

---

**THE LAPBOOK AS A DIDACTIC TOOL TO IMPLEMENT INTEGRATED TRAINING  
IN NATURAL SCIENCE AND TECHNOLOGY AND ENTREPRENEURSHIP AT  
PRIMARY SCHOOL LEVEL**

---

**Yordanka Peycheva**Episkop Konstantin Preslavsky University of Shumen, Bulgaria, [y.peycheva@shu.bg](mailto:y.peycheva@shu.bg)**Snezhana Lazarova**Episkop Konstantin Preslavsky University of Shumen, Bulgaria, [s.lazarova@shu.bg](mailto:s.lazarova@shu.bg)

*The paper is funded under № ПД- 08-130/07.02.2018.  
University of Shumen „Episkop Konstantin Preslavsky”*

**Abstract:** The formation of comprehensive and in-depth notions of objects and phenomena in the world can be achieved when the mastery of knowledge and skills is carried out in a system realized in the context of integration of different scientific directions. One of the main issues in modern education is related to the contradiction - on one hand between the need to form the skills necessary for the orientation and adaptation of the personality in the dynamics of the globalizing world and on the other - the education which is largely based on unilateral acquiring of knowledge and skills within the different subject areas. This influences the development of a worldview and the formation of an adequate attitude towards the problems under consideration and the world as a whole. The knowledge and skills acquired today are often “locked” in the respective direction. The cross-curricular unity in the curriculum is of a recommended nature, but even if it is realized, it does not fully meet the need for a comprehensive and multifaceted consideration of global issues, as a result of which the student not only understands, reflects, but also applies the lessons learned in the process of creating a product - ideal or material. Combining the intellectual nature of the cognitive process with the practice activity are conditions in which the students are highly active and achieve better learning outcomes. Therefore, it is expedient for the different directions to correspond more closely to each other and to carry out effective cross-curricular integration. The concept of applying an integrative approach in the current paper is based on the idea of creating pedagogical conditions for reconciling the goals and expected outcomes of technology and entrepreneurship and natural sciences studied at the initial stage of the primary education. Integration can take place on two levels - knowledge and skills. We believe that the lapbook as an innovative didactic tool contains the necessary potential for effective realization of the educational goals in both directions in terms of achieving the expected results. In the course of its elaboration, new information is acquired in the field of engineering and technology, specific skills underlying the curricula of technology and entrepreneurship programs are developed. At the same time, a number of subjects from the learning content, which are considered from the natural science point of view, are enriched and perceived in a technological way, after which they find place in an attractive book - a lapbook, made by the students themselves. Its utilitarian value is multiplied by the personal contribution to its creation - not only as an object but also as content. The main topics that are of interest to the students are exploring and preserving nature, jobs, modern technical achievements, holidays and customs. As a result of the adequate integration of competences, tailored to curricula, a number of skills are formed, such as: skills for searching on their own, systematization and presentation of information, and application of the lessons learned in a new situation.

**Keywords:** integrated learning, didactic tools, lapbook, primary school level

## 1. INTRODUCTION

One of the main issues in modern education is related to the contradiction - on one hand between the need to form the skills necessary for the orientation and adaptation of the personality in the dynamics of the globalizing world and on the other - the education which is largely based on unilateral acquiring of knowledge and skills within the different subject areas. This influences the development of a worldview and the formation of an adequate attitude towards the problems under consideration and the world as a whole.

The knowledge and skills acquired today are often “locked” in the respective direction. Global issues are an attempt to systematize the content of a given subject, but their practical implementation, apart from the other directions, leads in practice to incompleteness of the information in hand.

The cross-curricular unity in the curriculum is of a recommended nature, but even if it is realized, it does not fully meet the need for a comprehensive and multifaceted consideration of global themes, as a result of which the student

---

not only understands, reflects, but also applies the lessons learned in the process of creating a product - ideal or material. Linking theory to practice is the key to enriching the intellectual potential of the children, as a result of which the knowledge and skills acquired become meaningful.

## 2. EXPOSITION

In school, it is becoming more and more common for teachers, within a given subject, to intuitively assign to the students tasks which are unusual for the learning content: to draw, model and construct in Bulgarian, Mathematics, Man and Nature classes. They feel the necessity of offering entertaining tasks of practical nature in order to provoke the interest, motivation and cognitive activity of the students at primary school level. Not always, however, the limited schooling time is enough for the implementation of such an approach, where subjects and didactic means are made, often the activities, respectively the final products are elementary and do not comply with the level of the technological training of the students.

In order to obtain qualitative products, it is necessary to produce them at the appropriate time and place regulated by the law on school and pre-school education<sup>66</sup>. The formation of comprehensive and in-depth notions of objects and phenomena in the world can be achieved when the mastery of knowledge and skills is carried out in a system realized in the context of integration of different scientific directions.

