

The "VARIANT" program in the formation of professional competencies of future volleyball coaches

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Abstract:

The relevance of students' professional competence model formation development is due to the need to improve the pedagogical process in educational institutions of various profiles. The issues of using the method of modeling the pedagogical process to increase students - future volleyball coaches' motivation and professional competencies remain not fully studied. *The aim* is to test and evaluate the author's variable program for improving professional competencies of future volleyball coaches. *Materials and methods.* Two groups of students (n=40) of the physical culture university, «Physical education» specialty (direction of study) took part in the pedagogical experiment, with the study of the elective course «Volleyball». The control group (n=20) studied according to the standard program. The students of the experimental group (n=20) studied according to the curriculum «Variant» proposed by us, based on modeling pedagogical forms and methods of teaching under the conditions of solving didactic tasks by students for the professional competencies formation and motivation to work as a volleyball coach. We conducted boundary testing of students to determine the level of motivation and components of competence formation. *Research results.* After conducting a pedagogical study, there were significantly more students in the experimental group with a high level of professional competencies formation in all components. In this group, the motivation for the prestige of the profession increased by 2.6 times, the business attitude to the work of the coach by 2.3 times, compared with the level of motivation of the students in the control group. The values of the value-motivational component have significantly increased, the level of theoretical knowledge has become by 2.3 times higher, the reflexive-evaluative component is by 2.6 times higher, and the indicator of the procedural-activity component has increased by 29.9%, compared with these indicators in the control group. *Conclusion.* The aim of the research project has been fulfilled; its effectiveness has been confirmed by positive testing results. The author's program can be useful and recommended for use in students', studying at educational institutions of physical culture and sports profile educational process of physical education.

Key Words: physical culture, modeling of the educational process, professional competence, volleyball coach.

Introduction

In any country of the world, an important task of the higher education system is to improve the efficiency and quality of training specialists. The issue of improving the quality of teaching disciplines in educational institutions of physical culture and sports is relevant (Nagovitsyn, et al., 2017; Giuseppe Madonna, Patrizia Belfiore, 2020). In parallel with the significant achievements of scientists in the field of the theory of physical education, the issue of further search for methods, forms and means to improve the effectiveness of pedagogical activity and training of the younger generation continues to be important (Kim et al., 2018; Wibowo & Heemsoth, 2019; MacPhail, Tannehill & Avsar, 2019).

The educational process modernization in sports pedagogy requires constant search for innovative pedagogical technologies for training specialists (Protsenko et al., 2016; Kozlovskiy 2018). The issues of professional competence education, that is, professionalism among future coaches and PE teachers plays a crucial role in the pedagogy of sports (Danylevych et al., 2019; Kryshchanovych 2019). The relevance of

developing a model for the teachers' professional competence formation is due to the need to improve the pedagogical process in educational institutions of various profiles (Markova et al., 2017; Besnosyuk, 2019).

The process of forming the future coaches' professional competence is based on a system of effective methods of pedagogical influence. A sports teacher or coach, in addition to traditional forms and methods of teaching, needs innovative technologies, in particular, problematic, debatable, design and others (Prystupa et al., 2020; Sgambelluri et al., 2021). It is important to use interdisciplinary multidisciplinary approaches to teaching in pedagogical practice (Giuseppe Madonna, Patrizia Belfiore, 2020) and to ensure interaction between the teacher and students (Lindt, Blair, 2017; Zalech, 2021). A significant role in this interaction is played by the characteristics of the teacher's personality (Bavčević et al., 2018). Pashchenko A.V. (2016) believes that the educational process of students-coaches' training consists of four functional blocks. Important blocks are the theoretical and special knowledge of their future profession acquisition and the practical skills development in the field of physical culture and sports. The blocks aimed at motivating students to study, control and self-control of learning remain relevant.

