

CRITERIA FOR ASSESSING THE EFFECTIVENESS OF DEVELOPING METHODOLOGICAL COMPETENCE BASED ON DIGITAL MULTIMODAL RESOURCES

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Abstract: This article examines the criteria for assessing the effectiveness of developing methodological competence through the use of digital multimodal resources. In the context of the digital transformation of education, teachers are expected not only to possess traditional pedagogical and methodological knowledge, but also to be able to design, implement and evaluate learning activities using digital tools. Digital multimodal resources, which combine text, image, audio, video, animation, infographics, simulations, interactive tasks and online platforms, create new opportunities for improving the quality of teaching and learning. The article identifies and substantiates key assessment criteria, including motivational, cognitive, technological, methodological-design, communicative-interactive, reflective-evaluative and result-oriented criteria. The study also describes indicators and levels for evaluating the development of methodological competence. The proposed criteria can be used in teacher training, professional development courses and pedagogical research aimed at improving the effectiveness of digital education.

Keywords: digital education, multimodal resources, methodological competence, assessment criteria, digital competence, interactive learning, teacher professional development, educational technology.

Introduction The rapid development of digital technologies has significantly changed the content, forms and methods of modern education. Today, the educational process is increasingly organized through digital platforms, electronic textbooks, multimedia presentations, video lessons, virtual laboratories, online tests and interactive learning environments. These changes require teachers to develop new professional skills and competencies.

One of the most important professional qualities of a modern teacher is methodological competence. Methodological competence refers to a teacher's ability to plan, organize, implement and evaluate the educational process effectively. It includes the ability to select appropriate teaching methods, design learning materials, use educational technologies, manage students' cognitive activity and assess learning outcomes.

In the digital educational environment, methodological competence acquires a new meaning. A teacher must be able to integrate digital multimodal resources into the learning process in a pedagogically appropriate way. It is not enough to use digital tools only as visual aids. They should be selected according to educational goals, students' needs, the content of the subject and expected learning outcomes.

Digital multimodal resources are especially important because they present information through different channels: visual, auditory, textual and interactive. Such resources help students understand complex concepts more easily, increase their interest in learning, support independent study and develop critical and creative thinking.

Therefore, assessing the effectiveness of developing methodological competence based on digital multimodal resources is an important scientific and practical issue. Clear criteria and indicators are necessary to evaluate teachers' readiness, skills and professional growth in using such resources.

Literature Review

The issue of professional and methodological competence has been widely discussed in pedagogical research. Competence-based education emphasizes not only the acquisition of knowledge but also the ability to apply knowledge in practical situations. In this context,

methodological competence is considered an essential component of a teacher's professional competence.

Researchers note that methodological competence includes knowledge of teaching principles, methods and forms of instruction, assessment strategies, lesson planning and the ability to adapt teaching to learners' individual needs. A competent teacher can organize the learning process in a purposeful, systematic and effective way.

The concept of digital competence has also become increasingly important in recent years. Digital competence involves the ability to use information and communication technologies safely, critically and creatively in professional and everyday activities. For teachers, digital competence includes the ability to create digital content, use online platforms, organize distance learning, communicate with students in a digital environment and assess learning outcomes through digital tools.

The theory of multimedia learning, developed by R. Mayer, emphasizes that students learn more effectively when information is presented through both verbal and visual channels. According to this theory, properly designed multimedia materials can reduce cognitive overload and improve understanding.

G. Kress and other scholars of multimodality highlight that meaning is created through different modes such as language, image, sound, movement and interaction. In education, multimodality allows teachers to present learning content in diverse and flexible ways.

The TPACK framework proposed by P. Mishra and M. Koehler is also important for this topic. It explains the relationship between technological knowledge, pedagogical knowledge and content knowledge. According to this framework, effective teaching with technology requires the integration of all three types of knowledge.

Thus, digital multimodal resources can contribute to the development of methodological competence only when they are used in accordance with pedagogical goals and subject content. This makes it necessary to develop clear criteria for assessing the effectiveness of such competence development.