Combining the intellectual nature of the cognitive process with the practice activity are conditions in which the students are highly active and achieve better learning outcomes. Therefore, it is expedient for the different directions to correspond more closely to each other and to carry out effective cross-curricular integration. In order to use an integrated approach in the learning process in Science and Technology and entrepreneurship, it is necessary to clarify and explore the possibilities of implementing integrative links between these subjects. According to M. Andreev<sup>67</sup>, the integration of knowledge can be implemented in several main directions: implementation of methodological and interdisciplinary synthesis of knowledge; acquiring knowledge with a high degree of portability; conducting exercises and practical classes, providing a link between theoretical knowledge and life; organizing complex activities; integration not only concerns education but also upbringing. M. Andreev believes that training should not artificially “break” children’s consciousness through difficult-to-understand abstractions. It must be comprehensive, global, unifying, and integrated to form and preserve the integrity of the individual<sup>68</sup>. Under the conditions of Technology and entrepreneurship training, the necessary technical implementation of the necessary visual aids and materials can be ensured so that they correspond to the actual technological training of the students and at the same time contribute to the development of their cognitive and practical skills.

The necessary didactic tools and models for the learning process of other subjects can be made in the technological training classes in a way that corresponds to the level of practical training of the students as well as to comply with the curriculum. Certainly, in this case, their quality, complexity and originality will be at a higher level, resulting in greater satisfaction for their holders and motivation to work with them. In this way their use in the educational process will contribute to the more interesting and entertaining course of training, will facilitate the acquiring of the learning material and will also solve a number of educational tasks.

The concept of applying integrative approach in the current paper is based on the idea of creating pedagogical conditions for reconciling the goals and expected outcomes of Technology and entrepreneurship and Natural sciences studied at the initial stage of the primary education. These directions contain a number of common topics which can be enriched in the context of close cross-curricular unity. In parallel, the specificity of each subject is used to achieve a meaningful outcome in terms of the acquired knowledge and skills.

We believe that the lapbook is a modern didactic tool, the preparation of which - technically and in a meaningful way - creates positive emotions for the students and enables active cognitive activity.

The word *лапбук* in Bulgarian comes from the English word *lapbook*, which is a small folding information book that collects all the materials under a certain topic. In this interactive book, information related to a certain learning content is presented by small folding books, by various moving elements - opening windows, doors, pockets, spreading sheets, and more. They can include short texts, riddles, poems, puzzles, games, paintings, drawings. This attracts the child’s attention and provokes their interest both toward the book and the information in it.

The lapbook can be used for a variety of purposes – learning new content, generalizing and systematizing students’ knowledge and skills on a particular topic, presenting results from project work, private study.

---

<sup>66</sup> Law on school and pre-school education. Retrieved from <https://www.mon.bg/bg/57>

<sup>67</sup> Andreev, M. *The process of education. Didactics*. Sofia., (2001).

<sup>68</sup> Andreev, M. *Integrating trends in education*. Sofia., (1986).

One of the priorities set in the curriculum is the development of cognitive activity among students. The process of making a lapbook is an opportunity for its realization on the basis of a close cross-curricular integration. The main stages which students have to follow to develop their interactive information book<sup>69</sup> on their own are:

- *Selection of a topic* - a lapbook can be made on any topic. The information book can cover a common topic or just a part of it - for example, when acquainted with a healthy lifestyle the topic can be “Healthy Lifestyle” or to specify – “Healthy nutrition” and it could be reduced to specific nutrients, e.g. “Carbohydrates”, “Vitamins” and others. For third-grade students, it is recommended that topics be more specific in order to extend their knowledge of an object, subject, person, phenomenon, and event.

- *Preparing a lapbook plan* - this is the longest stage of the preparation. Here are the subtopics or the main issues, tasks - each of which must have a clear purpose. At the beginning, when students do not have enough experience to make a lapbook, it is necessary to suggest specific questions/ tasks to help them prepare. For example, under the topic of Healthy Nutrition - sample questions, tasks can be: What does it mean to eat healthily?; Which are the nutrients?; In which foods?; Where are they contained in the largest quantities?; What is the impact of different nutrients on health and human development?; riddles or poems about some foods or nutrients and curious facts. Facing the set tasks, students select the information they will use. Its systematization, the amount and the way it will be presented depends on the capabilities and abilities of each student. Although there are no limitations on the number of items, it should be kept in mind that the recommended size of the lapbook is a cardboard/ sheet of paper of size A3/ A4 in which different elements can be placed, i.e. it is necessary for the number of tasks to conform with that when preparing the plan.

- *Creating a visual model of the lapbook* - making a lapbook project. For this purpose, it is necessary to choose the elements which are to be used (envelopes, flowers, opening windows, pockets, rotating circles, etc.), to consider the location of each of them in the book, how to present the information, the questions and the tasks set out in the plan (text, games, cognitive tasks, puzzles, schemes, labyrinths, puzzles, etc.). It is at this stage that pupils unfold their creative potential, present the idea of their information book according to their views, abilities and interests;

- *Making the lapbook* – at this stage the book is being prepared, the components are being made/ elaborated, the pre-selected and systemized information is being written, and each element is being placed in a position that has been specified in the previous stage of the lapbook.

