

VII International Forum on Teacher Education

Development of the Methodological Competence of Students in the Distance Learning Environment

Aleksei Yu. Alipichev* (a), Natalia A. Sergeeva (b), Olga V. Takanova (c)

(a), (b), (c) *Russian State Agrarian University – Moscow Timiryazev Agricultural Academy, 127550, Moscow (Russia), 49 Timiryazevskaya street*

Abstract

The active introduction of distance learning tools into university practice has made lecturers rethink their work procedures and quickly adapt to new extreme conditions. The modern labour market is constantly technologically progressing, so prospective employees have to think fast, creatively, comprehensively, scientifically, methodologically, and effectively. The research goal is to analyze and subsequently optimize the means of developing methodological competence of students on the example of the undergraduate course “Foreign Language” taught in a non-linguistic university, namely, Russian State Agrarian University – Moscow Timiryazev Agricultural Academy. The main groups of methods used in the study are cognitive-synthesizing, theoretical, and empirical. Research methods include the analysis of scientific and methodological literature on education digitalization, observation of teaching experience, and survey. The authors conducted a pedagogical experiment to verify theoretical provisions. The results prove that graduates should think independently, be ready for responsible actions in the professional environment, strive to acquire new technologies, design their creative solutions, and use innovations. The study proposes to consider the algorithms of methodological competence development in teaching and vocational education and training (TVET) of students by the means of the course “Foreign Language” in the distance learning environment. The study involved 30 first- and second-year bachelor students. The authors suggest enhancing the course “Foreign Language” according to the proposed guidelines. In particular, the modification requires emphasizing the career guiding component, active use of interactive training methods, extracurricular research activities, and the extended range of learning and research tools used in the distance learning format.

Keywords: methodological competence, foreign language, non-linguistic university, blended learning, distance learning.

© 2021 Aleksei Yu. Alipichev, Natalia A. Sergeeva, Olga V. Takanova

This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Published by Kazan Federal University and peer-reviewed under responsibility of IFTE-2021 (VII International Forum on Teacher Education)

* Corresponding author. E-mail: al_new2003@mail.ru

Introduction

Informatization, globalization, and digitalization of all spheres of life form a new knowledge-based society (Siman & Zhilyaeva, 2020). This type of the society requires an education system that provides training for highly qualified specialists participating in lifelong education, characterized by different strategies, models, and technologies (Krupchenko & Kuznetsov, 2017). Today's labor market needs specialists who are not only competent in a certain area but also possess a set of personal characteristics necessary to effectively solve professional tasks. This fact indicates the need for the comprehensive development of methodological competence in students in an interdisciplinary context. This goal can be achieved, in particular, by means of the "Foreign Language" course offered in a non-linguistic university, as a rule, during the first and second years of study. The "Foreign Language" course, due to its communicative nature, offers enough means to form methodological competence. Educational methodologists claim that this course is considerably more practical and profession-oriented and it implies the study of efficient project-writing, debating, and presentation of strategy design, which stimulate students to achieve professional methodological mastery (Kosyrev, Kubrushko, & Kuznetsov, 2009). Today, in line with the pandemic transformation, foreign language training is implemented rather effectively in the distance learning format (Maksaev, Vasbieva, Sherbakova, Mirzoeva, & Kralik, 2021). Therefore, studies aimed at finding effective training technologies and ways of their optimizing in accordance with the requirements of scientific and technological progress and the level of development of modern technologies, including the digital ones are highly relevant today (Fleaca & Stanciu, 2019; Ivanov, Cobo, & Kosonogova, 2020; Zain, 2020).

Purpose and objectives of the study

The research aim is to analyze and subsequently optimize the means of developing methodological competence on the example of the undergraduate course "Foreign Language" taught in a non-linguistic university, Russian State Agrarian University – Moscow Timiryazev Agricultural Academy (Timiryazev University).

Literature review

When hiring young specialists, employers face serious problems – yesterday's students lack practical professional experience and demonstrate a low level of professional adaptability (Kubrushko, Kozlenkova, Mikhailenko, & Nazarova, 2018). The use of a competency-based approach in education may help to solve this problem (Moldovan, 2020). Competence reflects the ability of a professional to apply knowledge, skills, and personal traits to perform successfully in a particular area (Zeer, Tretyakova, Bukovey, & Scherbina, 2019).