Research Methodology

This article is based on theoretical analysis, comparison, generalization and systematization of scientific-pedagogical sources related to digital education, multimodal learning and methodological competence. A competence-based approach was used to identify the main components and assessment criteria of methodological competence.

The research is based on the following methodological principles:

Systematic approach. Methodological competence is considered as a complex structure consisting of several interrelated components.

Activity-based approach. The teacher's competence is evaluated through practical pedagogical actions, such as lesson planning, resource selection, classroom management and assessment.

Digital adaptation principle. The teacher's ability to work effectively in a digital environment is taken into account.

Result-oriented approach. The effectiveness of competence development is assessed through changes in teaching quality, students' engagement and learning outcomes.

Reflective approach. The teacher's ability to analyze and improve his or her own professional activity is considered an important indicator of competence.

Digital Multimodal Resources and Their Didactic Potentia

Digital multimodal resources are educational materials presented in digital form through various modes of information. They may include text, images, diagrams, audio recordings, videos, animations, interactive exercises, simulations, electronic tests, virtual laboratories and online learning platforms.

The didactic potential of digital multimodal resources is very broad. They help to:

- present learning material in a clear and visual form;
- explain complex concepts through animation, video or simulation;
- increase students' interest and motivation;
- organize independent and distance learning;
- support individual and differentiated instruction;
- provide immediate feedback;
- assess students' knowledge automatically;
- develop students' digital literacy;
- create interactive and collaborative learning activities.

However, the effectiveness of these resources depends on how appropriately they are selected and used. If a teacher uses digital materials without a clear methodological purpose, their educational value may be limited. Therefore, teachers need strong methodological competence to use digital multimodal resources effectively.

Structural Components of Methodological Competence

Methodological competence based on digital multimodal resources can be described through several interrelated components.

Motivational Component

This component reflects the teacher's interest in using digital technologies, readiness for innovation, desire for professional development and positive attitude toward digital multimodal resources.

Cognitive Component

This component includes knowledge of digital pedagogy, multimodal learning, interactive methods, electronic educational resources, digital assessment tools and methodological principles of using technology in teaching.

Technological Component

This component refers to the teacher's ability to use digital tools and platforms. It includes working with presentation software, video and audio tools, online testing systems, learning management systems, virtual classrooms and other digital applications.

Methodological-Design Component

This component reflects the teacher's ability to design lessons and learning activities using digital multimodal resources. It includes selecting appropriate resources, integrating them into lesson stages and aligning them with learning objectives.

Communicative-Interactive Component

This component includes the teacher's ability to organize communication and interaction in a digital environment. It involves online discussions, group work, feedback, video conferences, chats, forums and collaborative tasks.

Reflective-Evaluative Component

This component refers to the teacher's ability to analyze his or her own teaching activity, evaluate the effectiveness of digital resources, identify problems and improve future lessons.

Criteria for Assessing the Effectiveness of Developing Methodological Competence

To assess the effectiveness of developing methodological competence based on digital multimodal resources, the following criteria can be identified.

Motivational Criterion The motivational criterion evaluates the teacher's attitude toward digital multimodal resources and readiness to use them in professional activity.

- Indicators of this criterion include:
- interest in digital educational tools;
- positive attitude toward innovation;
- readiness to use multimodal resources;
- desire for professional self-development;
- willingness to improve digital and methodological skills;
- understanding the importance of digital resources in modern education.

Cognitive Criterion The cognitive criterion assesses the teacher's theoretical knowledge about digital multimodal learning and methodological competence.

- Indicators of this criterion include:
- knowledge of the types and functions of multimodal resources;
- understanding of digital pedagogy;
- knowledge of interactive teaching methods;
- understanding of digital assessment tools;
- knowledge of didactic requirements for electronic resources;
- understanding of the relationship between learning objectives, methods and digital tools.

Technological Criterion The technological criterion evaluates the teacher's practical skills in using digital tools and platforms.

