Formation of Professional Competencies of the Students in the Process of Studying the Educational Program "STEAM-Technologies in Education"

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Annotation

This article provides the formation of professional competencies of the students in the process of studying the educational program "STEAM-technologies in education". The basis of modern approaches, the suggestions and recommendations for enhancing the information-methodological support for the development of communicative, linguistic, sociolinguistic, pragmatic, speech and lexical competences with the help of STEAM technologies in teaching English for engineers are explained in the article.

Key words

Professional competence, STEAM technologies, performance, concept, formation, structural components, sphere, exist, internal, external, motivation, productive, techniques, discipline.

Introduction

Nowadays teachers face a major challenge. The world where we live is evolving rapidly, but the way we teach students has hardly changed over the last years.We believe we can do more and it is our responsibility to prepare graduates in 2030and subsequent graduates for the world they will find themselves in, even though we don't even know exactly how that world will be to look like. Undoubtedly, reliable and proven forms of traditional education continue to exist. As educators, we need to reflect on the fact that, in addition to factual information, students need to be taught universal skills.

Main part

The basis of the current educational standardsof higher education are the competencies thatmust be possessed by a university graduate who has completed a full course of study.As noted by scientists, "The number of definitions of competence seems overwhelming.

Apparently, there are as many of them as those who compose them, or even

more"For example, from the point of view of business practitioners, professional

competence is the ability of the subject of professionalactivities to carry out work in accordance with the officialrequirements. The latter are the tasks and standards of theirperformance accepted by the organization or industry.

In foreign and domestic literature, it is shownthe multiplicity and ambiguity of the wording of the concept"competence". To establish a working definitionthe concept of "competence", we compared the definitions of the concepts,based on the study of the content of texts containingdefinitions given by various authors

Definitions of the concept of "competence" by different authorsE.Zeer considers, that competence - a set of knowledge and skills, as well asways of performing activities.I.Zimnyaya thinks, competence - a set of new formations, knowledgevalue systems and attitudes that promotecreating value-semantic, behavioralmotivational, emotional - volitional, cognitiveresults of personal activities of subjects.V.Lednyovbelieves, that "Competence" is used instead of knowledge, skill possession. But M.Rijakov says, that "Competence is a sphere of relationsexisting between knowledge and action inhuman practice". Competence - a range of issues, phenomena in which this person has authority, knowledgeExperience is proved by S.Ojegov.

Competence includes more than justCognitive and operational-technological

components, but also motivational, ethicalsocial and behavioral. It includes the resultlearning (knowledge and skills), value systemorientations, habits, etc.

Competence is always a relevant manifestationcompetence. Competence is a set of interrelated qualitiespersonality (knowledge, skills, waysactivity) set in relation toa certain range of objects and processesnecessary for quality and productiveactivities in relation to them.

Competence is a complex of knowledge, skills, valueorientations and practical experience,necessary for a person to successfully solve problemsin a certain area of life or professionalactivities.

Comparison of the definitions of the concept of "competence" allowshighlight the following structural components:

−knowledge;

−skills;

−value orientations (motivation);

−professional experience of a teacher, or experiencepractical application of the acquired knowledge and skills.

Each structural component is interconnected with all others andis an integral part of the competence.

Knowledge is a set of ideas and concepts about objects,phenomena and laws of reality formed as a resultpurposeful pedagogical process and self-education.

The teacher's knowledge is directed, on the one hand, to the discipline,which he teaches, on the other - to the students. By pedagogical skill we mean "possessionteacher in certain ways and techniques of pedagogicalactivities based on the conscious application of psychologicalpedagogical knowledge "(O.A. Abdullina). Professionally-pedagogical skills should cover the same components asknowledge.Value orientations express a conscious attitudeperson to social reality and determine the motivation of hisbehavior, significantly affecting all aspects of professionalactivities. Depending on thestructure of personal value orientations, combinations and degreespreferences with respect to other values can be determined bywhat are the goals of a person's professional activity.

Motivation is a combination of internal and external motivationsforces that induce a person to activity, set its boundaries andforms and give this activity a direction orientedto achieve certain goals.

Professional activity is the mainsource of income type of labor activity of the person who ownsa set of special theoretical knowledge and practicalskills acquired through specialized training and experiencework.

Professional activities for which they are preparinggraduates, by direction

Education and pedagogical sciences, according to the master's program"STEAM technologies in education":

- pedagogical;

- methodical.

Professional tasks that a graduate solves,who have mastered the program "STEM technologies in education":

pedagogical activity:

- exploring opportunities, needs and achievementsstudents depending on the level of the mastered educationalprograms and design based on the results obtained

individual routes of training, education and development (this partshould be transferred to project activities);

- organization of the process of training and education in the fieldeducation using technologies that reflect the specificssubject area and corresponding age and psychophysicalcharacteristics of students, including their special educational

needs;

organization of interaction with colleagues, parents,social partners, including foreign ones;

- implementation of professional self-education andpersonal growth;

project activity:

- designing educational programs andindividual educational routes of students;

- designing the content of academic disciplines (modules),forms and methods of control and control and measuring materials;

- designing educational environments that providethe quality of the educational process;

- designing a further educational route andprofessional career.

The planned results of the development of educationalprograms.

As a result of mastering the program "STEAM technologies ineducation "the graduate must be formedgeneral cultural competences:

- the ability for abstract thinking, analysis, synthesis,the ability to improve and develop yourintellectual and general cultural level;

- willingness to act in non-standard situations, carrysocial and ethical responsibility for the decisions made;

- the ability to self-master andthe use of new research methods, to the development of newspheres of professional activity;

- the ability to form resource and information basesto carry out practical activities in various fieldsthe ability to independently acquire and use, inincluding with the help of information technology, new knowledgeand skills not directly related to the sphereprofessional activity.

