

Integration Processes as a Basis for Modernization of Secondary Vocational Education Institutions: Directions, Resources, Management Specifics

Elena Mikhailova^{1,*} Tatyana Lozhkina^{2,a} Elena Azbukina^{3,b}

¹Tomsk State Pedagogical University, Tomsk, Russia

²Tomsk Basic Medical College, Tomsk, Russia

³Tomsk Regional Institute for Advanced Training and Retraining of Educators, Tomsk, Russia

^aEmail: tu.lozhkina@gmail.com

^bEmail: azbelena@yandex.ru

*Corresponding author. Email: elenanmikhailova@yandex.ru

ABSTRACT

Integration processes are the basis for modernizing professional education both globally and in Russia. The present article is aimed at describing current trends in the process of modernization of Russian secondary vocational education and the authors' idea on how to improve the activity of an individual professional educational institution - Tomsk Basic Medical College - in this direction. In order to frame the concept of the transformation of the secondary vocational education system, several methodological approaches were applied, including the system, contextual and competence ones. Experimental activity implied intra-university integration, integration between student and teaching communities, and integration with employers and educational institutions. For the purpose of coordination and management, a new methodological structural unit - organizational and methodological department - was established. The combination of internal and external integration processes has ensured improved key performance indicators of Tomsk Basic Medical College and has proved the authors' system of secondary vocational education transformation to be successful.

Keywords: integration processes, integration, secondary vocational education and training system, educational institutions, development

I. INTRODUCTION

At the present day, secondary vocational education forms an essential element of the Russian system of continuous education, which trains skilled workers and performs social, personal, professional and educational functions. The system of vocational education and training is currently undergoing profound structural transformations associated with education quality improvement and search for forms, methods and means of raising students' professional competences under the conditions of globalization, integration of socio-economic processes, scientific, technical and political changes. However, even though the system has a distinct advantage - the opportunity for students to combine general and vocational education, the insufficient level of educational, fewer chances of further admission to universities and lower status value of this stage of education negatively affect its attractiveness. [1]

In addition, as it has been shown by experiments, "about 40% of graduates of secondary vocational education and training institutions do not work in line with their qualification. They tend to occupy positions that require lower qualification in comparison with what they attained through training, and, correspondingly, offer lower salaries than what could actually accrue to them" [2]. Although the authors of the present article do consider the need for developing vocational guidance, they also highlight that the Russian system of secondary vocational education and training itself should also be modernized.

II. INTEGRATION AS A TREND IN MODERNIZING EDUCATION

It is of high importance not only to reverse negative trends, but also to map out constructive radical transformations that should be achieved through the educational process, such as the implementation of current WorldSkills standards, distance learning and e-learning technologies, the introduction of new

qualifications and branches of study, the development of new competencies, etc. As evidenced in practice, the success of the transformations carried out is only possible if the two processes within the system - external and internal - are congruent. Internal transformations in the education system should adhere to all external socio-economic guidelines, as current economic and social conditions bring about the transition to the fourth industrial revolution, which entails new production technologies, new consumption domains and services both worldwide and in Russia. The growing interest in integration and its reception are primarily conditioned by the following factors: rapid social change, new economies, labour mobility, rise in unemployment and social strain such as migration, preparation for employment in receiving states, etc. [3]. This trend is reflected in the transformation of national educational systems, which encourages politically motivated career and education choices and teaches students and the working population to face uncertainties of the future [4].

Today, in the measure never given before, the secondary vocational education and training system is required to train new-breed professionals, who apart from performing their labour functions are also capable of carrying out complex production tasks and projects within multi-disciplinary teams. Not only does it take professional competencies but also over-professional ones alternatively referred to as soft skills. New opportunities open up for the system of vocational education and training, including the combination of production, research and educational activities and joint use of material and manpower resources in order to train future professionals that meet modern requirements of employer companies [5]. In this context, the integration principle and intensification of integration in education, science and production in particular are becoming a cause of major concern.