Methodological competence is the integral characteristic of a professional; it implies the theoretical and practical readiness to carry out professional activities in a creative way (Doronicheva, 2018).

Foreign and Russian pedagogical studies interpret the content and structure of the methodological competence in different ways. While methodological competence is defined as the foundation of a methodological culture, methodological culture is the highest level of the methodological performance of an individual, who is motivated to conduct research activities, demonstrating reflection and flexibility in using methods and approaches to creatively solve different tasks (Doronicheva, 2018). Korshunova (2012) defines methodological literacy as theoretical knowledge about the methods and approaches of scientific research and as the basis of methodological competence.

According to Shipilina (2012), methodological competence is a set of knowledge, skills and abilities required for the implementation of professional activities in its predictive, projective, methodological, organizational, and expert aspects. At the moment, graduates are not always properly trained to plan their professional activities (Kozharinov, Kalugina, Ryabchenko, Kolobkova, & Kralik, 2021). However, while the modern labor market conditions require specialists who are capable of self-determination and conscious choice of their professional activities, most graduates do not even know how to perform their professional duties (Kozharinov et al., 2021). This contradiction determines the problem of the development of methodological competence in university graduates.

Kadulina (2005) believes that methodological competence features polyfunctionality, non-algorithmicity, complex organization, and multidimensionality. Each of these elements includes both mental processes and intellectual skills.

Considering the term “methodological competence”, Adolf (2016) analyses knowledge and skills that are included in its composition. The most challenging components are conscious acquisition of knowledge, the ability to appeal to various contexts and choose appropriate scientific methods, compare them to find differences, and determine an adequate approach. Relevant abilities also include checking the reliability and validity of statements, considering the logical and consistent structure of research activity, providing comprehensive and rational grounds for stated points of view, referring to relevant literature sources, and identifying highly unreliable or irrelevant information. The above components are combined into an integral set of structured interdisciplinary knowledge, skills, and high-level competences.

Smirnova (2008) holds the point that methodological competence demonstrates the student's acquisition of a certain level of education. Knowledge, skills and abilities are taken as criteria, including world outlook, psychological qualities of a person, ability to produce new knowledge and acquire personal values.

Smirnova (2008) concludes that a methodologically competent specialist has creative capacity, the ability to find an innovative approach to solving problems, and the need for self-improvement. Obtaining ready-made theoretical knowledge leads to passive perception; it fails to develop the ability of scientific reasoning, reflection, critical thinking, and creative organization of one's own activity. All this is acquired by a person as a result of practice and research activity. Therefore, research activity is a pre-requisite for the development of methodological competence.

Adolf (2016) believes that by publishing papers in various journals and speaking at scientific conferences, researchers get an opportunity not only to develop their methodological competence but also to confirm their hypotheses and analysis results, which significantly increases their value in scientific community and contributes to professional self-implementation.

Experts stress that in online learning, the habitual set of tools that the teacher can use to organize and stimulate the educational activities of students is sharply limited and radically changed (Wu, T. T. & Wu, Y. T., 2020). Still, we have to follow the algorithms to ensure the development of methodological competence in compliance with the goals set.

At the first stage, it is necessary to work out the algorithms of invariant actions. Next, select methodological knowledge and skills that determine the graduates' readiness to ensure continuous self-education and creative activity. Further on, activate their ability to apply knowledge in practice. If students can establish relevant interrelations, actualize the acquired knowledge and develop ways of implementing innovative activities, they are likely to have a certain degree of the development of methodological competence. This level of methodological activity mastery requires a set of skills related to analysis, synthesis, comparison, abstraction, generalization, and concretization.

Based on the analyzed literature on the problem of methodological competence, we have identified its main components: flexibility of thinking; self-reflection; finding effective and creative solutions to professional problems; self-education; self-organization; analysis and synthesis of the obtained data; critical thinking; linking theory and practice; organizing and conducting research activities.

In the modern education system, the Bachelor's degree level is followed by the Master's degree. The principal distinction of the Master's program is the researcher training. If students are not ready for research activity and do not possess basic methodological knowledge, this indicates their methodological incompetence. Consequently, one of the goals of the Bachelor's training is developing readiness for research activity.