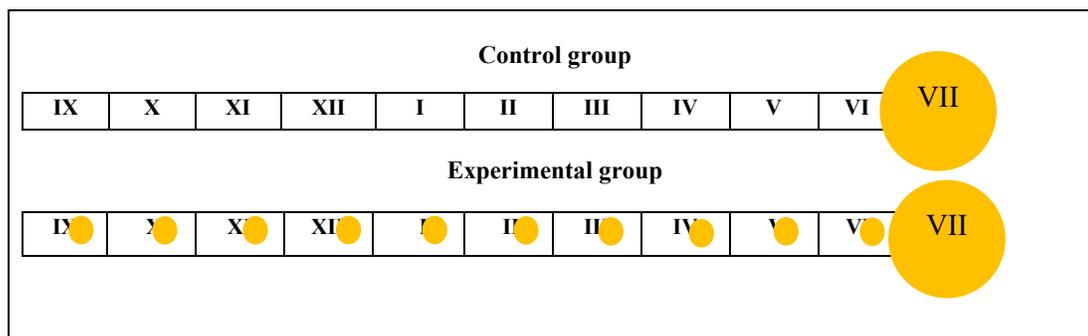
Currently, there are contradictions between the demands of modern society in PE teachers and coaches with a high level of professional competence and not sufficiently high level of their training in educational institutions (Maksymchuk et al., 2018; Prystupa et al., 2020). The problem of using specific scientific and methodological tools, methods and methods of developing students' of physical education universities motivation for educational and cognitive activity remains unresolved (Meier, 2020). The issues of modeling pedagogical technologies for training coaches in various sports have not been fully studied. The modeling of effective pedagogical technologies in his sports and pedagogical practice is reported by Kolokoltsev et al. (Kolokoltsev et al., 2020).

Project activity or problem-oriented method is considered in pedagogy as one of the methods of students' professional knowledge formation. Scientific sources report that the educational environment of universities does not sufficiently use the students' self-development and self-improvement potential (Stefan, 2020). This fact requires conducting research to study the issue of improving the quality of training and enhancing the cognitive activity of physical education universities students, including using the modeling method in teaching students.

Research aim: is to test and evaluate the author's variable program for improving professional competencies of future volleyball coaches.

Material & methods

The research work was carried out during the academic year at the University of Physical Culture of the Siberian Federal District (Russia). The pedagogical experiment involved two groups of students (n=40) of the 3rd year of «Physical education» specialty, with the study of the elective course «Volleyball» in the amount of 328 academic hours per year. The control group (CG, n=20) studied according to the standard curriculum. The students of the experimental group (EG, n=20) studied according to the author's curriculum «Variant» proposed by us, based on modeling pedagogical forms and teaching methods in the conditions of students solving didactic tasks for the formation of professional competencies and motivation to work as a volleyball coach. The standard training program is based on the reproductive training method. According to this program, future coaches undergo training practice at schools, sports clubs and sections once a year, where they consolidate their knowledge, skills and abilities. Our program is based on the problem-activity method of intensive formation of professional competencies throughout the academic year. We offer an additional monthly training session of a problematic nature, where the teacher uses the pedagogical technology of simulation and simulated event that may arise in the future work of the coach. In these classes, students need to actively use their professional competencies to make decisions. In our program, we have designed the learning process as a chain of a teacher's actions for the future coaches' professional competencies formation (Figure 1).



Note ● - practice; I-XII - months

Fig. 1. Design of the competence formation process for students of CG and EG during the year