The present research is aimed at studying the impact of integration processes on framing a new concept of modernization of secondary vocational education and training in Russia and, eventually, their effect on the activity of an individual educational institution (modernization directions, resources, development of a new management structure of a secondary vocational education institution).

The article is organized as follows: the first part presents the overview of conceptual approaches, as well as different viewpoints on integration processes in vocational education and their impact on the modernization of the system of vocational education and training. The research part of the paper discusses applications, taking into account the effect of integration processes on the development of an educational institution (by the example of a medical secondary vocational education institution (college).

The foundation for framing the concept of vocational education transformation (its goals, essence, functions, principles and structure) is laid by the system, contextual and competence-based methodological approaches. According to N.S. Iskrin, T.A. Chichkanova, Z.F. Rakhmonzoda, R.D. Davlatov, the system approach is grounded on the relationship and interdependence of all subsystems of an educational institution, as well as on its dependence on the external environment [6, 7]. Following the theory of social management, an educational institution can be considered as a unity of its subsystems, which in their turn are organically connected with the external environment.

Integration processes in Russian education are predominantly conditioned by external factors, which are related to education development both on a global scale and at the level of individual educational institutions. The dominant trends in the development of the Russian education system should include:

- bringing the quality and level of education up to global educational standards at all stages of education; applying adequate procedures, tools and means of educational quality control, including a comprehensive system of indicators;
- adjusting the content and structure of the national education system in accordance with international standards;
- considerably increasing teachers' and students' academic mobility; providing conditions for increasing the export and import of technologies, knowledge and educational services.

Integration processes in professional education become the subject of research, the comprehension of which gives rise to new goals of professional education, new means of attaining them, and new interaction mechanisms. The main point of integration in the system of professional education is ensuring its consistency and systemic characteristics based on the concordance of values and ambitions.

Russian researchers, Yu.A. Lukin in particular, consider integration to be the process of combining isolated parts (elements) into a new unity. In this context, the process of creating a qualitatively new system through joining two or more systems, structural elements and functions in one unity is coming to the forefront. As a result, the efficiency of the integrated system substantially exceeds the overall efficiency of all the elements before integration. Thus, following Yu.A. Lukin, integration is a process, which in its broader sense means development, as it joins previously independent elements and further forges and strengthens their links. Moreover, integration reveals the result of the interaction between previously

independent elements, the result that can be either intermediate or concluding [11].

The procedure of integrating educational institutions rests on differentiation and diversification: structuring the system of professional education into stages and levels, a variety of education programs and forms to organize the educational process, a range of types of educational institutions, etc. Integration processes in Russian education are primarily conditioned by external factors and related to education development both on a global scale and at the level of individual educational institutions.

A distinction is made between external and internal integration. External integration implies bringing together the activity of different actors – scientific institutions, educational institutions and production; different types of educational institutions; and different fields of science or academic disciplines. Internal integration presupposes integrating elements within a certain activity, science field or discipline.

Education can integrate with different agents, including scientific institutions, production, etc. This presupposes joint utilization of the potential of educational, scientific and industrial organizations aimed at joint and mutually beneficial activities, such as scientific research, development, etc. External integration is understood as “organic introduction of the education system into the activities that are non-specific to it, previously performed by other agents and social institutions” - culture, health care, local authorities and government, etc. It should be emphasized that these days, educational institutions are becoming centres for consolidation of resources of other social institutions, thereby providing opportunities for lifelong learning and disrupting the associated social boundaries [12].

According to the theory introduced by V.S. Bezrukova, in order for the integration between a vocational education institution and a company to be considered “the highest form of interaction”, it should have the following characteristics: “indissoluble relation between integration elements, new objectivity - a new mono-object, new functions of interacting elements” [12]. Additionally, the important aspects of integration include the goal of integration, mutually beneficial activities, and its target result.