Later on, at the Master's training stage, students improve their previously acquired knowledge, skills, and abilities by studying specific topics in their subject area, participating in research activities, and writing a Master's thesis.

The “Foreign Language” course is a compulsory component of the Federal State Educational Standard of Higher Education for the Bachelor curriculum of Training area 44.03.04 – Vocational education and training (sector-based), training profiles “Economics and Management,” “Information Technologies in Education” (academic Bachelor degree).

The “Foreign Language” course syllabus defines its purpose as developing communicative competence to carry out professional activities in conditions of cross-cultural professional communication. According to the nationally recognized methodologists, the recent modernization of the structure and content of the course “Foreign Language” was backgrounded through the analysis of the cutting-edge requirements of the stakeholders in the TVET teacher training programs. Thus, the course proves to contribute considerably to the graduates’ teaching and methodological skills (Krupchenko & Kuznetsov, 2017).

Learning outcomes of the course include the development of Universal Competence-4 (UC-4). Students must conduct a well-grounded discussion on the topics studied using the appropriate vocabulary, clichés, and other appropriate means of expressing information; observe the rules of communicative behavior; analyze and compile texts of different styles depending on the sphere of communication. Moreover, students should be ready for business communication in oral and written forms in the state language of the Russian Federation and a foreign language (languages).

Also, after mastering the course, students are supposed to work in a group and individually, exchange information, and resolve issues of cross-cultural and interpersonal interaction. The process of using a foreign language, both professionally and socially, becomes the basis for solving problems. Self-organization and independent learning are the primary abilities required for the continuous professional self-improvement of a specialist.

The final assessment applies not only to general knowledge but also to students' personal qualities, as well as some components of methodological competence. Using discussions, presentations, and role-play activities related to socio-cultural and professional issues, teachers can assess the development of the prescribed competence.

Methodology

The study is guided by the personality-oriented and competence-based approaches. For solving the problem of developing students' methodological competence, the following research methods were used: cognitive-synthesizing (observing psychological and pedagogical experience); theoretical (course designing and curricula planning); empirical (observation, pedagogical modeling, and questionnaire surveying). The theoretical provisions were verified in a pedagogical experiment. The obtained data were statistically processed and interpreted using the expert assessment method. The study was carried out in Russian State Agrarian University – Moscow Timiryazev Agricultural Academy by the academic staff of the Department of Russian and Foreign Languages. The study involved 30 Bachelor students of 1-2 years of study (Training area 44.03.04 – Vocational Education and Training (sector-based)) and 12 lecturers. The survey questionnaire was approved by, and the survey itself was carried out under the guidance of the Methodological Board of the Faculty of Humanities and Pedagogy. Informed consent was obtained from all individual participants included in the study. The survey data determined the range of the most effective means to develop methodological competence, taking into account the latest trends in teaching methodology.

Based on the previously considered content and structure of methodological competence, we can single out specific components to be formed in the graduates of Training area 44.03.04 – Vocational education and training (sector-based). The survey reflects the critical elements of this competence developed through the “Foreign Language” course. The study aims to identify the need to optimize the development of methodological competence and determine positions that require more careful examination.

We assume that students should assess their level of readiness and motivation for research activity. Students were offered 11 questions based on the content of methodological competence and the UC-4 competence and its indicators, including those developed through the “Foreign Language” course (Table 1).

Table 1. Survey questions

No.	Questions
1	Have you participated in research activities in the framework of the “Foreign Language” course?
2	Have you encountered any difficulties in your research while taking the “Foreign Language” course?
3	On a 10-point scale, rate your willingness to learn a foreign language on your own?
4	In the process of learning a foreign language, have you gained experience in writing an essay, research paper, participating in a project, a discussion, or a business game, preparing a presentation?