After this stage, the lapbook is ready and can be used in the training process (Figure 1).



Figure 1. Lapbook

We believe that the lapbook is an appropriate didactic tool for achieving effective integration between Science and Technology and entrepreneurship at primary school level. For the implementation of this concept we state the following didactical reasons:

- The elaboration of qualitative didactic materials implies the availability of *specific work* skills. Forming them is a priority of the technological training, so it is appropriate to use the potential of the respective educational field to realize the technical implementation of the task. The making of the lapbook components in this particular case takes into consideration both the practical skills available to the students so far and those that have to be mastered in compliance with the curriculum. Only then the end product will be adequate to the expected results of both the

<sup>69</sup> Viktorovna, T. *The Lapbook as a variable form of preschooler's cognitive development*. Retrieved from <https://www.adou.ru/categories/2/articles/109>

program and the children. The degree of complexity, functionality, as well as the aesthetic value of the elements and the didactic tool as a whole will be the result of the actual technological training of the students and will offer greater opportunities for systematizing and presenting the information included in them.

The making of a lapbook can be implemented over several hours, and why not under the conditions of project-based technology training. Taking into consideration the fact that the practical tasks can be interpreted by the teacher, it is possible to envisage the elaboration of more complex elements.

First grade students usually work with ready-made folds, outline templates, and fit paper items together. In order to achieve variety in the making of the elements, their knowledge about cord knotting, thread twisting and tacking stitch for decoration can be used.

Suitable for the second graders are the elements: with a harmonica-type folding, fitting together elements with staples; movable attachment of elements with a thread, with pop-up, moving elements, cutting friezes with repeating figures; interlacing with paper strips.

The third graders master techniques for movable attachment of elements, develop skills for the making of knots with the macrame technique, suitable for decoration, gain knowledge about the pulley and roller mechanisms.

Fourth grade students can make an envelope out of a ready-made unfolding or a graphic image in which they make changes in its shape, construction or aesthetic layout (Figure 2).



*Figure 2. Paper envelopes*

The elaboration of complex cardboard elements with a mechanism (Figure 3) can be done following an instruction and a scheme within one school class under the teacher's expert guidance. The result is impressive, and the motivation to find, summarize and present information - textual or visualized - is high.



*Figure 3. Elements with a mechanism*

---

The formation of skills for working with a craft knife allows students to make slits and friezes in the elements to achieve efficiency and originality in constructions.

The making of 3D elements also enhances the attractiveness of the lapbook and thus increases the interest of the students not only in the elaboration but also when it is being completed at a later stage.

- With regard to **knowledge**, specific concepts and topics are considered and complemented by the positions of the subject areas under consideration. The main topics that are of interest to the students are the following: acquaintance with and conservation of nature, healthy eating, jobs, contemporary scientific achievements, holidays and customs, plants, animals, national holidays, seasons, natural disasters, celebrities, etc.

- As a result of the adequate integration of competences, tailored to curricula, a number of skills are formed during the preparation of the lapbook, such as: skills for searching on their own, systematization and presentation of information, and application of the lessons learned in a new situation.

Researching a topic or a problem involves working on student's own with different information sources. Digital competence is becoming more and more necessary due to the extremely rich information base on the Internet, and it is therefore considered to be a necessity. The ability to communicate in their native language and the communicative skills are crucial for generating, summarizing and systemizing the most important, essential information.

When it is necessary to systematize bulk information according to certain criteria, it is appropriate to use for each of them a corresponding component in the lapbook which is composed of more parts that can be unfolded or provides the possibility of storing a larger amount of information (e.g. a punched pocket or an envelope). In this way each of them carries certain content with the most important or classified information. Therefore making elements with a more complex structure is not only interesting but also useful. Thus, the opportunities offered by the technology training curriculum for the elaboration of such products, which will be useful for the development of the students' subject-manipulation activity and its combination with their cognitive activity, should not be missed.

### 3. CONCLUSION

The lapbook is a suitable form for the age of primary school level students to present facts, events, and ideas from the surrounding world. Therefore, we consider that its relevance, functionality and aesthetic appearance are of great importance.

As an innovative didactic tool, the lapbook contains the necessary potential for more effective implementation of the educational goals in the two directions under consideration in terms of achieving the expected results. In the process of its elaboration it is possible to learn new information, to form and develop certain skills, as well as specific work skills set in the curricula of Technology and entrepreneurship. At the same time, a number of subjects from the learning content, which are considered from the natural science point of view, are enriched and perceived in a technological way, after which they find place in an attractive book - a lapbook, made by the students themselves. Its utilitarian value is multiplied by the personal contribution to its creation - not only as an object but also as content.

### REFERENCES

[2] Andreev, M. The process of education. Didactics. Sofia., 2001.

[3] Andreev, M. Integrating trends in education. Sofia, 1986.

[1] Law on school and pre-school education, Retrieved from <https://www.mon.bg/bg/57>

[4] Viktorovna, T. The Lapbook as a variable form of preschooler's cognitive development. Retrieved from <https://www.adou.ru/categories/2/articles/109>