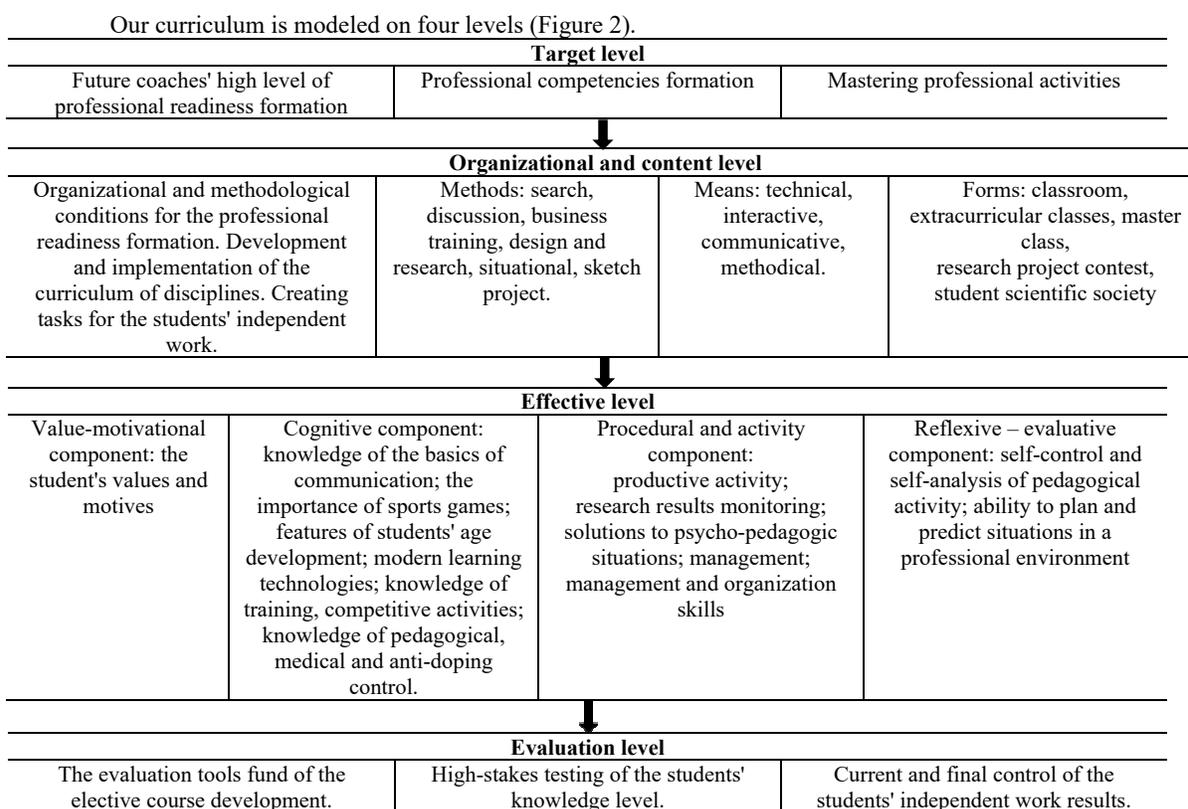


Fig. 2. The structure of the program for the professional competencies formation among EG students

The students' professional competence assessment was carried out according to the criteria: advanced, basic, threshold and insufficient. Each criterion corresponded to a certain level of students' knowledge, their skills and knowledge of educational material. In both groups, a high-stakes test-survey was conducted using the questionnaire «Motives for choosing a profession» (Grinshpun, 1994). The project materials were processed using the licensed version of the STATISTICA 10.0 and MS Excel 2010 programs. Generally accepted statistical indicators were calculated. Using the Student's t criterion, the reliability of the difference in the values of the indicators ($p < 0.05$) was determined. A significant difference in quality indicators was determined using chi-squared (χ^2). During the project, the ethical norms and rules of the Human Rights Committee of the Helsinki Declaration of 2008 were observed

Results

At the beginning of the pedagogical experiment, many CG and EG students had motives of choice such as «prestige of the profession», «material well-being», «business attitude», «creative attitude» were «weakly expressed» and «moderately expressed» (Table 1).

