Adaptation of approaches of the Shatalov method to the pedagogical system of the higher marine professional education

Dmitry Novoselov¹

¹FSBEI of HE Kerch State Marine Technology University, 82, Ordzhonikidze Street, 98309, Kerch, Russia
E-mail: vera.murgul@mail.ru

Abstract. The possibilities of adapting the elements of the Shatalov method, primarily the ideas of supportive notes, into the system of higher professional education are considered using the example of subjects of the navigation cycle in the training of cadets of marine specialties. Ideas are proposed that allow combining the requirements of international conventions in the training of maritime transport specialists with the requirements of domestic education standards, as well as the development of electronic support systems for full-time students. The features of using supportive notes in the lecture and seminar system are described.

1. Introduction

Historically, there were three main teaching systems - individual, class-and-lesson, and lecture-seminar. These systems differ from each other in terms of audience coverage, the ratio of collective, individual and independent forms of learning material, as well as the way teachers manage the educational process.

In modern higher education, the most common is the lecture-seminar system of teaching.

A lecture-seminar training system is a collective form of training, the concentrated expression of which is lectures, seminars used in the professional education system (V.V. Anisimov) [1].

2. Statement of the research problem and assessment of approaches

Bordovskaya N.V., Rean A.A. [3] give the following signs of a lecture-seminar training system
1. The student’s independent activity is the basis for studying at a university;
2. Lectures, seminars, laboratory practicals, consultations, practice in the chosen specialty, etc. - the main forms of training organization;
3. A study group is the central form of student organization (the permanent composition of which, as a rule, is maintained for the entire period of study);
4. The totality of study groups represents a specific course of study at a university;
5. The course works according to a single curriculum and programs according to the schedule of training sessions;
6. The academic year is divided into two semesters, an examination period and a vacation;
7. Each semester ends with passing tests and exams for all academic disciplines;
8. Training at a university ends with passing final exams in leading disciplines and specialties;
9. The duration of the lesson is 1.5 hours;
10. The entire content of the training is divided into separate disciplines.

Unlike the class-and-lesson system, the main control takes place at the examination period at the end of the semester, while students on this system have greater independence in the study of the subject.

The system consists of complementary parts:
- Lecture, on which the theoretical foundations of this discipline are given
- Practical, which consists of practical, seminar or laboratory classes. In this part, the lecture material is brought to a practical level.
- In addition, consultations and independent work of students, as well as internships, are of great importance.

Of course, the primary and main part is the lecture part. Moreover, all parts must be closely connected to each other.

Lectures, as a method of delivering educational material, have a number of drawbacks. For example, a lot of time is spent on mechanical recording of material. Often a student makes an abstract of a lecture automatically, without particularly delving into the material. At the same time, on the other hand, a good lecturer, on the basis of his own knowledge and compilation of textbooks, creates his own logical picture of the subject, focuses on areas that are important for this specialty. During the lecture, there is live communication with students, and a good lecturer perceives the state of the audience, responds to this state, if necessary, repeats or clarifies incomprehensible moments, i.e. there is a live dialogue.

The effectiveness of lectures is determined by:
1. Methods and effectiveness of the teacher’s presentation.
2. Methods and effectiveness of perceiving material by a student.
3. Methods and effectiveness of monitoring the knowledge gained.

All points are interconnected and should initially be included in the lecture. In fact, two persons are present at the lecture: a lecturer and a generalized person - the audience of students. The effectiveness of the lesson depends not only on the lecturer's work in delivering the lecture material, but also on the students who perceive this material.

That is, the lecturer must not only convey the material with the necessary degree of clarity, but also create the conditions and methods for the perception of this material. Not just a mechanical record, but a perception. There is an opinion that “my problem is to qualitatively read the material. And how a student will use it, we will find out at the exams”. This is the wrong approach. The lecturer should not only qualitatively present the material, but also create the conditions for its effective perception.

3. Classification approach to solving the problem

The classic way of conducting a lecture is to read the material. This is a method that has come to us from the depths of centuries, when the teacher had knowledge embodied in material form in the lecture notes, and students only had a pen, paper and a thirst for knowledge.

Nowadays, in addition to pen and paper, students have various gadgets, from the phone to the laptop, and the teacher has an electronic lecture notes available from any place where there is Internet access. Moreover, during the lecture, the teacher already has a screen instead of a regular board, and a projector instead of chalk.

