a cube.</p> <p>Measure and compares length, table with standard and non-standard units (SEM);</p>	<ul style="list-style-type: none"> ▪ Knowing the numbers, the even and odd numbers, differentiating bigger, smaller, equal and similar, simple mathematical operations, etc. can easily be repeated or determined through various games across movement games and polygons through which children masters new movements and learn new skills. ▪ Practicing the different forms of movement that offer the opportunity to identify, describe 2D and 3D form The game „Hunting the form of“ <ul style="list-style-type: none"> ▪ Using the units for length, mass and time, students can measure, record and compare their achievements in certain motor tasks and tests and thus monitor their progress and evaluate their abilities and capabilities. In this way they become aware of their capabilities and progress.
Physical and Health Education	<p>To encourage, to develop the natural locomotion and movements overcoming new movements and motor skills.</p> <p>To develop psychomotor abilities through play and physical activity;</p> <p>Become able to evaluate physical capabilities.</p>	

- To be trained to tell stories orally and writing on literary language;
- To be trained to participate in the conversation through active involvement and self-expression of their experiences, feelings and facts;
- To enrich the dictionary with new words;
- To develop a sense of belonging to their own and respect toward other cultures;
- To create incentives to monitor content from different media and to transmit brief information about them;
- To be trained to use ICT in the function of the subject.

The same contains several program areas: Initial reading and writing; Language (grammar); Reading the literature and mandatory reading; Expression and creation; Media culture.

In Table 2. an example for integration is presented - correlation connection between these two subjects.

Mathematics - curriculum is divided into 5 areas: Numbers / Mathematical operations, Geometry, Work with Data, Measurement and Troubleshooting. It is focused on principles, schemes, systems, functions and relationships, so that students can apply the mathematical knowledge and develop a holistic understanding of the subject. It provides a set of development teaching goals

Table 4. Example of integration – correlation relationships between PE and Science

Teaching subjects	Aims	Integration correlation
<i>Science</i> Thematic union: Introduction into forces	Experiences for the power of pushing and towing to explores how forces can move or stop the movement of objects	Games, pulling on the rope, throwing soft balls or pillows, fast / slow change of direction
<i>Physical and Health Education</i> Lifting and carrying	To overcome and practicing the technique of lifting and carrying To develop strength and agility of large muscle groups	

Table 5. Example of integration – correlation relationships between PE and Society

Teaching subjects	Aims	Integration correlation connection
<i>Society</i> Theme: My hometown	To expand knowledge about their own homeland and about the municipality	<ul style="list-style-type: none"> ▪ Walks through the residence at different manners (in a line, by one, by two, fast and slow, walking, climbing, using bicycles etc), visiting old buildings. ▪ Learning the traffic rules through movement games.
<i>Physical and Health Education</i> Exercise for organizing setting and movement	To perfect the installation and movement. To develop locomotor ability for moving in all directions	

Table 6. Example of integration – correlation relationships between PE and Art education

Teaching subjects	Aims	Integration correlation connection
<i>Art education</i>	To combine large and small shapes and rich them with texture painting	Practicing different exercises and adopting complex coordinated movements and performance in different conditions-painting in nature walk
<i>Physical and Health Education</i> Exercise for organizing setting and movement	To be encouraged to develop natural locomotor movements and acquiring a new movements and motor skills	

Table 7. Example of integration – correlation relationships between PE and Music Education

Teaching subjects	Aims	Integration correlation connection
<i>Music education</i> Music and movement	To develop sense for rhythm to perform musical steps To encourage to perform movements according to previously established choreography	Participation in the music game. Playing on waltz Combining walked, lining, setting.
<i>Physical and Health Education</i> Exercises for organizing setting and movement	To perform exercises that complies with certain rhythm and pace To develop a sense of aesthetic perform, movements routes	Performing of body shaping exercises on certain music

Table 8. Example of integration – correlation relationships between PE and English Language

Teaching subjects	Aims	Integration correlation connection
English Lexical units	To understand the meaning of lexical units and to reproduce them	Games in which develops the desire for competitive spirit, ability to contribute and helping
Physical and Health Education	To develop psychomotor dimensions	

through which describing what the student should know or should do in each year of education.

