



PRINCIPLES OF ENSURING SAFETY IN THE EVENT OF A RADIATION ACCIDENT USING THE "CONSIDER ALL FACTORS! (CAF)" METHOD. EFFECTIVENESS OF TEACHING THE TOPIC "IMPLEMENTATION OF DEACTIVATION WORKS"

Mukhlisakhon Abdullayeva

Doctoral Student, Namangan State University, Namangan, Uzbekistan

Email:abdullayevamukhlisaxon93@gmail.com

Abstract

The idea, and practical value of any activity, process and system depends on what principles it is based on. For this reason, priority principles, which take a leading place in its essence, are determined in planning the organization of activities, ensuring the flow of the process and forming the system. Therefore, in the article, consider all factors in the teaching of Industrial and radiation safety in higher education institutions! Using the "Consider all factors! (CAF)" method, a lesson was organized and suggestions for its use were made and a pedagogical analysis was made.

Keywords: Ionizing radiations, the principle of normalization, the principle of justification, the principle of minimization, types of educational methods.

Introduction

Educating a spiritually mature person, improving education and training, and raising the new generation are one of the most important tasks of our state. Further development of the higher education system in our republic, raising it to the level of international standards, especially the radical improvement of the process of training mature and qualified pedagogues for preschool educational institutions has become one of the priorities of the state education policy.

Strengthening the interaction between "education - science - production practice" in higher education institutions, their integration, the latest achievements of science and technology, and the best practices of developed foreign countries in this regard. One of the urgent tasks is to improve the higher education system based on learning, to develop and implement effective forms, tools and methods of training future pedagogues for



professional activities by introducing modern pedagogical and information technologies into the educational process.

Creating a new generation of educational literature, textbooks and training manuals, and educational and methodological literature, which serve as an important factor in the formation of theoretical knowledge, practical skills and qualifications in future pedagogical staff, especially educational - the use of foreign literature and their practical experiences is of great importance in the development of methodological complexes.

Literature Review

The goal of the reforms implemented in the field of education is to raise a mature generation. In this regard, many scholars leave different opinions and comments. In particular, in the opinion of Abu Ali Ibn Sina, "A teacher is a strong, conscientious, honest, child it is necessary to be a person who knows the ways and rules of ethics well. The whole of the teacher of the student it is necessary to study his inner and outer world and get into the layers of his mind" [1] "A pedagogue, says Al Farobi, - should value his dignity and be fair. Only then will he have a high level of humanity and reach the peak of happiness" [2]. emphasizes. In coverage of the topic, Uzbekistan on radiation situations and their safety On August 31, 2000, the Law of the Republic of Kazakhstan "On Radiation Safety" was also used [3].

Methodology

The article discusses the system of evaluating the quality of education in higher education institutions will be done. Its main structural factors and parts are described. When determining the rating of higher education institutions in Uzbekistan, the analysis is made on the example of the science of industry and radiation safety. Approaches to the evaluation of the quality of higher education are studied, and the method of experiment-testing is carried out, and the method of statistical data analysis is carried out.

Analysis and Results

The role of designing the educational process is important in the pedagogical skills of the pedagogue. The educational process is such a centre that every thought and action of the pedagogue revolves around this centre and returns to it again.



Each lesson makes its unique contribution to the teaching process. The topic of the principles of radiation safety. We will consider the following issues in detail during training.

- ✓ Principles of radiation safety;
- ✓ When working with sources of ionizing radiation principles of protection;
- ✓ Depending on the types of ionizing radiation means of protection against the effects;
- ✓ Equipment used in working with radioactive substances structural principles.

The main principles of radiation safety are as follows:

Principle of normalization— not to increase the individual radiation dose of citizens from all sources of ionizing radiation above the level that is permissible and safe for their health;

Justification principle —prohibition of all types of activities related to the use of ionizing radiation sources, if the benefit to man and society (in addition to the natural radiation background) does not exceed the possible risk;

Principle of minimization— when using any source of ionizing radiation, keep the individual doses of radiation within the safe limits for citizens' health and the number of people receiving radiation as small as possible.

Safety of work with sources of ionizing radiation in enterprises special services - industrial and radiation safety services supervise. Such special services in secondary and higher educational institutions or special courses trained persons work. Such services are placed before them with the necessary equipment and facilities to solve problems will be provided. Services, new devices that implement radiation control working methods that are constantly being improved depending on the release based on which they carry out all kinds of control.

Protected from radiation sources by time, distance and barrier. *Time- the less you stay around the radiation source, the less radiation is taken. Distance- the further away from the radiation sources, the more its radiation decreases. If the dosimeter shows 1000 $\mu\text{R}/\text{s}$ at a distance of 1 meter, 5 m and at a distance, it shows 40 $\mu\text{R}/\text{s}$.*

Obstacle(things) – the denser they are between you and the source, the more radiation they trap.