- Indicators of this criterion include:
- ability to prepare electronic presentations;
- ability to use video and audio materials;
- ability to create interactive tasks;
- ability to design online tests and questionnaires;
- ability to use platforms such as Moodle, Google Classroom, Microsoft Teams, Zoom and other learning management systems;
- ability to use artificial intelligence tools and digital assistants for educational purposes;

- ability to ensure basic digital safety and ethical use of digital materials.
- Methodological-Design Criterion

The methodological-design criterion assesses the teacher's ability to integrate digital multimodal resources into lesson planning and teaching methodology.

- Indicators of this criterion include:
- ability to design lessons based on digital resources;
- selection of resources according to learning objectives;
- integration of multimodal materials into different stages of the lesson;
- consideration of students' age, level and individual characteristics;
- combination of teaching methods with digital tools;
- development of digital tasks for independent learning;
- ability to create a logical connection between content, method, resource and assessment.

Communicative-Interactive Criterion

The communicative-interactive criterion evaluates the teacher's ability to organize effective communication and interaction in a digital learning environment.

- Indicators of this criterion include:
- organization of online discussions;
- involvement of students in group and collaborative activities;
- provision of timely feedback;
- support of students' digital literacy;
- creation of interactive learning situations;
- use of forums, chats, video conferences and shared digital documents;
- encouragement of students' active participation.

Reflective-Evaluative Criterion

The reflective-evaluative criterion assesses the teacher's ability to analyze teaching results and improve professional activity.

- Indicators of this criterion include:
- analysis of lesson effectiveness;
- use of digital assessment results;
- identification of strengths and weaknesses in teaching;

- reflection on the appropriateness of selected digital resources;
- development of improvement plans;
- ability to modify teaching strategies according to students' results;
- use of feedback from students and colleagues.

Result-Oriented Criterion

The result-oriented criterion evaluates the actual educational outcomes achieved through the use of digital multimodal resources.

- Indicators of this criterion include:
 - increase in students' motivation;
 - improvement of students' academic achievement;
 - growth of students' independent learning activity;
 - development of critical and creative thinking;
 - increase in classroom interaction;
 - improvement in the quality of the teacher's methodological activity;
 - positive changes in lesson effectiveness.
- Levels of Methodological Competence Development

The level of methodological competence development can be divided into three main levels: high, medium and low.

High Level At a high level, the teacher independently selects, creates and effectively integrates digital multimodal resources into the educational process. The teacher uses digital tools not only for presentation, but also for interaction, assessment, feedback and individualized learning. Lessons are well-structured, methodologically justified and result-oriented. The teacher regularly analyzes teaching outcomes and improves professional practice.

Medium Level At a medium level, the teacher uses ready-made digital resources and can partially adapt them to the lesson content. The teacher understands the importance of digital multimodal resources but may face difficulties in designing interactive activities or connecting resources with learning objectives. Digital tools are used regularly, but not always systematically.

Low Level At a low level, the teacher rarely uses digital multimodal resources or uses them only as visual aids. There is weak connection between digital resources and lesson objectives. The teacher has limited technological skills and lacks confidence in organizing digital learning activities. Reflection and analysis of digital teaching effectiveness are insufficient.

1. **Motivational criterion** Interest in digital resources, readiness for innovation, professional self-development, positive attitude toward digital learning.

2. **Cognitive criterion** Knowledge of digital pedagogy, multimodal learning, interactive methods, digital assessment and didactic requirements.

3. Technological criterion Ability to use digital platforms, presentations, video, audio, online tests, interactive tools and learning management systems.

4. Methodological-design criterion Ability to design lessons, select appropriate resources, integrate digital tools with methods and organize independent learning.

5. Communicative-interactive criterion Ability to organize online communication, feedback, group work, discussions and interactive activities.

6. Reflective-evaluative criterion Ability to analyze teaching effectiveness, evaluate results, identify problems and improve teaching practice.

7. Result-oriented criterion Improvement of students' motivation, academic achievement, independent learning, creative thinking and overall teaching quality.

Practical Mechanisms of Assessment

The effectiveness of developing methodological competence based on digital multimodal resources can be assessed through different methods.

Diagnostic tests can be used to identify teachers' theoretical knowledge of digital pedagogy and multimodal learning.

