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ROLE OF METASUBJECT
EDUCATIONAL RESULTS IN LEARNERS' PROFESSIONAL
SELF-CONSCIOUSNESS FORMATION

M.A. Isaikina, N.G. Nedogreeva, A.S. Pokotilo

The article reveals the notion of metasubject educational results that are closely connected with the formation of universal skills necessary for a specialist in demand in the contemporary society.

The purpose of the article is to identify the influence of metasubject results on the learners' mastering of knowledge, abilities and skills as well as to establish the relationship between formed competences and learners' professional self-consciousness development.

***Materials and methods** are considered to be theoretical research of discussed notions, analyses of literature, generalization and systematization.*

***Results.** Metasubject results are considered to be cross-cutting educational results related to universal competences formation in accordance with educational programs of basic general education and complete secondary education.*

The emphasis is placed on the development of cognitive, informative, communicative and regulatory competences while the latter is viewed as indicator of direction of learners' professional self-consciousness formation. The article touches upon the role of the teacher in the formation of competences and metasubject educational results necessary for learners' professional self-consciousness growth.

Conclusions. *The educational process should be organized in such a way to develop skills and abilities of learners using the most effective motivating means. The development of competences is to promote metasubject results necessary for learners' professional self-consciousness formation and growth.*

Keywords: *metasubject results; learners' professional self-consciousness; cross-cutting educational results; universal competences*

РОЛЬ МЕТАПРЕДМЕТНЫХ ОБРАЗОВАТЕЛЬНЫХ РЕЗУЛЬТАТОВ В ФОРМИРОВАНИИ ПРОФЕССИОНАЛЬНОГО САМОСОЗНАНИЯ ОБУЧАЮЩИХСЯ

М.А. Исайкина, Н.Г. Недогреева, А.С. Покотило

Статья раскрывает понятие метапредметных образовательных результатов, тесно взаимосвязанных с формированием у обучающихся универсальных навыков, которыми должен обладать востребованный специалист в современном обществе.

Целью статьи является выявить влияние метапредметных результатов на овладение обучающимися знаниями, умениями и навыками, а также установить взаимосвязь сформированных компетенций с развитием профессионального самосознания обучающихся.

Материалы и методы составляют теоретическое исследование понятий, обсуждаемых в работе, анализ литературы, методы обобщения и систематизации.

Результаты. *Метапредметные результаты рассматриваются как сквозные образовательные результаты, связанные с формированием универсальных компетенций, корректирующих с основными образовательными программами основного общего и среднего общего образования. Акцент сделан на развитие универсальных компетенций – познавательной, информационной, коммуникативной и регулятивной, последняя рассматривается как показатель направления развития профессионального самосознания обучающихся. Отмечена роль педагога при формировании компетенций и*

метапредметных образовательных результатов, необходимых для роста профессионального самосознания обучающихся.

Выводы. *Образовательный процесс следует организовывать таким образом, чтобы при развитии навыков и умений обучающихся использовались наиболее мотивирующие средства обучения. Формирование компетенций должно усовершенствовать метапредметные образовательные результаты необходимые для формирования и роста профессионального самосознаний обучающихся.*

Ключевые слова: *метапредметные результаты; профессиональное самосознание обучающихся; сквозные образовательные результаты; универсальные компетенции*

Introduction

Nowadays many learners have no idea of choosing the future profession and essence, tasks and obligations of this or that sphere of employment. The changeable number of applicants applying to a university is connected with lack of occupational self-identification of school graduates. Besides we meet people with diplomas of higher education who prefer choosing the occupation absolutely unrelated to the educational field of their studies. It let us presume that such people were not able to make the right choice of future profession when they were at school. The important task of contemporary society is to make the number of professionals in different spheres of our life to increase every year.

The education emphasizes on the universal competences development as well as metasubject results of learning in accordance with educational programs of basic general education and complete secondary education [8]. The metasubject results are stated to be the part of educational results, the content of the academic subject, the estimation criteria of planned results of program of school education mastering and final graduates' assessment [6].

Literature review

For the first time the Russian scientists (Yu.V. Gromyko, N.V. Gromyko, A.V. Khutorskoy) turned to the notion of «metasubject», «metasubject results» and «metasubject competence» at the end of the 20th

century. Metasubject is related to several subjects, represents their basis and links these subjects to each other. In contrast to general educational activity metasubject is connected to the subject one [9]. Metasubject consists of the training of techniques, means, ways and other cognitive processes being outside the scope of the specific subject and being used in any subject teaching [2]. Yu.V. Gromyko interprets the metasubject content of education as the activity that provides the educational process in any subject learning and does not relate to any particular academic discipline [3]. Metasubject may be defined as the principle of educational integration, as the way of formation of theoretical thinking and the single world image in the person consciousness [7].