General professional competencies:

- willingness to carry out professionalcommunication in oral and written forms in Russian andforeign languages for solving the problems of professionalactivities;

- readiness to use knowledge of modern problems of science andeducation in solving professional problems.

- willingness to interact with participantseducational process and social partners, to leadcollective, tolerantly perceiving social,ethno-confessional and cultural differences;

- the ability to carry out professional andpersonal self-education, design further

educational routes and professional career.

A graduate who has completed a master's program musthave professional competencies appropriatetype of professional activity, which is focused on

Master's program:

pedagogical activity:

- the ability to apply modern techniques andtechnologies for organizing educational activities,diagnostics and assessment of the quality of the educational process various educational programs.

- the ability to shape the educational environment anduse professional knowledge and skills in implementationtasks of innovative educational policy;

- ability to lead research workstudents;

- willingness to develop and implement techniques, technologiesand teaching techniques, to the analysis of the results of the process of theiruse in organizations carrying out educationalactivity.

Methodical activity:

- readiness to develop and implement methodologicalmodels, techniques, technologies and teaching techniques, for analysisthe results of the process of their use in organizations,carrying out educational activities;

- readiness for systematization, generalization anddissemination of domestic and foreign methodologicalexperience in the professional field.

Consider the curriculum of a master's program"Implementation of the principle of meta-subject of STEAM education."

The formation of professional competencies occurswhen studying the following disciplines:

- Technologies of modern classroom

- Fundamentals of Mathematical Modeling

- Implementation of the principle of meta-subject of STEM education

- Industrial practice (pedagogical)

Technologies of a modern classroom

- Organization of elective courses (on the example of a course

"Technical innovation")

- Pedagogical qualimetry

- Praxeological foundations of effective activity

- Industrial practice (pedagogical).

Fundamentals of Mathematical Modeling

- Organization of elective courses (on the example of a course"Technical innovation")

- Fundamentals of modern production

- Organization of project activities for schoolchildren

- Methodology for early education in the basics of science

- Multimedia didactics

- Development of students' creative abilities:

- Interdisciplinary communications in fulfilling the requirements of the State Educational Standard.

Results and discussions

A simple analysis shows that the least paidattention to the formation of professional competencies.

Consider the formation of professional competencies inexample of the discipline "Implementation of the principlemetasubjects of STEAM education.

The discipline for analysis was chosen according to two parameters:

- in the list of disciplines of forming professional competence, this is the onlydirectly related to STEAM education;

- the discipline forms only one competence, therefore it is convenient for research.

The process of studying the discipline is aimed at formingprofessional competence: the ability to apply modern techniques andtechnologies for organizing educational activities, diagnosticsand assessing the quality of the educational process in variouseducational programs.

To assess the level of formation of professionalcompetence, the following indicators are highlighted: know, be able to, own.

The student must knowthe structure of the State Educational Standard, its features, the essence of the upcomingchanges in the learning process, content and ways of implementation, conceptual foundations of health preservation, structuralelements of Informational technologies, principles of integration of the main and additionaleducation.

Evaluation tool for the indicator:

Oral and written surveys, reports, communications,interviews.

The student must be able to shape the educational environment in accordance withthe requirements of the Federal State Educational Standard, to use the acquired knowledge formodernization of the learning process.

Evaluation tool for the indicator:

practical work interview and deliverymaterials obtained in the performance of independent work.The student must own

modern teaching technologies, assessment toolslearning outcomes of schoolchildren, new informationlearning technologies, skills for creating health-preservingtime.

Evaluation tool for the indicator:

Interview, practical work and deliverymaterials obtained in the performance of independent work.

Understanding the problem, completeness, argumentation, consistency.

Each of the criteria is assessed on a scale of "passed" - "notcredited ". Practical work is considered credited if the studentcompleted all components of the assignment.

The practical part of the course is considered mastered if allpractical work.

Individually oriented tasks are counted according tothe fact of their presentation and compliance with the declared topic.Discipline credit (according to the "pass-fail" system) is givenby the totality of the results presented.

The final diagnostic conclusion about the formationcompetence is formulated on the basis of the following rule: ifmore than 70% of the constituent components of competencies have been formed(knowledge, skills, possessions), then aconclusion is made about the formationcorresponding competence, otherwise – aboutlack of competence.

If we consider this program from the point of viewthe formation of four components of professional competence:

–knowledge;

–skills;

–value orientations;

–experience of the teacher's professional activity,then the following can be stated.

–in the process of studying the discipline "Implementation of the principlemeta-subjects of STEM education "students developknowledge and skills in this discipline.

–in terms of motivation, we proceed from the fact that students,who came to study for a master's degree in STEM technology, have alreadyhave a strong formed motivation.

–in the process of studying the discipline, students do not haveopportunities to apply the acquired knowledge in your professionalactivities, and get specific experience in the application of the obtainedknowledge of this discipline,

Conclusion

The study proved that regular use of software systems in the educational process creates a mixed type of learning environment that provides the formation of knowledge, skills and competencies, as well as provides a gradual transition of students to independent learning activities.STEAM technology is an interactive communication, fully informing students about how the stages of the learning process go; effective teaching methods that provide modeling of situations related to professional communicative-cognitive activity in the educational process, taking into account the modern communication environment; students' interest in learning throughout their lives and careers includes continuing education, which involves the development of foreign language learning skills independently, promotes the idea of self-education, and requires students to develop an independent stable personality based on reflexive skills.So, knowledge and skills are formed in the process of learningdiscipline.Professional competence cannot be considered completelyformed.Therefore, a program of discipline "STEAM technologies ineducation", which will at least partially solve this problem.

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