- 5 What types of activities were insufficiently implemented while taking the “Foreign Language” course (writing an essay, research paper, participating in a project, a discussion, or a business game, preparing a presentation)?
 - 6 Have you mastered scientific and professional vocabulary in a foreign language?
 - 7 Do you have sufficient command of a foreign language to conduct research activities?
 - 8 Do you know how to choose suitable sources in a foreign language?
 - 9 Are you ready to participate in innovative projects in a foreign language?
 - 10 Has learning a foreign language, in your opinion, contributed to the development of your abilities to carry out research activities (flexibility of thinking; self-reflection; effective and creative solution of professional problems; independent learning; self-organization; analysis and synthesis of the data obtained; critical thinking; connecting theory and practice; organizing and carrying out research activities)?
 - 11 What abilities do you think you will need for the successful implementation of professional activities (flexibility of thinking; self-reflection; effective and creative solution of professional problems; independent learning; self-organization; analysis and synthesis of the data obtained; critical thinking; the ability to connect theory and practice; organizing and carrying out research activities)?
-

Results

According to the survey results, it was revealed that at this stage of training, students have certain knowledge and skills for creative problem solving, reflection, continuous education and further professional self-realization.

Of particular interest is the result of comparing answers to questions 10 and 11, where the respondents had to choose which of the components of methodological competence were developed while taking the “Foreign Language” course, and then indicate which of them will be required to carry out professional activities. Table 2 demonstrates that self-education and self-organization, critical thinking, reflection, the ability to connect theory and practice are most effectively formed. Nevertheless, we can conclude that the declared indicators can be significantly improved.

Table 2. Relationship among the survey results (replies to questions 10 and 11 statistically processed using the Excel program and subjected to expert interpretation)

Components of methodological competence	Components of methodological competence developed mainly through the "Foreign Language" course	Components of methodological competence relevant to the professional activity
---	--	---

Flexibility of thinking, organizing and carrying out research activities	22.5%	57.5%
Self-reflection	45%	47.5%
Effective and creative solution of professional problems	10%	67.5%
Independent learning	72.5%	55%
Self-organization	52.5%	70%
Analysis and synthesis of the data obtained	32.5%	45%
Critical thinking	37.5%	60%
Ability to connect theory and practice	45.2%	40%
Organizing and carrying out research activities	2.5%	25%

Considering the main types of classroom activities, enabling the students to gain experience in the practical use of a foreign language, we can state that not all students tend to participate in discussions, role-play activities, business-based simulations, and projects actively enough. These are precisely the types of activities that most effectively form the necessary communicative and research skills in the conditions of not only an intentionally arranged situation but also that involving a certain amount of improvisation. Thus, the survey results indicated the lack of a valid communicative component, improvised and spontaneous speech tasks in the classroom. It is worth noting that students show a desire and readiness to get immersed in a quasi-professional atmosphere, to present their knowledge and skills, as well as anticipate workplace problems that may arise in real life.

The respondents showed a high interest in activities such as writing essays and research papers. The introduction of such tasks into the education process allows students to familiarize themselves with topical issues, analyze what is happening nowadays, put forward their own assumptions on different topics, propose their arguments and solutions while making use of the scientific vocabulary, which is an integral part of a competent specialist.

However, Fig. 1 shows that students demonstrated a low level of awareness in this aspect.

Only 14% believe that they have sufficient command of the required vocabulary in a foreign language.

