Updating the professional profile of the modern teacher: the results of a regional study

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Abstract. The article presents the results of expert assessment of the importance of professional competencies for successful educational activity by the teachers of the regional system of secondary education. A theoretical review of the scientific literature on changes in general education and their impact on the professional activities of teachers, as well as the content of the current Russian professional teacher standard provided a methodological basis for the research tools of the current professional profile of the modern teacher. The expert survey and statistical data analysis procedures performed using SPSS software (version 23) allowed us to identify the latent factors that determine new important details of the professional profile of a secondary education teacher. The results of the study are the basis for the development of additional educational resources, professional development courses, internships in the system of supplementary secondary teacher education. Considering the requests of the professional teaching community, which faces staff shortages, it is possible to improve the quality and efficiency of educational organizations of the regional system of secondary education.

1 Introduction

Daily practices such as early use of digital gadgets, heavy information load, significant reduction in motor activity, insufficient communication in the family and with older relatives, excessive glucose intake, changes in traditional diet, etc. are becoming the norm for today's generation of children. Such changes can be conventionally grouped into a number of classes (tracks), such as information and communication, technical and technological, socio-psychological, gastronomic (culture of children’s nutrition and family meals), etc. Active and multifactorial changes in the development of the modern generation of children must be taken into account in educational work. They also affect the quality of the educational process in secondary and high schools. Accordingly, the competences of modern teachers must change, considering not only the content of education, but also the qualities of the contingent of students, the future career guidance of high school graduates.

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Therefore, the issue of studying the competence profile of a secondary education teacher becomes relevant.

Multiple situations of high uncertainty and multifactoriality in decision-making related to personal and professional spheres of life of a modern person lead to the need to master competencies to successfully overcome the emerging obstacles. In this regard, the school education system pays great attention not only to the knowledge component, but also to the development of competencies that allow students to comprehensively assess the situation and propose systemic solutions. Interactive teaching methods have a positive impact on the development of such competencies to a large extent. For example, problem-based learning (PBL) is one of the modern approaches to teaching students. The authors Leatemia L.D., van Merrienboer J.J.G., Susilo A.P. paid much attention to the quality of the implementation of this method. The researchers come to the conclusion that when developing tasks for the lessons within this method, it is necessary to focus on the features of students' perception. Referring to Korthagen’s “The Onion” model (environment, behavior, competencies, beliefs, identity, and mission), the authors emphasize that in order to function properly in PBL, teachers' teaching perspectives, as measured by those six aspects, should be in a student-centered direction [1-11].

An accurate understanding of the situational context of the educational process is very important for the work of the modern teacher. Sproesser U., VogelM., Dörfler T., Eichler A. conclude that the teaching of any functions in specific subjects (for example, mathematics) should be based on real situations, building a bridge between knowledge and real-world practice of specific students [5]. This includes considering gender differences in perceptions and performance in mathematics as a subject. Therefore, teachers should have sustainable skills to identify the situational context to ensure the effectiveness of the learning process. A number of publications note the importance of the contextual nature of the training of future teachers [7, 9, 10].

Among the emerging interactive teaching methods are game methods in project management. Jaccard D., Bonnier K.E., Hellström M. draw the attention of the scientific community to the fact that the research in this subject area focuses mainly on the characteristics of games themselves [3, 12-14], while the little is found on the teaching methodology for the development and use of this approach in project management. The development of technical tools of learning leads to the need for teachers to apply the integrated concept of learning, including virtual and augmented reality hybrid simulation. According to the authors, the transition to interactive pedagogy entails the need to develop new competencies, including social skills, and the change in the relationship between teachers and students. In this regard, an important detail in the competency profile of modern teachers can be emotional intelligence. Tuyakova U., Baizhumanova B., Mustapaeva T., Alekshova L., Otarbaeva Z. demonstrate how emotional intelligence training affects the emotional competence of future social teachers by measuring their levels of emotional intelligence before and after training. The study used the Hall emotional intelligence test [4]. Denston, A., Martin, R., Fickel, L., O'Toole, V. [8] point out that teachers’ understandings of social-emotional wellbeing contribute to developing ways that teachers can better interact with students. It is also important to consider the socio-emotional factor in working with students, which is necessary for quality educational process and effective solution of educational problems [15-28].