Collective protective equipment against ionizing radiation is regulated by GOST 12.4.120-83 "Collective protective equipment against ionizing radiation. General requirements". This is normative According to the documents, the main means of protection are stationary and portable protective screens, sources of ionizing radiation transportation and storage, as well as a collection of radioactive waste and shipping containers, protective safes and boxes, etc.

When performing work with sources of ionizing radiation and during transportation, the danger zone should be marked with warning signs and the sign "Radiation danger" [4] (Fig. 1).



Figure 1. Radiation sign

After the topic statement, we will use educational methods to increase the effectiveness of the lesson. Educational methods are divided into the following types (Fig. 2).

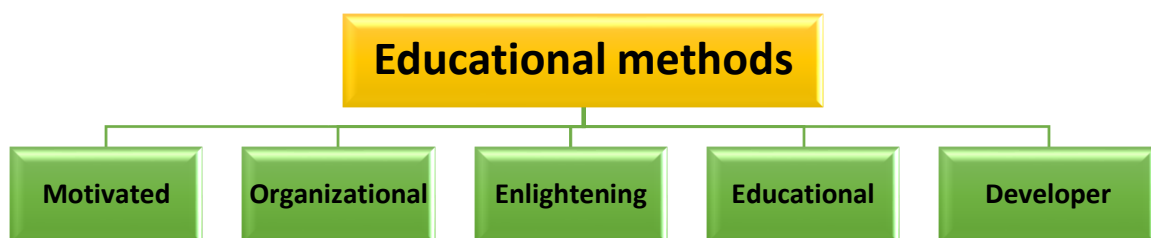


Figure 2. Educational methods.

This is the method we used to improve the quality of the lesson "Consider all factors!" (CAF) method. CAF is a method that serves to focus a person's attention on certain factors, and the purpose of its application is to develop a person's consciousness, expand his imagination, and enrich his thinking. The more specific the method is, the more effective it will be. If the student hesitates to express this or that opinion openly, then the application of the method will not have any effect. However, the student is asked to state his answers without fear.

When using the method in the course of training, it is advisable to make a list of factors that will allow you to master the subject effectively, finding answers to the following questions:

1. What factors were taken into account when mastering the subject?
2. What factors were not taken into account when mastering the subject?
3. What other factors can be included in the list?
4. What other aspects of the issue should be paid attention to?

If there are approximately 20-25 students in the group using the BOHO method, we provide handouts in the following order (Figure 3).

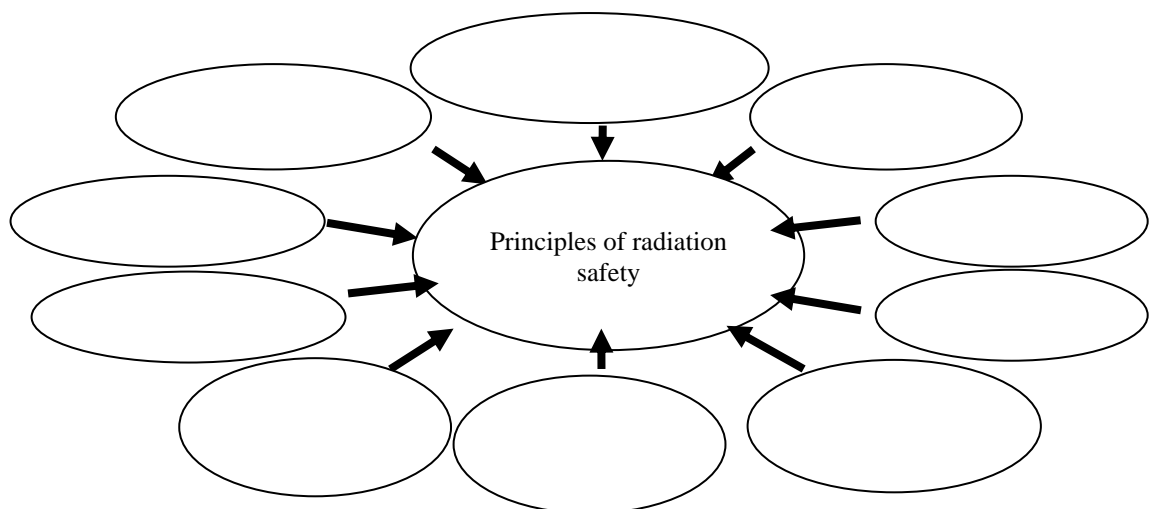


Figure 3. "Consider all factors!" (BOHO) method handout.