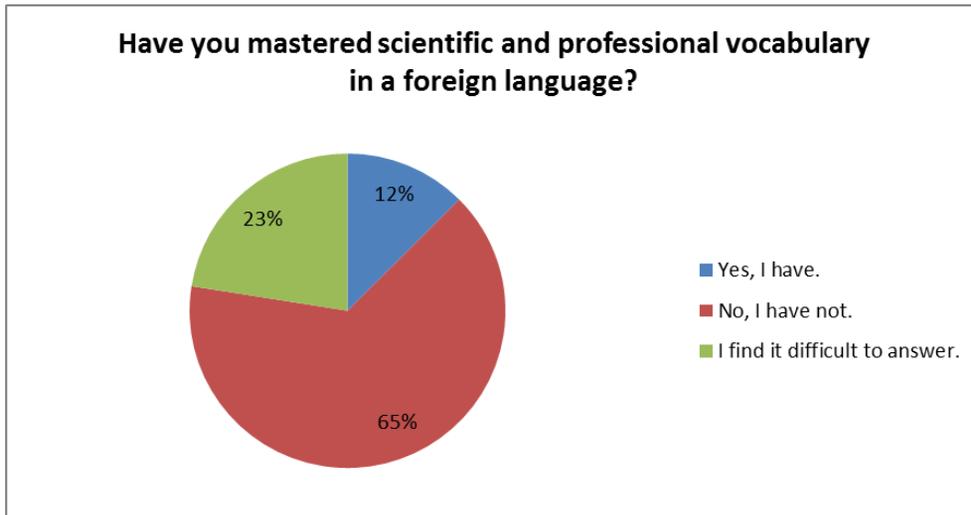


Fig. 1. Mastery of scientific and professional vocabulary

The most interesting trend is observed when analyzing the answers to the question about foreign language proficiency for research activities. As a result of studying the “Foreign Language” course, the readiness for research activities does not reach such a high level, which is clearly shown in Fig. 2. 75% of students believe that they do not have sufficient knowledge, and 15% find it difficult to answer. Such indicators may be associated with the fact that students are poorly competent in the use of a foreign language, and they are also not motivated to research activity. Therefore, attention should be paid to the development of students' motivation to carry out research activities.

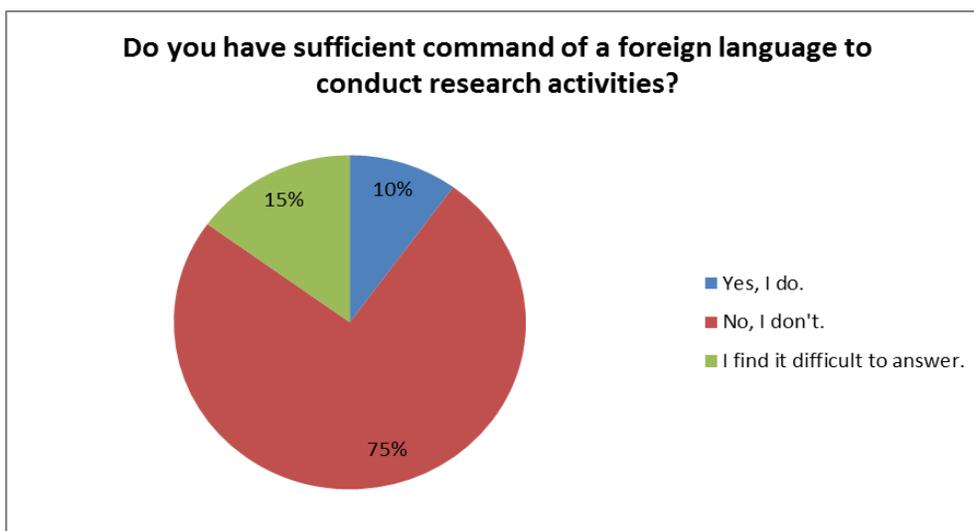


Figure 2. Mastery of a foreign language necessary to conduct research activities

It is necessary to increase the presented indicators since some graduates plan to apply for a Master's program, including study abroad options. Knowledge of a foreign language and research culture is an absolute advantage that makes a specialist competitive.

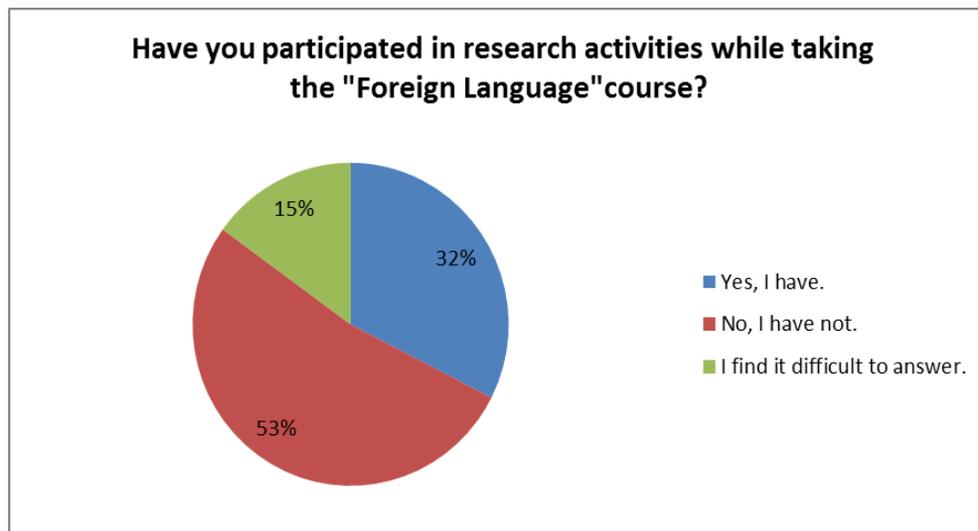


Figure 3. Participation in research activities while taking the "Foreign Language" course