It should be mentioned that metasubject results assume the volume of knowledge being formed and used not only in the particular subject teaching but during the whole educational process. They also imply simultaneous skills development in different directions of the educational activity. The ability to systematize knowledge, to deal with facts and define their origin, to find alternative decision may be mentioned as the example of necessary skills.

Metasubject results refer to cross-cutting educational results tied with formation of learners' universal modes of actions or means that are supposed to be owned by a person in order to be included in modern activity, cooperation and communication. They are associated with specific forms of thinking determining the current economic situation as well as the present-day world. Passing through educational results being basic and introduced into all spheres and stages of learning process should become the integral characteristic of educational efficiency of learners [5] and may be described as:

- educational independence that implies the learner's skill to seek the means for personal promotion and development;
- educational initiative as the ability to form the personal schooling, to create situations suitable for self-development and to put them into practice;
- educational responsibility that is the ability to make individual decision about willingness to act in unusual situations.

Within the basic general education under the age of 12-15 the learners demonstrate the most social activity and self-determination along with the formation of professional self-consciousness. At this period the following types of literacy as learning, information and communicative may be single out as metasubject educational results. Under learning literacy, we understand the personal ability to define and make new tasks while information literacy means the ability of adequate learning material use and latest technologies of storing this material. As for communicative literacy, the person who possesses it, is able to set and solve particular tasks of social and organizational interaction as goals defining, situation assessing, partners' intentions and modes of interaction considering, suitable communication strategies choosing, interaction success evaluating, meaningful changes in own behavior making.

Cross-cutting educational results are considered in detail by A.B. Vorontsov and B.D. Elkonin [1]. They say that educational result is the action produced by a person in some sphere of life or work. This action includes three interconnected points such as first of all constructions and testing of supports and guidelines. It is linked to improving learning resources. Besides, the second point of three mentioned ones is testing and defining the fields or boundaries of educational situation. The last one is initiation and prospective testing that becomes obvious in practice. If the perspectives are not visible the action does not involve promotion and the learners are provided under the boundaries of established educational situations.

Research description

So the educational result is the outcome of the learner's educational program development. We can speak about the three conditions that constitute the educational result. They are as follows. The first condition of any educational process consists in learner's meaningful initiative in the educational demand formation. The second one implies that every learner should be able to frame and realize his or her own educational task. The third condition lies in the importance for the learner to choose the necessary tools for making tasks. When all three conditions are represented in the educational result it becomes possible to speak about qual-

itative education that allows a person to realize his or her potential and abilities in any socio-economic situation at every stage of development in life. In this regard it is appropriate to mention learners' professional self-consciousness formation in achieving positive results. The essence of self-consciousness formation includes three key competences: cognitive, communicative and information as the indication of knowledge and experience necessary for effective educational activity.

The professional self-consciousness formation of the learners who are interested in Physics and Computer Science, as well as Robotics and Computer Programming is in the sphere of our investigation. Nowadays the equipping scientific establishments with educational robotics and programming means is conducted rapidly (lego Mindstorms Education EV3, interactive platform Arduino and others). It allows to increase the interest to the physical phenomena investigation in a laboratory experiment. But in the process of robotic physics experiment there arises the question of evaluation metasubject educational results as the indicator of learners' professional self-consciousness formation.

It should be noted that the robotics introduction in the learning process of Physics is carried out during lessons as well as during off-schedule classes that can be organized in the complementary education centers. Nowadays so called «The Point of Growth» are getting the great popularity and they encourage the professional self-consciousness formation. The educational centers of digital and humanitarian fields «The Point of Growth» are organized on the school basis of remote villages of Saratov region. They are supposed to give the learners knowledge in Computer Science, Technology, Safety of Vital Activity with the use of new methods of teaching.

As the example we should note the work of robotics club attending which learners assemble models and program them on the platform Arduino. Every lesson is composed of two parts, i.e., theoretical and practical. Theoretical part involves the introduction and study of new material while practical one considers assembling and showing physical phenomena. Practical part of the class reveals educational and metasubject results and competences formation. The learners demonstrate not only the ability to deal with circuits but also how they can analyze information, search non-standard approach to the problem solving, work in a team.

It is important to develop the ability to apply in practice the knowledge they gained during classes. It may be estimated by dividing learners into small groups of two or three persons and giving an individual task to each group. The task is better to choose as a kind of reviewing courses, for example, assembling the circuit as it was discussed at the previous lesson. Such tasks help to define if the learners have mastered the topic. Learning material mastering is obvious when the task is done independently and the number of questions asked during the work is low. Mistakes made during the work and a great amount of questions asked mean the necessity to repeat learning material.

At robotics classes the learners' skills of proper information use are formed. It is known as information skill. Learners are getting basis information skills and information technologies skills. The main interest is focused on information technologies skills as learners are getting acquainted with software and technical devices during off-schedule classes as well as the rules of practical, convenient, quick and safe Internet surfing. Software includes text programs, integral programming environment and programming languages. As for technical devices, computers and elements of radiotechnics and robotics are used during such classes.