In the system of vocational education and training, external integration with the labour market and particular employers is of the utmost importance. External integration with the labour market provides extensive vocational education and brings it up to the needs of a student and the requirements of the labour market; helps to overcome the inward-looking attitude of educational institutions, establishes meaningful interactions between students and the labour market and creates integrative complexes for vocational training [13].

For the purposes of the present research, external integration of a vocational education institution and employer companies is the most relevant type of integration and modernization factor. It entails the following benefits:

- Joint technology development that ensures progress at each stage of implementation (in accordance with the actual targets and strategic goals of the company) ;
- Integration of professional activity with life-long learning;
- Training competitive graduates who are able to master new subject areas and gain new skills [14].

In practice, experience suggests that the interaction of students with the working employees of companies when studying is the most powerful tool for students’ professional socialization. It allows them to project their future professional activity and develop patterns of future professional behaviour, which altogether contributes to the development of professional competences essential for successful professional activity of recent graduates. One of the mechanisms of external integration between the institutions of secondary vocational education and companies can be the mentoring system, which is currently being reinvigorated. Of course, applying the mentoring system as a form of such interaction is not unprecedented; however, its current revival and redefining its value-semantic meaning is likely to become the goal of integration between an educational institution and a particular employer company. The development of a mentoring system as a form of integration implies establishing common integrative goals for the agents, selecting mentors, assigning mentors to students (mentees), defining new responsibilities of mentors and mentees, and consolidating the intermediate or concluding results of integration.

Development of training programs for future professionals and advanced training programs for working professionals who already demonstrate tangible product of their labour, presents the form of external contextual integration of vocational education institutions and companies. Such integration takes certain efforts from each of the agents, as in order to design educational programs that meet employers’ requirements, it is critical to analyse the functions and objectives of a professional’s activity, and to identify the competencies essential for their achievement [14]. This requires the agents’ agreement on goals, actions and outcomes. From our perspective, achieving contextual integration, which will result in the development of training programs that meet employers’ requirements is one of the most challenging integration

tasks between a vocational education institution and a company.

Most certainly, a high priority type of external integration activity for a vocational education and training institution is its integration with educational institutions of different levels - schools, higher education institutions and other vocational education institutions.

The integration between vocational education institutions and schools contributes to their shared

views and prepares school students for social self-identification and conscious career choices. Integration with vocational education institutions and higher education institutions provides the opportunities for mutually beneficial exchange and application of all types of resources ranging from material resources to manpower and intellectual assets. Integration between educational institutions of different levels takes place in the form of joint educational programs (see "Table I").

TABLE I. INTEGRATION TYPES CONTRIBUTING TO THE DEVELOPMENT OF A VOCATIONAL EDUCATIONAL INSTITUTION

Integration type	Integration agents	Integration forms	Integration mechanism		
			Target	Interaction type	Outcome
<i>External</i>	Educational institution of the system of vocational education /employer company	Mentoring	Increasing the employment rate of a particular company	Creating a pool of mentors, assigning students to mentors by contract, defining functions of mentors and mentees	1.Increase in employment rate of a particular company – “follow the mentor”; 2.Faster adaptation in the company
	Educational institutions of the system of vocational education/ educational institutions of different levels (schools, vocational educational institution, higher education institutions)	Contextual integration	Improving education quality accounting for employers’ requirements	Coordination of labour functions essential to perform production activities	1.Engagement in labour activity; 2.Minimization of costs associated with re-training; 3.Satisfaction with the quality of students graduating.
		Joint educational programs	Improving education quality	Accessing the missing resources through contractual arrangements; implementation of joint educational programs	1. Satisfaction with the received education; 2.Efficient resource management
<i>Internal</i>	Teachers majors, professional disciplines and humanities	Cross-disciplinary integration	Shared views and understanding of the essence of students’ future professions	Agreement between teachers on teaching materials. Conducting complex student assessment. Organizing complex professional competitions between students.	1.Employment in line with received education for the period up to 3 years; 2. Satisfaction with the educational process
	Teaching community and other employees of an institution of the vocational educational system	Integration within the teaching community	Building a team of like-minded professionals	Various forms of mentoring	Engagement of the teaching staff in the accomplishment of strategic objectives and implementation of projects of a vocational education institution
	Teaching staff, other employees, students	Integration within a vocational education institution		Implementation of different level projects (federal, regional)	Reputation of an educational institution on the market endorsed by the results of independent assessment