During the survey, it was found that most of the students were not involved in various studies while taking the "Foreign Language" course. Nevertheless, even 1-2-year Bachelor students can actively participate in various projects, scientific competitions, and conferences in a foreign language, especially in the context of digitalization of education, which presents a huge number of distance learning opportunities to share their opinions even "without leaving home".

Important for the research is the provision that the course develops students' creative approach to finding solutions to the assigned tasks and at the same time, develops mastery of a foreign language. In general, the course has a beneficial effect on the general study atmosphere and provides for adequate conditions for both intellectual growth and the formation of an active, creative position and mobility.

Within the framework of this study, 12 foreign language lecturers were also interviewed. They had to offer the most effective types of activities for the development of methodological competence in the framework of the "Foreign Language" course.

According to the respondents, it is necessary to ensure the active use of such activities as role-play activities, discussion, analysis of research-focused practical cases, writing essays and research papers, and increase the number of tasks for working with audio and video texts, taking into account the wide-spread use of the distance and blended learning format.

Polls on the development of methodological competence give reason to believe that students have knowledge in the use of modern technologies, work with information sources, and are ready to build their own research capacity while taking the “Foreign Language” course. The data obtained helped to identify aspects that need improvement. The survey proved the relevance of optimizing the development of methodological competence in students of Timiryazev University by means of the “Foreign Language” course. The survey results have also served as the basis for drawing up methodological recommendations in the framework of this study.

Discussion

According to the study results, it can be concluded that it is necessary to improve the syllabus of the course “Foreign Language” for Training area 44.03.04 – Vocational Education and Training (sector-based) to optimize the development of methodological competence. This way, students will be able to acquire the knowledge, skills, abilities, and traits that they lack to achieve the appropriate level. Consequently, specialists with a higher level of methodological competence would be comprehensively trained.

At the moment, there are a large number of methods, the use of which develops the methodological range of opportunities available for students.

Methodological competence cannot be developed without empirical knowledge. According to the famous Dale cone, when learning with only visual and textual means, after two weeks, not more than 30% of the information presented remains in memory. In the simulation of real events during classes, this percentage rises. Namely, the likelihood of remembering what is simultaneously described, said, and done reaches 90% after a two-week period. Thus, it is very important to pay attention to the forms of work where students, individually or jointly, are directly involved in the process of practically applying their knowledge.

Methodological competence is best updated with the help of techniques requiring capacity building in analytical activities through the use of interactive methods, problem-solving tasks, projects, and creative assignments.

The process of developing methodological competence should take advantage of digital learning technologies, as they provide the most effective communication links between those who teach and those who learn. In addition, digital education is the best way to meet the needs of society for effective specialists.

The “Foreign Language” course allows students to obtain and apply fundamental knowledge in the target language and critically approach the learning process and study additional scientific and professional information in a specific context. Especially helpful here is the development of projects, participation in discussions and debates on professional topics. Students will be able to take on the role of a critic and get better familiarized with the peculiarity of the profession while solving problems using a foreign language.

Project activity includes all the components of methodological competence, ranging from the analysis and synthesis of the received information to effectively and creatively solving the assigned tasks. Within the framework of the classroom activities, it is worth paying attention to the development of projects in a limited timeframe and allowing students to present the final product of their actions and respond to spontaneously asked questions. This way, students will develop a high level of autonomy, creativity, flexibility and critical thinking, and communicative competence. In other words, there is maximum engagement in all aspects of speech and thinking activity necessary to develop methodological competence.

Conducting discussions and debates is an effective way to involve students in active, collaborative work as much as possible. Thus, a favorable environment is created. Students can learn to analyze and constructively discuss different points of view on the problem, putting forward new hypotheses without fear of making mistakes.