Table 1. Characteristics of the students of CG and EG motivation to choose a future profession (in %)

Group	Stage	Characteristics of the motives intensity (%)				
		Not expressed	Weakly expressed	Moderately expressed	Expressed	Clearly expressed
Prestige of the profession						
CG	Beginning	20.0	10.0	40.0	30.0	0
	End	15.0	10.0	45.0	30.0	0
EG	Beginning	25.0	15.0	35.0	25.0	0
	End	0	0	15.0*	65.0*	20.0
Material well-being						
CG	Beginning	0	50.0	25.0	25.0	0
	End	0	50.0	25.0	25.0	0
EG	Beginning	0	45.0	25.0	30.0	0
	End	0	45.0	25.0	30.0	0
Business attitude						
CG	Beginning	0	40.0	45.0	15.0	0
	End	0	35.0	45.0	20.0	0
EG	Beginning	0	45.0	45.0	10.0	0
	End	0	10.0*	45.0	30.0*	15.0
Creative attitude						

CG	Beginning	0	35.0	40.0	25.0	5.0
	End	0	30.0	40	25.0	5.0
EG	Beginning	0	35.0	45	20.0	5.0
	End	0	0	20*	60.0*	20.0

Note: * $p < 0.05$ significant difference in indicators difference.

At the end of the pedagogical study, all the surveyed students of the CG and EG have an increase in the motivational and value component to the correct choice of the profession of a coach, this is especially pronounced among the students of the EG. While studying at the university, students receive not only professional knowledge of their future work. The main criterion for a PE teacher is the professional competencies availability, especially in working with children. Therefore, we evaluated the high-stakes level of professional competence components formation in future volleyball coaches in our experiment (Table 2). At the beginning of the experiment in both groups, more than 50% of students had a threshold level of all components of professional competencies (Table 2). Students with a basic level accounted for ¼ of the number of all respondents in both groups. The rest of the students had an increased or insufficient level of competence formation.

Table 2. High-stakes distribution of the number of students of CG and EG by the levels of professional competencies components formation (%)

Group	Stage	The level of components formation (%)			
		Insufficient	Threshold	Basic	Increased
Value-motivational component					
CG	Beginning	5.0	65.0	25.0	5.0
	End	0	50.0	40.0	10.0
EG	Beginning	10.0	60.0	25.0	5.0
	End	0	25.0*	40.0*	35.0*
Cognitive component					
CG	Beginning	0	60.0	30.0	10.0
	End	0	40.0	45.0	15.0
EG	Beginning	0	65.0	30.0	5.0
	End	0	15.0*	45.0*	40.0*
Procedural and activity component					
CG	Beginning	5.0	65.0	25.0	5.0
	End	0	45.0	40.0	15.0
EG	Beginning	10.0	70.0	15.0	5.0
	End	0	10.0*	45.0*	45.0*
Reflexive – evaluative component					
CG	Beginning	15.0	65.0	20.0	0
	End	0	40.0	50.0	10.0
EG	Beginning	10.0	65.0	25.0	0
	End	0	10.0*	40.0*	50.0

Note: * $p < 0.05$ a significant difference in the differences between the indicators before and after the experiment

After the pedagogical experiment completion, the students in CG and EG established an increase in professional competence at all levels of component formation. In CG, there was no significant improvement in all levels of students' professional competence components formation ($p > 0.05$). EG students had an improvement in the levels of all components ($p < 0.05$). Initial testing of the cognitive component (theoretical knowledge) level of all respondents showed no statistically significant differences between CG and EG students (Figure 3).

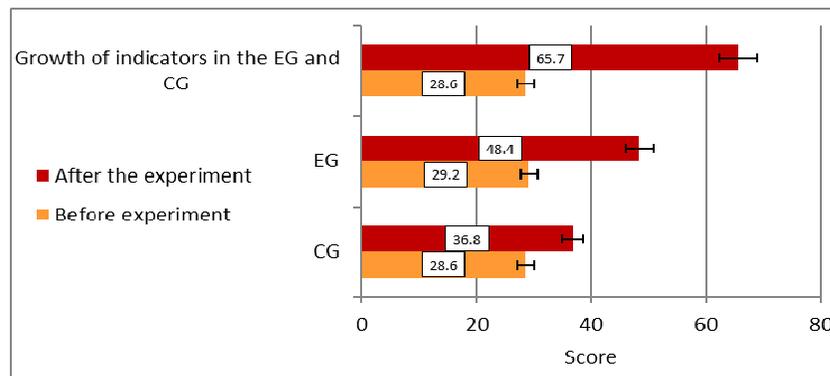


Fig. 3. Assessment of the students of CG and EG cognitive component (points)

At the end of the pedagogical experiment, a significant increase in the value of the students' theoretical knowledge index was found in both groups, $p < 0.05$. The increase in the value of theoretical knowledge among EG students turned out to be by 2.3 times greater than the increase in this indicator among CG students (65.7 and 28.6%, respectively). The assessment of the interviewed students' procedural and activity component of the professional skills formation before and after the experiment is given in Table 3.