Digital processes in education, which were made relevant and found the widest application during the pandemic (COVID-19), play a large role in the development of teachers' professional competencies. Many publications from the current Scopus Overview [2, 6, 12-14, 16, 19] are focused on the characterization of digital competencies necessary for the success of teachers in both general and vocational education. The presented studies
describe different aspects of the formation and application of digital competencies. Zainal H., Xin X., Thumboo J., Fong K.Y. point out the two advantages of using digital technology in training, based on interviews with experts in the field of methodological support of medical education – promoting a culture of innovation and performance improvement [2]. At the same time, their conclusions regarding the negative effects of digital technologies are relevant and applicable not only to medical, but also to teachers’ education. Namely, the erosion of teachers’ educational-content knowledge, lack of a global vision of the patient's situation (learner, in the case of our study), the intensity of technological progress and technological depersonalization. The qualified use of pedagogical tools and additional opportunities enabled by digital technology by teachers will contribute to the effective solution of the problems of modern education [20-26].

In summary, as a result of a brief review of modern publications exploring the professional competence profile of teachers, we can identify a number of relevant discussion points:
– development of methods, techniques, pedagogical technologies to effectively ensure the results of the educational process;
– active use of digital resources and digital learning tools;
– development of teachers' emotional competence and skills of using diagnostic tools to determine the socio-psychological context of learning.

2 Materials and methods

The empirical part of the study was conducted in the regional system of general education of Stavropol Krai from March to April 2022. Primary sociological information was collected through an electronic questionnaire via Google Forms. A total of 86 teachers from 16 educational institutions of the Stavropol Krai took part in the expert survey. The data obtained during the survey were processed using the SPSS Statistics software (version 23) and presented in a generalized form. Twenty-two variables characterizing teachers' competencies stated in the current professional standard in the Russian system of general education were used in the research toolkit. They are listed in Table 2. The survey participants assessed each variable (professional competence) in terms of the need to improve it in order to work successfully in a secondary education organization. The assessment was given on a three-point scale, where 1 point - competence does not require enhancement; 2 points - competence requires some enhancement; 3 points - competence requires significant enhancement.

3 Results and discussion

The use of factor analysis allows us to form a model of competence profile of a modern teacher, relevant to the regional system of secondary education of the Stavropol Krai. The starting point of statistical construction of the structural model was the determination of the total explained variance. According to the results of statistical processing of the database with the results of the expert survey in the program, using the SPSS Statistics (version 23), the total explained variance was 93.159% and was defined by three components. The data are presented in Table 1.

22 variables that describe the competency profile of a secondary education teacher were expertly evaluated by employees of the regional system of secondary education on a 3-point scale of significance for effective work in secondary educational institutions of Stavropol Krai. As a result of factor analysis performed using the Rotation Method: Varimax with
Kaiser Normalization (Rotation converted in 11 iterations), a factor model with three factors was formed.

**Table 1.** Total explained variance of a competency profile of a secondary education teacher.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Initial eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
<th>Rotation Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount Variance (%)</td>
<td>Cumulative %</td>
<td>Amount Variance (%)</td>
</tr>
<tr>
<td>2</td>
<td>1.708</td>
<td>7.762</td>
<td>69.613</td>
</tr>
<tr>
<td>3</td>
<td>1.162</td>
<td>5.283</td>
<td>74.897</td>
</tr>
<tr>
<td>4</td>
<td>0.966</td>
<td>4.393</td>
<td>79.290</td>
</tr>
<tr>
<td>5</td>
<td>0.878</td>
<td>3.990</td>
<td>83.280</td>
</tr>
<tr>
<td>6</td>
<td>0.796</td>
<td>3.617</td>
<td>86.897</td>
</tr>
<tr>
<td>7</td>
<td>0.620</td>
<td>2.816</td>
<td>89.713</td>
</tr>
<tr>
<td>8</td>
<td>0.490</td>
<td>2.226</td>
<td>91.939</td>
</tr>
<tr>
<td>9</td>
<td>0.431</td>
<td>1.957</td>
<td>93.896</td>
</tr>
<tr>
<td>10</td>
<td>0.312</td>
<td>1.417</td>
<td>95.313</td>
</tr>
<tr>
<td>11</td>
<td>0.263</td>
<td>1.194</td>
<td>96.506</td>
</tr>
<tr>
<td>12</td>
<td>0.227</td>
<td>1.033</td>
<td>97.539</td>
</tr>
<tr>
<td>13</td>
<td>0.180</td>
<td>0.820</td>
<td>98.360</td>
</tr>
</tbody>
</table>