As the survey has shown, there is a lack of activities where students can practice their communication skills in intuitive thinking and alternative decision-making conditions. Discussions and debates contribute to the development of creative thinking, as they help the participants reach original solutions faster. Group discussion of topical issues is beneficial for motivating students to cooperate since all participants are involved in this activity.

One of the recommendations for improving the organization of independent work activities is assessing news, articles, and professional literature available to students after they have acquired basic methodological knowledge. It is necessary to present an oral analysis of a specific source, summarize the ideas presented by the author as an expert in the relevant field, and, finally, evaluate the functionality of the described data, hypotheses, and proposals. Accordingly, oral reports are more engaging and visual if delivered together with presentations made according to current digital trends.

When analyzing the research results, we found that students have a low level of motivation for research activities, which significantly influences the development of methodological competence. Conscious motivation to do research originates from the study process, which provides all the conditions for gaining experience in this field. Without expertise in such activities, there will be no desire to continue doing this further, which can be seen from the respondents' answers. Such an attitude will undoubtedly lead to high results with a clear goal, motivation, self-confidence, and performance satisfaction. It is essential to motivate students to effectively carry out research activities, especially those requiring a foreign language.

In our opinion, it is also relevant to provide conditions for students' extracurricular activities in a foreign language in a research context. It is worth visiting scientific events organized by Timiryazev University or any of the partner universities. These may include scientific conferences, lectures, academic competitions, TedTalks events in a foreign language, and discussion of challenging scientific projects in a foreign language in social networks with Russian and foreign students. Many activities are now more accessible due to the active introduction of remote sensing technologies. This extracurricular activity should be related to the subject matter covered during the classes and should comply with the principle of career guiding learning. Students' feedback is precious here.

The following are a couple of examples of study activities in a distance format aimed at the development of methodological competence:

1) group project work on the search for foreign language sources on a given topic with a discussion of the results, for example:

- analyze the methods and techniques of information retrieval and types of reading (using the information resource);
- carry out a research project in mini-groups – find at least three sources of up-to-date information in a foreign language on the topic: “Code of professional communication with colleagues from Russia” as a guide for foreign partners (using the discussion panel tool);
- discuss the search results in mini-groups, analyze the sources found, and offer the final list of recommendations for foreign partners (methodically arranged and creatively presented) (using the webinar tool).

2) pair work (making a thematic (analytical) review of foreign language sources on a given problem in a foreign language) with subsequent peer-review (editing) (using the chat tool).

Algorithm of actions:

- select foreign-language sources on the proposed problem (using keywords), for example, “Ways of individualizing organizational and pedagogical interaction between a teacher and students in a distance format”;
- write down bibliographic data of sources;
- make a plan and an abstract of the selected sources;
- produce a generalized analytical review.

Analytical reviews are peer-reviewed through the chat tool according to the following criteria:

- relevance of keywords and found foreign language sources to the problem under study;
- correct presentation of bibliographic data;
- completeness and adequacy of the information presented in a concise form;
- analytical comprehension of the information found and the practical utility of the results obtained.

Upon the completion of the activity, both participants meet online in a webinar and discuss their experience and provide mutual feedback.

Thus, the “Foreign Language” course can serve as a means of developing the methodological competence of students. However, the latter should demonstrate clear motivation, willingness to participate in various individual, pair, and group activities. They should also be ready to apply the skill developed in the course to do their independent research and analyze the obtained results.

As a possible limitation of the study outcomes, we must stress that the proposed methodology has been tested and approved only for full-time students. So we can claim that it basically applies to the full-time study format. However, the distance and hybrid formats require further study of the course possibilities with new task types and algorithms for individual and group learning activities.

Conclusion

The content of syllabi and study process in the "Foreign Language" course for Training area 44.03.04 – Vocational Education and Training (sector-based) can be improved based on the following recommendations to optimize the development of methodological competence: 1) emphasizing the career guiding component of the content of the "Foreign Language" course, taking into account specific features of the training area; 2) active use of such activities as role-playing, discussion, analysis of practical situations, and tasks for working with audio texts and video, taking advantages of the blended learning format; 3) providing conditions for extracurricular research activities of students in a foreign language; 4) the extended range of learning and research tools used, taking into account modern trends in education digitalization and the development of distance learning curricula.