The question arises: do we need a classic reading in this case? It turns out that the student has an electronic version of the notes before his eyes, the teacher dictates the definition according to it, and the student writes down. Does that make sense? That is, you can safely get away from mechanical stuffing and use the freed up time for a more detailed explanation of the material, examples and other interesting activities. Also, there is room for criticism - motor skills leave the process of perception, there are things that are easier to perceive in the form of recordings. For example, independent drawing of an explanatory drawing gives much more than just admiring the drawing process. And some people better perceive information by “fingers”.
The other side of the problem is the demonstration material. The blackboard remains, but we have a projector, which we need to use. Moreover, it should be used not because it appeared, but because it gives us new opportunities. But which ones?

The easiest way is to demonstrate the same electronic lecture notes, but the problem is that in fact, this is the same paper notes intended not for demonstration, but for thoughtful reading.

The next step is the creation of presentations. This is a direct use of technical equipment for its intended purpose, but the usual presentation is one-sided. It only solves the demonstration function. It does not solve the functions of perceiving material and control. That is, the student partially falls out of the lecture process, he just listens, or maybe does not listen, because he can always get this very presentation from the depths of the Internet and read at home. That is, his motivation for attentive perception of the lecture material is partially lost.

From our point of view, the simple use of presentations that are not supported by a methodological system that takes into account the peculiarities of perception is adversely affect the learning of training material.

The idea of supportive notes, taken from the development of the Donetsk teacher Viktor Fedorovich Shatalov [16], and the technique created on its basis can fill the formed methodological vacuum.

The distribution of the Shatalov method in its original form for lecture classes is largely hindered by a number of features. Firstly, it is not typical. It has a pronounced individual author's approach. Secondly, it is quite complicated in technical implementation, as it is built on a large number of visual didactic material. Moreover, there is a completely different specificity in higher education, and mechanical transfer of the experience of school teachers is impossible. It requires complete creative processing, the development of some specific approaches and the creation of a methodological system suitable for use at a university.

Classically, the Shatalov method is based on the following provisions:
1. Repetition.
2. Control of knowledge.
3. Rating system.
4. Methodology for solving problems.
5. Supportive notes.

The core of the method is supportive notes, and the very understanding of supportive notes can be very broad, but in essence, it is a collection of some concepts that have a complete meaning, an internal logical structure and are aimed at memorizing the subject. That is, drawings, definitions, formulas and other elements that collect the theme together.

What is the disadvantage of the classic notes or textbook? In it, the theme is “dispersed” in space, it occupies a large volume, which may interfere with the whole perception of the picture.

In supportive notes, the whole topic is visually placed in one frame. It has a characteristic structure of visual perception, where various components are visible in interconnection, and each supportive note must be individual.

How is it different from a regular presentation slide? In the presentation, each slide is dedicated to a specific element - definition, phenomenon, etc. Therefore, as a simple demonstration of educational material, a presentation slide may be more convenient, but it is not as universal as supportive notes. In fact, the presentation not supported by the methodological basis gives one advantage - hands not stained with chalk.

Ideally, supportive notes are a complete unit of information on a topic. In fact, it provides the minimum information that a student should know and, based on it, to be able to receive extended information.

In the process of working with supportive notes, first a general picture of the topic is given, and then a sequential explanation of the individual elements - reference signals, their relationship.

Some definitions may be given in a simplified form, which is simpler to perceive.

Supportive notes should have the following properties:
1. Conciseness
2. Structurality
3. Presence of semantic accents
4. Autonomy
5. Associativity and imagery
6. Accessibility of freehand copying
7. Visual clarity

In the described method, supportive notes cease to be just a poster or presentation slide, it becomes the basic unit of information, and the method is constructed in the way that the student addresses supportive notes repeatedly, and the notes are both a means of conveying information, and a means of obtaining information, and a means of controlling acquired knowledge. We emphasize that it is basic, but not the only one, since it provides reproductive training on its own and, if used improperly, can simply develop into cramming.

4. Application of the Shatalov method for training marine specialists
The foundations laid in the Shatalov method are very interesting and organically combined with modern technologies in education. The technique may be of particular interest for use in marine education, since it becomes possible to take into account some specific features of the latter [11], such as the need to comply not only with domestic standards but also with international ones [8,12], significant impact of practices with a possible separation from the training process [5].