Table 3. CG and EG students' procedural and activity component indicators high-stakes assessment (M±m)

Indicator #	CG			EG		
	Beginning of the experiment	End of the experiment	% increase	Beginning of the experiment	End of the experiment	% increase
1.	Professional skills and personal qualities of a future volleyball coach (max = 27 points)					
	15.6±3.96	19.9±3.42	27.5	15.8±3.99	25.6±4.94*	62.0
2.	Main characteristics of students (max = 13.5 points)					
	8.3±2.24	9.8±3.14	18.0	8.2±2.18	11.6±3.95	41.4
3.	Future volleyball coach's activity (max = 13.5 points)					
	7.8±1.35	9.2±2.41	17.9	7.9±1.42	12.4±3.14*	56.9
4.	Organization of the training lesson, methods of activity (max = 27 points)					
	14.6±4.37	18.9±4.63	29.4	14.4±4.31	25.8±4.95*	79.2
5.	Effectiveness and results of the lesson (max = 19 points)					
	8.2±2.26	14.4±3.26*	75.6	8.1±2.32	18.4±3.64*	127.2
6.	Total number of points (max = 100)					
	54.5±5.32	72.2±6.24*	32.4	54.4±5.31	93.8±5.71*	72.4

Note: * $p < 0.05$ a significant difference in the differences between the indicators before and after the experiment

At the beginning of the pedagogical experiment, there were no differences between the values of the procedural-activity component in students of CG and EG, $p > 0.05$. At the end of the research project, there was an increase in the value of this component in both groups. In the experimental group, significant high-stakes differences are recorded in one indicator (No. 5). In the control group, there are differences in four indicators (No. 1, 3, 4, 5). The increase in the EG students' procedural and activity component indicators estimates was higher, the total number of points was by 29.9% higher than that of CG students (72.2±6.24 and 93.8±5.71 points, respectively). The results of the high-stakes assessment of the interviewed students' reflexive-evaluative component of are shown in Figure 4.

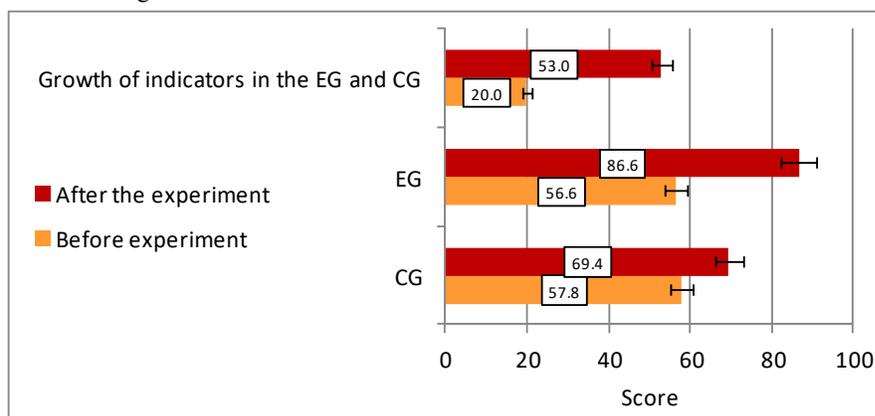


Fig. 4. CG and EG students' reflexive-evaluative component assessment (points)

At the beginning of the experiment, there were no significant differences between the assessments of the reflexive-evaluative component of the students of CG and EG. At the end of the experiment, an increase in this estimate was found in both observation groups. In EG students, the increase in grades was by 2.6 times higher than in CG. The students of the experimental group who were engaged in physical education according to the elective course program «Volleyball» proposed by us, the process of forming professional competencies necessary for future coaches turned out to be much more effective than the students who were engaged in the standard program.