**Table 2.** Rotated component matrix of a competency profile of a secondary education teacher.

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Should apply project-based, experimental, problem-based learning, etc.</td>
<td>0.008</td>
<td>0.453</td>
<td>0.830</td>
</tr>
<tr>
<td>2. Should know the methods of objective assessment of knowledge and characteristics of students</td>
<td>0.395</td>
<td>0.751</td>
<td>0.707</td>
</tr>
<tr>
<td>3. Should apply modern psychological and pedagogical technologies in their work</td>
<td>0.377</td>
<td>0.576</td>
<td>0.798</td>
</tr>
<tr>
<td>4. Should use inclusive practices when working with students/children with special educational needs</td>
<td>0.509</td>
<td>0.848</td>
<td>0.692</td>
</tr>
<tr>
<td>5. Should have general ICT competence</td>
<td>0.798</td>
<td>0.769</td>
<td>0.692</td>
</tr>
<tr>
<td>6. Should have subject and pedagogical ICT competence</td>
<td>0.848</td>
<td>0.769</td>
<td>0.692</td>
</tr>
<tr>
<td>7. Should organize various extracurricular activities</td>
<td>0.769</td>
<td>0.769</td>
<td>0.692</td>
</tr>
<tr>
<td>8. Should organize educational activities that take into account cultural, gender, age, and individual differences among children</td>
<td>0.692</td>
<td>0.769</td>
<td>0.692</td>
</tr>
</tbody>
</table>
The first factor consists of 13 items: should have subject and pedagogical ICT competence (factor loading 0.848); should maintain a professional friendly atmosphere in the children’s collective using socio-psychological analysis (factor loading 0.840); should protect the worth and interests of school students (factor loading 0.830); should communicate with children, understand and accept them, recognize their worth (factor loading 0.805); should have general ICT competence (factor loading 0.798); should organize various extracurricular activities (factor loading 0.769); should be able to discover the value aspect of academic knowledge and information and ensure that students understand and experience it (factor loading 0.757); should use psychological approaches in their practice (factor loading 0.713); should know how to organize excursions, hikes, expeditions, etc. (factor loading 0.759); should organize educational activities that take into account cultural, gender, age, and individual differences among children (factor loading 0.713); should use methods for increasing cognitive and learning motivation (factor loading 0.707); should form communities for children and adults (factor loading 0.747); should create multigenerational study groups of children, their parents, and teachers (factor loading 0.619).

The second factor consists of 7 items: should know the standardized methods of psychodiagnostics of personal characteristics and age features of students (factor loading 0.842); should develop and implement individual educational programs for students (factor loading 0.759); should know the methods of objective assessment of knowledge and characteristics of students (factor loading 0.751); should evaluate subject and personal learning results (factor loading 0.747); should apply modern psychological and pedagogical technologies in their work (factor loading 0.656); should use inclusive practices when working with children (factor loading 0.619); should know the standardized methods of psychodiagnostics of personal characteristics and age features of students (factor loading 0.692).
The third factor consists of 2 items: should apply project-based, experimental, problem-based learning, etc. (factor loading 0.830); should cooperate with other teachers and other specialists in solving educational problems (factor loading 0.735).

The third factor is interpreted as promotion of project-based learning with the involvement of pedagogical teams in project-based educational activities, which is important for the implementation of the metadisciplinary approach.

Therefore, we can say that the conclusions obtained during the theoretical review of the literature, were confirmed in the results of the empirical part of the study.

4 Conclusions

Based on the theoretical analysis of scientific publications and empirical results of the study of the professional profile of a modern teacher in the regional system of secondary education, we can make a number of conclusions.

1. In modern publications of the subject field under study a number of topical discussion points have been identified:
   – development of methods, techniques, pedagogical technologies to effectively ensure the results of the educational process;
   – active use of digital resources and digital learning tools;
   – development of teachers' emotional competence and skills of using diagnostic tools to determine the socio-psychological context of learning.

2. The factor model describing the relevant professional competence profile of a secondary education teacher is represented by 3 factors:
   – high professional knowledge of pedagogical techniques and methods of teaching, including digital methods, that consider the positive nature of social educational practices and learning motivation of students;
   – orientation to the socio-psychological context of pedagogical activity and knowledge of ways to include all categories of students in the educational process through the development of individual training programs;
   – promotion of project-based learning with the involvement of pedagogical teams in project-based educational activities, which is important for the implementation of the metadisciplinary approach.

The conclusions obtained in the theoretical and empirical part of the study can be used to develop directions for improving the process of training and professional development of teachers to work effectively in the system of secondary education of the Stavropol Krai and Southern Russia.

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