The introduction and testing of the system of supportive notes was carried out for students of marine specialties and allowed developing an original methodology for subjects of the navigation cycle, such as “Navigational astronomy”, “Navigation and pilot chart”, “Fundamentals of navigation”.

As already been noted, it is impossible to simply transferring the Shatalov method to the higher education system, primarily because it was created for the school class-to-lesson system. For such a system, everything is very simple - one lesson, one topic, one supportive note. Questioning material from the last lesson, new material, problem solving.

In the lecture-seminar system, this approach is impossible, since new material and practical work with it occur in different classes with a different number of students [6,7].

If in the class-to-lesson system, it takes 10-15 minutes to explain the new material using the supportive note, then during the lecture, several supportive notes can be involved, 3-5 on average. It is difficult to put together an hour and a half of lecture material in a smaller number of notes, and more notes can develop into the same presentation, and the idea of supportive notes loses its meaning. On the one hand, the field of knowledge included in one supportive note is noticeably enlarged, and on the other, we lose the opportunity to devote a separate lesson to each supportive note. In the classic Shatalov method, the supportive note is not only a visual material for explanation, but also a means of monitoring the knowledge gained, and a frontal written questionnaire on the supportive note is one of the key provisions of the method.

The authors introducing the ideas of the Shatalov method into the educational process at a university usually bypass this problem, limiting themselves simply to describing the method and its advantages. The topic of practical implementation, as a rule, remains unresolved [4.15].

The development of basic knowledge and skills in the marine field requires a qualification approach from various thematic groups and classifiers [17-19].

In our case, the problem is partly solved by the fact that navigation sciences for the most part are purely practical and, accordingly, the number of practical classes can exceed the number of lectures, i.e. up to two practical classes can be given per lecture. Besides, with a relatively small number of students in the lecture group (up to 50-60 people), the beginning of the lecture can be engaged for a written questionnaire. However, with more people it becomes much more difficult to control students for cheating. On the one hand, this takes a certain piece of the lecture, up to about 20 minutes, but on the other hand, it allows the student to repeat the material of the previous lesson before the lecture begins.
Such a system makes it possible to check 2-3 supportive notes in one week, while with a reasonable enlargement of the material included in one note, 3-4 supportive notes can be used during the lecture. Thus, to integrate them into the educational process, it is necessary to reduce the number of controlled supportive notes.

At the same time, modern computer technologies significantly expand the range of opportunities provided to the teacher, which allows neutralizing the inconvenience and difficulties that arise when introducing the system of supportive notes in the lecture-seminar training system.

The opportunities provided by presentation editors make it possible to turn supportive notes from a static poster into a supportive algorithm that is gradually being deployed on the blackboard.

5. Conclusions
Introducing supportive notes or supportive algorithm (with a decrease in their number) in the training process with a lecture-seminar system can go in several ways:

1. Using the modularity of constructing supportive notes, while the main material is collected in a basic note. Then each module of the basic note is described in separate more detailed slides. This method of application is described in [4]. There are 2-3 such basic notes, depending on their control capabilities.

2. When creating the lecture notes, the basic material is selected, which is collected in 2-3 supportive notes. The rest of the material, which is not key one, but must be read at the lecture, is highlighted in additional notes.

3. Supportive notes gradually unfold on the screen. With the introduction of each new block, less significant details are removed, and only the key information remains on the screen. In this case, the introduction of the term “supportive algorithm” is appropriate.

If for the third way, a gradual deployment is necessary, then for the first two, it is not critical, but it can be used. In our case, the second and third ways are preferred.

Of course, with this use of supportive notes or algorithms, difficulties in developing the course somewhat increase. A careful selection of supportive notes on the topics of lectures and practical classes is required, while their numbering may not always be observed. It is clear that notes or an algorithm with a bias in the practical part should be used in a written questionnaire of a practical lesson. And theoretical notes should be used during the lecture. It is even possible to transfer the control of supporting notes to several lessons, provided that it will be relevant at that lesson. The method requires a thorough preliminary study. But even taking into account the difficulties in building the course, further work is greatly simplified, while becoming more high-quality and effective.

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