The research results and the proposed methodological recommendations can be generalized to other subjects in the curriculum of Bachelor's training.

Funding

The authors have no funding to report.

Competing interests

The authors have declared that no competing interests exist.

Acknowledgements

The authors have no support to report.

References

- Adolf, V. A. (2016). Pedagogical search in the context of the formation of methodological competence. *Vysshee obrazovanie v Rossii*, 4, 156-160.
- Doronicheva, R. M. (2018). Methodological culture and aspects of education. *Aspekty i tendentsii pedagogicheskoy nauki : materialy IV Mezhdunar. nauch. konf.*, 4-9.
- Fleaca, E., & Stanciu, R. D. (2019). Digital-age Learning and Business Engineering Education – a Pilot Study on Students' E-skills. *Procedia Manufacturing*, 32, 1051-1057.
- Ivanov, I., Cobo, J. C., & Kosonogova, M. (2020). Implementation of developmental education in the digital learning environment. *Procedia Computer Science*, 172, 517-522.

- Kadulina, N. M. (2005). *Didactic conditions for the development of methodological competence of university students* (Unpublished doctoral dissertation). Pushkin Leningrad State University, Pushkin.
- Korshunova, O. V. (2012). Methodological competence of a modern teacher. *Vestnik VyatGU*, 1(3), 112-118.
- Kosyrev, V. P., Kubrushko, P. F., & Kouznetsov, A. N. (2009). TVET and teacher-training curricula: a developed national perspective. *International Handbook of Education for the Changing World of Work. Bridging Academic and Vocational Learning*, 1(6), 1285-1292.
- Kozharinov, A., Kalugina, O., Ryabchenko, N., Kolobkova, A., & Kralik, R. (2021). Innovative methods of mastering economic knowledge by learning a foreign language. *Studies in Systems, Decision and Control*, 316, 615-623.
- Krupchenko, A. K., & Kuznetsov, A. N. (2017). Professional linguodidactics as the cutting-edge advanced approach to foreign language teaching in TVET: ESP vs. CLIL. *11th International Technology, Education and Development Conference. Conference proceedings*, 2863-2868.
- Kubrushko, P., Kozlenkova, E., Mikhailenko, O., & Nazarova, L. (2018). Facilitation of Innovative Pedagogical Activity of University Teachers. *Advances in Social Science, Education and Humanities Research: International Conference on the Theory and Practice of Personality Formation in Modern Society (ICTPPFMS-18)*, 198, 266-269.
- Maksaev, A., Vasbieva, D., Sherbakova, O., Mirzoeva, F., & Kralik, R. (2021). Education at a cooperative university in the digital economy. *Studies in Systems, Decision and Control*, 316, 33-42.
- Moldovan, L. (2020). A Tool for Continuous Evaluation of Competences and Approaches to Employment Support. *Procedia Manufacturing*, 46, 263-270.
- Shipilina, L. A. (2012). Formation of the methodological culture of future masters of vocational training: a conceptual aspect. *Sibirskiy pedagogicheskiy zhurnal*, 5, 9-17.
- Siman, A. S., & Zhilyaeva, V. V. (2020). Electronic information-and-education environment under the conditions of State accreditation of the University. *International Scientific Journal*, 3, 121-127.
- Smirnova, V. V. (2008). Methodological competence of a teacher in the context of lifelong education. *Chelovek i obrazovaniye*, 4, 100-103.

- Wu, T. T., & Wu, Y. T. (2020). Applying project-based learning and SCAMPER teaching strategies in engineering education to explore the influence of creativity on cognition, personal motivation, and personality traits. *Thinking Skills and Creativity*, 35, 1-10.
- Zain, S. (2021). Digital transformation trends in education. In D. Baker & L. Ellis (Eds.), *Future Directions in Digital Information* (pp. 223-234). Cambridge, UK: Chandos Publishing.
- Zeer, E. F., Tretyakova, V. S., Bukovey, T. D., & Scherbina, E. Y. (2019). Convergence as methodological basis for development of trans-professionalism of activity subjects. *Humanities and Social Sciences Reviews*, 7(4), 1080-1085.