A number of teaching units in mathematics can integrate and correlate with the PE teaching units. The basics of integration - correlation relations between these two subjects, we identified mainly in practical applicability of the acquired knowledge from mathematics through their application in the realization of different PHE content, as well as the possibility for a quick check of the knowledge in mathematics through various movement games and polygons with competitions in which the demands of the games is solving certain math problem or task. The practical application of knowledge of the type of measurements and compare the length, width, weight, volume, time of standard and non-standard way of data obtained as a result of the assessment of their own abilities, are important in a sense to give the children an opportunity to get know themselves, their own possibilities and record their progress. This is particularly important in the process of creation of self-image, to develop the self-confidence and self-criticism as qualities that should be built for children from the earliest age.

Natural sciences - in the curriculum are set 4 content areas; scientific research, biology, chemistry and physics. Research strengthens these three content areas which are focusing on developing self-confidence and interest for acquiring new knowledge. Each content area contains specific thematic sections which set specific goals which can be attained.

The objectives of the curriculum are grouped into six thematic units which are given in a specific order. The objectives of the research are repeated, occur in each topic and are listed at the beginning of each subject. These are: Life processes; Plants that bloom, Senses, Materials, Introduce about forces, and Maintenance of health. With the contents of each thematic unit can achieve correlation and integration with the PE teaching content.

This subject set many opportunities for correlation with PE, in a sense of exploring the nature with different forms of movement, applying PE contents in a sense of caring for health, choosing the best options for nutrition etc. Some of the possible examples for correlation – integrative relationship are presented in Table 4.

Society - the society curriculum we identified the following objectives:

- To expands knowledge about the immediate environment, to grasp the connection between the people and events,

- To provide basic child rights;
- To acquire awareness of the importance of knowledge in personal and social life;
- To be trained to use different sources of knowledge;
- To introduced with different ways of mass communication and transmission of information;
- To understand the family relations and to be able to encourage family harmonious and friendly relations;
- To acquire knowledge about the rules of cultural behavior and to encourage the respect;
- To expand the knowledge about their own place, their home and their homeland;
- To expand knowledge about the traffic and different vehicles;
- To acquire knowledge about safe behavior;
- To expand knowledge about the culture of their community and other communities;
- To develop positive attitudes toward the multiculturalism.

The same is implemented through several topics:

- Me in relation with others and others with me;
- The school and knowledge;
- Relationships in the family;
- My hometown
- Traffic.

The possibilities for integrative – correlation activities between the PHE and Society are numerous. Most of them are connected with application of different forms of movement when exploring the social environment, presentation of different form of traffic and acquisition of traffic roles by movement games; learning different forms of safe behavior home and out of home as a goal of both subjects; PE and Society; learning about our differences based on the fact how different our performance can be in every single movement; learning about the rules and manners of behavior in certain society by acquisition of them in different movement games with rules; using the power of sport in enclosing the people and overcome the differences. Some of these forms are presented in Table 5.

Art education - In art education program are highlighted numerous purposes. Some of them are following:

- to use a variety of materials and techniques for drawing, painting, modeling, building and visual communications in the artistic expression;
- to use various procedures for artistic expression (scratching, spraying, ...);

- to know how to use computer technology for artistic expression;

- The same includes several thematic areas: Drawing; Painting; Shaping in the space; Modeling and building; Design and Visual Communications

In each of these thematic areas there is a possibility for establishment of integration - correlation relationship. Teachers' positive characteristics are the foundation based on which, through the educational process and interaction with the students are building quality interrelations, filled with mutual respect and confidence. This, in fact is one complex network of mutual interaction and communication and which complexity is a result of the quality of mutual relations between the teacher and students as a precondition for successful realization of educational process as well as the process of development of children's personality.