The skill of working in a team as the communicative competence formation is very vital in practical work. The communicative skills help learners to get into contact with other counterparts, to act and accept ideas and opinions of partners. One of the possible ways of productive and comfortable interaction is the creation of groups with changeable participants. The teachers can estimate the participants' work and achievements after several classes and swap group members for better results. If a learner is ready to communicate, has leadership skills, takes part in discussion and can admit his or her mistakes, it means that his or her communicative and social skills have been formed to some extent.

The assessment criteria of metasubject results have been worked out on the basis of methodological material and our personal pedagogical experience. There criteria are considered to reach the goal of learners' professional self-consciousness formation.

The three competences mentioned, cognitive, information and communicative, are supposed to promote metasubject educational results.

As for criteria of their development they are as follows. Cognitive competence is interrelated with the abilities of construction and creation of the abilities to see mistakes and correct them, to solve the same tasks for several times, to make conclusions and logic discussions. Informative competence develops the abilities of choosing information with the help of technical means, finding and processing information in the Internet, using technical means in a correct way. Communicative competence promotes the abilities to work in pairs and groups, to interact with other counterparts and communicate with them.

Alongside with these competences we should point out the role of regulatory competence of educational results. The notion «regulatory» means the development direction determining, order and balance providing. To be successful in the modern society a person should set the concrete and definite aims, plan the attainment, foresee different ways of development on the situation. The teacher's aim is to learn students to define the purpose, to make a plan of reaching this purpose and change this plan if necessary. Learners are to suppose and estimate the results gained as characteristics of professional self-consciousness. In this competence development it seems important to name the abilities of readiness to create new ways of tasks solving, to give arguments, to find and make up algorithms of own actions and to predict the results with adequate self-evaluation.

Conclusions

Every student has to make an independent choice of academic subjects that are of the great value in the future professional sphere. It is better to do during the years of getting the general secondary education. Learners choice of subjects allows the teachers to pay more attention to develop the learners' abilities and effective mastering of the basics of chosen profession [4].

To conclude it should be noted that analyzing the presence or lack of definite learners' actions, the teacher can modify the work of a student as well as the whole group in order to develop skills and to get metasubject results necessary for learners' professional self-consciousness formation and growth. The task of the teacher is also to motivate the learners edu-

educational process while the most effective mean of motivation seems activity approach. This approach helps to put gained theoretical knowledge into practice and to see whether the practical implementation is correct. The self-image development in different fields promotes the learners' professional self-consciousness formation.

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DATA ABOUT THE AUTHORS

Maria A. Isaikina, Associate Professor, Department of English Language and Intercultural Communication, PhD in Education

Saratov State University

83 Astrakhanskaya Str., Saratov, 410012, Russian Federation

mariya-isaikina@mail.ru

SPIN-code: 9563-9079

ORCID: 0000-0001-6127-4978

Natalia G. Nedogreeva, Associate Professor, Department of Physics and Methodic and Informational Technologies, PhD in Education

Saratov State University

83 Astrakhanskaya Str., Saratov, 410012, Russian Federation

nata-ned@mail.ru

SPIN-code: 2586-4912

ORCID: 0000-0003-1445-5252

Aleksandr S. Pokotilo, Teacher of Physics; Master Student

Secondary School in Dubki; Saratov State University

1, Oktayabrskaya Str., Dubki, Saratov region, 410530, Russian Federation; 83, Astrakhanskaya Str., Saratov, 410012, Russian Federation

mistertesla@yandex.ru

ORCID: 0000-0002-3828-0824

ДАННЫЕ ОБ АВТОРАХ

Исайкина Мария Александровна, доцент кафедры английского языка и межкультурной коммуникации, кандидат педагогических наук, доцент

Саратовский национальный исследовательский государственный университет имени Н.Г. Чернышевского

ул. Астраханская, 83, г. Саратов, Саратовская область, 410012, Российская Федерация

mariya-isaikina@mail.ru

Недогрева Наталия Герасимовна, доцент кафедры физики и методико-информационных технологий, кандидат педагогических наук, доцент

Саратовский национальный исследовательский государственный университет имени Н.Г. Чернышевского

ул. Астраханская, 83, г. Саратов, Саратовская область, 410012, Российская Федерация

nata-ned@mail.ru

Покотило Александр Сергеевич, учитель физики; магистрант *МОУ «СОШ п. Дубки»*; *Саратовский национальный исследовательский государственный университет имени Н.Г. Чернышевского*

ул. Октябрьская, 1, п. Дубки, Саратовский район, Саратовская область, 410530, Российская Федерация; ул. Астраханская, 83, г. Саратов, Саратовская область, 410012, Российская Федерация

mistertesla@yandex.ru