It should be emphasized that not only external but also internal integration, taking place within a secondary vocational education institution is an important condition for its modernization. Firstly,

internal integration focuses on integrating the content of education by means of establishing cross-disciplinary relations, which in its turn provides a multi-faceted approach to mastering course content. Ideally, cross-

disciplinary integration of vocational education should take place through the application of both traditional and modern teaching technologies that base on the principles of collaboration and teacher-students creative interaction, the consonance of cognitive and research activity that reflects the content and social implication of future professional activity [9]. Internal cross-disciplinary integration contributes to the development of integration processes within the teaching staff and between teachers of professional disciplines, teachers of humanities and teachers of majors (professional modules). The key objective of cross-disciplinary integration is to formulate the content and social implication of a future career by modelling various professional situations. A theory of contextual education by A. Verbitsky suggests that creating a system of case problems allows to understand the context of future profession through modelling professional activity and opens up opportunities to integrate knowledge across disciplines in order to handle modelled situations [9]. Cross-disciplinary integration aimed at the development of students professional competencies and improvement of education quality can be naturally complemented by providing a special educational environment that would simulate future professional activity [9], [10]. Therefore, cross-disciplinary integration is expected to facilitate transformation of educational activity into professional activity, which will result in improved vocational education quality.

Cross-disciplinary integration is organically connected with another type of internal integration - *integration within the teaching community*. Following the traditional approach, each teacher organizes their activities independently and in reliance on their professional experience, knowledge and vision of the subject and their responsibilities. The move towards inter-staff integration should ensure building a team of like-minded professionals. [15]

The principal types of teacher mentoring can include the following:

- A senior teacher mentoring a junior teacher. A senior teacher guides their junior colleague, facilitates their adaptation in the team, transfers corporate values and teaching traditions of the educational institution, and assists in developing working relationships;
- A high-achieving teacher mentoring a teacher who experiences difficulties in teacher-students interaction, self-identification, etc.;
- An innovative teacher mentoring a conservative teacher. A junior, innovative colleague assists a conservative teacher in mastering new teaching technologies, digital competencies, teaching based on WorldSkills standards, etc.;
- An experienced subject teacher mentoring a junior subject teacher. This mentoring type suggests that an experienced subject teacher provides methodological support in a specific subject (attending each other's lessons, designing syllabus and choosing teaching and learning materials together, etc.).

One more form of internal integration to be mentioned is *integrating students and teaching community within a vocational education institution*. This integration form is also based on mentoring by utilizing teachers' and students' potential through establishing collective forms of interaction and reciprocal learning. This form of internal integration is closely connected with integration within the teaching community. It develops the pedagogy of working together [16], which is characterized by creative cooperation and teacher-students dialogue on teachers' side, and students presenting themselves as social, moral, professional and cultural persons on students' side.

Provided conditions for personal and professional development for both teachers and students, their relationship with the external environment that encourage personal and professional development of the entire staff of a vocational education institution and the subsequent reinforcement of the image of an educational institution on the market are the most important result of addressing integration processes (external and internal) and their impact.

In 2018, as part of a scientific experiment, Tomsk Basic Medical College started implementing the idea of addressing integration processes. The previously existing methodological service of the institution and its functions were fully revised and transformed into a new structural unit, aimed at coordinating external and internal integration.

III. CONCLUSION

To conclude, integration is one of the most significant features of long-awaited fundamental changes in the system of secondary vocational education and training. It can have two directions - external and internal.