In the curriculum of *music education* outlined the following objectives:

- To apply proper singing position (sitting, posture, breathing);
- To apply cultivated singing (singing moderately without grimacing, raising arms and shouting);
- To being trained to sing songs with various rhythmic melodic line;
- To be trained for actively listening music;
- To introduce the note elements;
- To be familiar with children's musical instruments and playing with them;
- To remembered, repeated, used movements in rhythmic musical activities

Within this curriculum are set several thematic sections: Singing, Music and movement; Listening music, Singing on the children's musical instruments; Fundamentals of musical literacy, basics of children's musical expression and creation. According to the influence that music contents have on the development of psychological and physical abilities of students, they have an important and prominent place in the general curriculum and especially in the physical education curriculum (Milanović & Tošić, 2012). The main correlation between these two subjects is in application of music in second part of PE classes when body shaping exercises are performed, making the class more fun, interesting and the process of exercising more interesting and demanding. The music rhythm facilitates the process of exercising, brings synergy to the class, and makes everybody to move in same steps. Other possibility for direct correlation between these two subjects are folklore dances which are part from both curricula as well. "Dance and folk dances" as selective subject is an integral part of the school curriculum in the Republic of Macedonia (Nasev, 2013). Some of the suggestions for correlation and integration are presented in Table 7.

The curriculum of *English language* contains the following purposes:

- To be enable for aural and visually recognizing new words and understand their meaning;

- Be able to reproduce words and simple language statements;

- Be able to recognize graphics of previous oral adopted words;

- To be able to write the famous words after spelling;

- To be able to lead a simple communication at the level of the adopted vocabulary and by applying of the language functions close to the age of the students;

- To gain information about another culture.

Contains several thematic units: Lexical units of grammatical structure; Language functions; Listening with understanding; Reading; Culture.

CONCLUSION

The connection of curriculum material of methodical and educational aspect is achievable and desirable between the subject which, on one side produce emphasized mental and on the other side, physical load. But often in the attempts for their correlation and integration appear certain problems. Namely, the teachers are faced with the problem of linking content logically into a whole and linking of content that seemingly can absolutely nothing to link. But this problem is solved with the implementation of the so-called active learning, i.e. with the opportunities which gives us the modern educational technology and with the implementation of a number of activities which must be relevant and respond to the nature of knowledge, i.e. teaching content that the student should adopt.

The analyses in this work as well as the experiences from practice shows that physical education has a major possibilities for correlation with all other school subjects. This possibilities are also emphasized by the development process were all development areas are integrated and sends the idea of holistic approach. The physical education contents, especially the movement games, represents a possibility for children to be free, to express their personality and feelings. These helps to the teacher to get know the children's real feelings and manners of behaviors and to correct them when needed using the appropriate tools. All presented forms of correlations and many more are just suggestion for the teachers and the possibility to look widely on PE and its educational role as well as on its role in creating a full development personality of the children. How this will be developed and applied in practical work depends mainly from the teachers understanding, interest and creativity as well as how the teachers which will use the PE contents in all their forms and aims. One side of this process is the direct correlation of the activities and subject contents. The other side is the process of learning and mechanisms for acquiring the knowledge, as well as the abilities that provide realization of the anticipated content. Here we primarily think on mental abilities needed for cognitive learning, and motor skills, motor coordination primarily still named as motor speed and intelligence, responsible for efficiency and success in

motor tasks and movements. The relationship between the cognitive and motor skills is confirmed in numerous studies, suggesting a connection between the segments of cognitive and motor skills development. These relations between all segments of development as well as respecting the developmental capabilities of every child, following their individual needs and abilities, is one of the basic requirements of modern teaching, indicating not only at the possibility, but also to the necessity for establishment of integration - correlation relationships between the teaching subjects.

The application of different social forms of work enables the easy transfer of knowledge. The correlation of the content towards which we should pursue, should be seen as an additional aggravating circumstance in the selection of activities. As a result, it gives us a wide range of possibilities. What we need to have in mind, is that the main goal toward which we needs to strive, is the integration of knowledge.

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