Dicussion

The analysis of scientific and educational literature shows that there is a large number of methodological materials allowing to reform the training program for students-future volleyball coaches. Despite the extensive research material available in the field of sports pedagogy, the issues of intensification and effectiveness of the training process of future specialists remain relevant (Kim et al., 2018; Wibowo &

Heemsoth, 2019; MacPhail, Tannehill & Avsar, 2019). A promising direction is the educational process modeling (Galavova, & Zakirova, 2018). In the generally accepted concept, a model is a diagram, an image of a phenomenon or process. Modeling makes it possible to achieve the research hypothesis in a structured way; it is easier to determine the relationships between the elements of the phenomenon (Besnosyuk, 2019). In the pedagogical project conducted by us, it is shown that the effectiveness and quality of training is significantly higher when using the proposed model for the formation of professional competencies in future volleyball coaches in the educational process. We agree with the statement of M. Danylevych et al. (2019) and S.U. Kryshchanovych (2019) that the formation of professional competencies of future specialists has a leading role in the education system. To do this, it is necessary to expand the arsenal of pedagogical tools and technologies contributing to future coaches' professional competence formation (Prystupa et al., 2020).

The proposed program structure contains four levels of formation and development of students' motivation and professional competence for the future profession of a volleyball coach. The positive result of using our proposed program in teaching students of the experimental group is consistent with the data of A.V. Pashchenko (2016), who reports that the development of students' motivational component forms qualitative knowledge increases their cognitive process and promotes self-control of learning.

The use of interactive technologies and the enrichment of traditional forms and methods of teaching with innovative systems play an important role in increasing the effectiveness of pedagogical influence (Sgambelluri et al., 2021). The issue of finding new means and methods of interaction with students in the educational process and the continuity of all types of practical training is relevant (Lindt, Blair, 2017; Zalech, 2021). The program we have proposed contains a model of practical training of future volleyball coaches for intensive and effective formation of their professional competencies.

During the training of students at the university, it is important for the teacher to use the problem-activity method for the formation and development of professionally significant qualities for the coach, such as love for the chosen profession, responsibility, creativity, tolerance, optimism, empathy and psycho-emotional stability (Prystupa et al., 2020). At the end of our project, the students of the experimental group had a higher increase in the values of the indicators of all assessments of the cognitive, reflexive-evaluative and procedural-activity components than the students of the control one. These data may indicate that training according to our proposed program for the formation of a professional component and motivation for work turned out to be more effective than teaching students according to a standard curriculum.

Conclusions

The author's program «Variant» is proposed and tested for intensive formation of professional competencies and motivation of students for future coaching work «Volleyball». The program is based on the modeling of pedagogical forms and methods of teaching under the conditions of students solving didactic tasks by the problem-activity method. In our program, the learning process is designed as a chain of a teacher's actions who uses pedagogical simulation and simulated event technology to simulate a situation that may arise in the future work of a coach.

After conducting a pedagogical study in the experimental group, the number of students with a high level of professional competence formation in all components significantly increased. They registered an increase in the value of the cognitive component indicator by 2.3 times, the reflexive-evaluative component by 2.6 times, the procedural-activity component increased by 29.9% compared with the increase in the values of these indicators in the control group students. Motivation to the prestige of the profession increased by 2.6 times and the business attitude to the work of the coach by 2.3 times, compared with the increase in the motivation index of students in the control group, $p < 0.05$.

The positive results of our project testing indicate the effectiveness of the «Variant» program proposed by us for the formation of students - future volleyball coaches' professional competencies. We believe that the aim of our research project has been fulfilled and our program can be useful and recommended for use in the educational process of physical education of students of educational institutions of physical culture and sports profile.

Conflicts of interest. The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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