External integration implies interaction with employers and educational institutions of different levels; it strengthens the position of a vocational education institution and contributes to its development.

Internal integration is implemented through cross-disciplinary integration, inter-staff integration, integration of teachers and students within a vocational education institution. It contributes to improving the quality of professional education.

Integration as a product considers the system of secondary vocational education and training as responding to the challenges of the modern world. The development of vocational education and training is currently impossible without planning, designing and practicing integration processes, and without the introduction of joint activities, methodological approaches (systemic, contextual and competence-based) and management techniques (strategic management and management by objectives) into the activity of vocational education institutions.

programs of general education, additional education and vocational education, and with the application of the best practices of experience exchange between students / Ministry of Education of the Russian Federation. Moscow, 2019. 267 p.

- [15] Prozumentova G.N. Methodological principles of the School of joint activities. School of joint activities: conception, projects, practice of development. Ed. by G. N. Prozumentova. Tomsk, 1997. Book 1. Ch. 1. Pp. 10–21.
- [16] Sagdatullin A. M. Integration of science, education, production and business as a basis of increase in efficiency of regional system of professional education // Bulletin of the Adygha State University. 2014. No. 1 (132). Pp. 48–52.

References

- [1] Koreshnikova Yu. N., Zakharov A.B., Dudyrev F.F. Differences in General Education in Vocational and High Schools: Characteristics of Teachers and Teaching Practices in Mathematics. Educational Studies. Moscow, 2018. No. 2. Pp. 228–253.
- [2] Dudyrev F. F., Romanova O. A., Travkin P. V. Employment of graduates of the vocational education system. Educational Studies. Moscow, 2019. No. 1. Pp. 109–136.
- [3] Fernando M. Reimers (2020) Educating Students to Improve the World, Springer Briefs in Education. Available at: <https://doi.org/10.1007/978-981-15-3887-2>
- [4] Sarojni Choy, Gun-Britt Wärvik, Viveca Lindberg (2018) Technical and Vocational Education and Training: Issues, Concerns and Prospects. Springer, Singapore: Springer Nature Singapore Pte Ltd. Howard, P. Available at: <https://doi.org/10.1007/978-981-10-8857-5>
- [5] Veys T.P. Integration as a factor in the development of modern education. Bulletin of the Educational Consortium Central Russian University. Economics and Management Series. 2016. No. 8. Pp. 83–84.
- [6] Iskrin N.S., Chichkanova T.A. The systematic approach to management in education. Education and science. 2015. No. 1 (120). Pp. 7–21.
- [7] Rakhmonzoda Z.F., Davlatov R.D. System approach to optimization of management of educational institution. Baltic Humanitarian Journal. 2017. Vol. 6, No. 4 (21). Pp. 383–386.
- [8] Verbitsky V.A. Contextual education in a competence-based format. (Competence-based approach as a new educational paradigm). Issues of Social - Economic Development of Siberia. 2011. No. 4 (6). Pp. 67–73.
- [9] Gustyakhina V.P. Contextual approach in the training of future teachers. Modern Problems of Science and Education. 2009. No. 2. Available at: <http://www.science-education.ru/ru/article/view?id=1060> (Access date: March 5, 2020).
- [10] Lukin Yu.A. The essence of pedagogical integration. Perspectives of Science and Education. 2019. No. 2 (38). Pp. 68-83. doi: 10.32744 / pse.2019.2.6
- [11] Bezrukova V.S. Dictionary of New Pedagogical Thinking. Yekaterinburg, 1996. 93 p.
- [12] Minina V.N., Basov N.V., Demidova I.D. Integration complex as a form of network interaction between science, education and business. Journal of Sociology and Social Anthropology. 2012. Vol. 15. No. 5. Pp. 307–325.
- [13] Salakhov I.R. The subjects of professional education: the models of interaction // Herald of Vyatka State University. 2011. Pp. 52–55.
- [14] Methodological guidelines (target model) on mentoring students for organizations that carry out educational activity under the