Questionnaires and surveys can help determine teachers' motivation, attitude and readiness to use digital resources.

Practical tasks can be used to evaluate teachers' ability to create lesson plans, video lessons, interactive tests, presentations or digital learning materials.

Classroom observation allows experts to assess how digital multimodal resources are used during the lesson.

Portfolio analysis helps evaluate the quality of digital and methodological materials created by the teacher.

Expert assessment can be conducted by methodologists, experienced teachers or academic supervisors.

Reflective reports allow teachers to analyze their own teaching activity, identify difficulties and suggest ways for improvement.

A rating scale can be applied to measure the level of competence development. For example:

0–55 points: low level;

56–75 points: medium level;

76–100 points: high level.

Such an assessment system makes it possible to evaluate both qualitative and quantitative changes in teachers' methodological competence.

Discussion The use of digital multimodal resources has a positive influence on the development of teachers' methodological competence. First, it encourages teachers to design lessons more creatively and systematically. Second, it helps teachers present educational content in different forms, which improves students' understanding. Third, it increases students' engagement and participation in the learning process.

Digital multimodal resources also support differentiated instruction. Teachers can provide different types of materials according to students' learning styles, interests and abilities. For example, some students may understand a topic better through video, while others may prefer diagrams, texts or interactive exercises.

Another important advantage is the possibility of immediate feedback. Online tests, quizzes and digital platforms allow teachers to quickly analyze students' results and adapt the learning process accordingly. This strengthens the reflective aspect of methodological competence.

At the same time, several problems may occur in the process of using digital multimodal resources. Some teachers may have insufficient digital literacy. Some educational institutions may lack technical infrastructure. In some cases, digital resources are used only for external attractiveness, without deep methodological purpose. In addition, teachers may face difficulties in selecting reliable and high-quality digital content.

Therefore, the assessment of methodological competence should not be limited to technical skills. It should also include pedagogical appropriateness, methodological justification, interactivity, reflection and learning outcomes.

Conclusion The development of methodological competence based on digital multimodal resources is one of the key directions in modern education. Digital multimodal resources provide teachers with opportunities to enrich lesson content, increase students' motivation, organize interactive activities, support independent learning and assess educational outcomes more effectively.

The article identifies seven main criteria for assessing the effectiveness of methodological competence development: motivational, cognitive, technological, methodological-design, communicative-interactive, reflective-evaluative and result-oriented criteria. These criteria allow a comprehensive evaluation of teachers' readiness, knowledge, practical skills, methodological thinking and professional growth.

It can be concluded that effective use of digital multimodal resources requires not only technical skills but also strong methodological competence. A teacher should be able to select digital resources according to the purpose of the lesson, integrate them into the learning process, organize interaction, evaluate results and reflect on professional activity.

The proposed criteria and indicators can be applied in teacher education institutions, professional development programs, methodological training courses and scientific research. They can also serve as a basis for improving the quality of digital education and strengthening the professional competence of teachers.

References

1. Decree of the President of the Republic of Uzbekistan "On Approval of the Digital Uzbekistan — 2030 Strategy and Measures for Its Effective Implementation".
2. Decree of the President of the Republic of Uzbekistan "On the Development Strategy of New Uzbekistan for 2022–2026".
3. Law of the Republic of Uzbekistan "On Education". Tashkent, 2020.
4. Mishra, P., Koehler, M. J. Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge. Teachers College Record, 2006.
5. Mayer, R. E. Multimedia Learning. Cambridge University Press, 2009.
6. Kress, G. Multimodality: A Social Semiotic Approach to Contemporary Communication. Routledge, 2010.
7. Redecker, C. European Framework for the Digital Competence of Educators: DigCompEdu. Publications Office of the European Union, 2017.
8. Siemens, G. Connectivism: A Learning Theory for the Digital Age. International Journal of Instructional Technology and Distance Learning, 2005.
9. Khutorskoy, A. V. Competence-Based Approach in Education. Moscow, 2013.
10. Muslimov, N. A., Usmonboyeva, M. H., Sayfurov, D. M. Innovative Educational Technologies. Tashkent, 2015.