All factors related to radiation safety are written in empty circles. If the student has more opinions than the circles presented by the pedagogue, he can independently write his opinion by drawing a circle. The time limit is 20 minutes. At the end of the allotted time, all handouts are collected and inspected.



The proposed method was tested by students of the Department of Labor Protection and Ecology, Department of Labor Protection and Technical Safety of the Namangan Institute of Engineering and Construction. When using the BOHO method, 1 point was calculated for each correct answer written and the following results were shown.

Table 1. Results when using the CAF method

| The student's serial number in the journal | Correct answers | Wrong answers |
|--|-----------------|---------------|
| Student number 1 | 12 | 0 |
| Student number 2 | 10 | 2 |
| Student number 3 | 9 | 0 |
| Student number 4 | 2 | 0 |
| Student number 5 | 4 | 0 |
| Student number 6 | 10 | 0 |
| Student number 7 | 6 | 1 |
| Student number 8 | 5 | 0 |
| Student number 9 | 14 | 0 |
| Student number 10 | 8 | 0 |
| Student number 11 | 6 | 0 |
| Student number 12 | 6 | 2 |
| Student number 13 | 7 | 0 |
| Student number 14 | 6 | 0 |
| Student number 15 | 10 | 4 |
| Student number 16 | 15 | 0 |
| Student number 17 | 7 | 1 |
| Student number 18 | 3 | 1 |
| Student number 19 | 7 | 0 |
| Student number 20 | 8 | 0 |
| Student number 21 | 11 | 0 |
| Student number 22 | 9 | 1 |
| Student number 23 | 6 | 0 |
| Student number 24 | 5 | 0 |
| Student number 25 | 13 | 0 |

Students who scored 15-12 points had high performance.

Students who scored 11-8 were average.

The students who scored 7-4 had satisfactory performance.

The students scored 3-0 and had an unsatisfactory performance.

The overall result in the group is as follows.

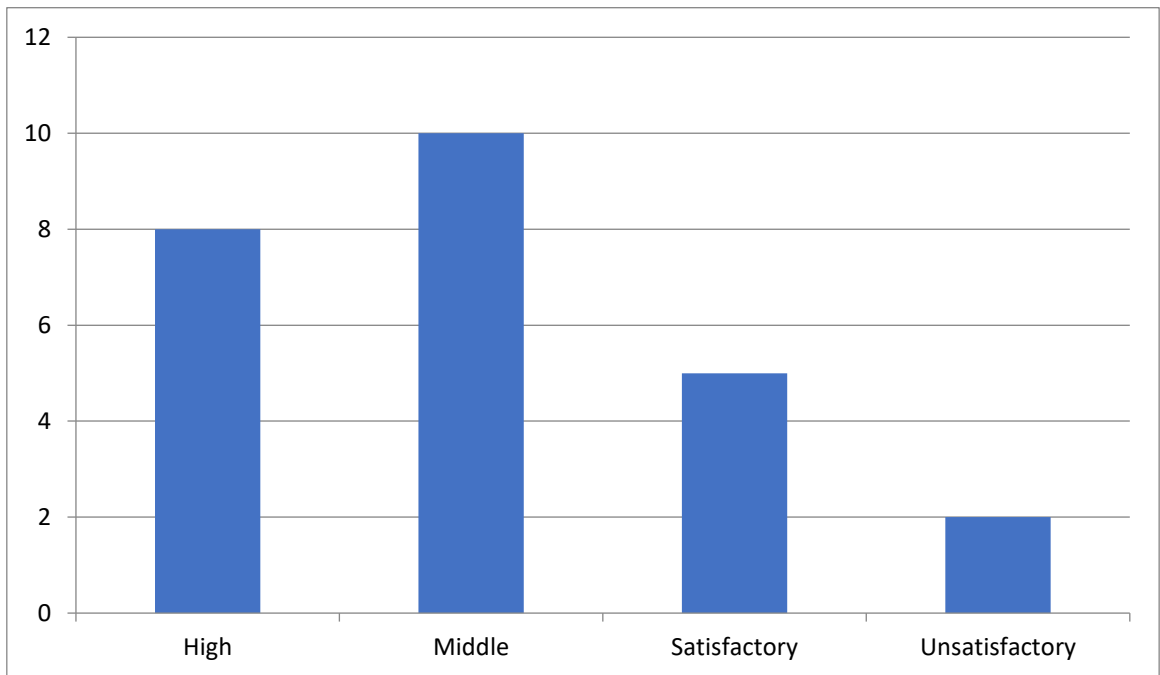


Figure 4. Group total

Summary

In conclusion, it can be said that the quality of the educational process in higher education institutions and the issue of provision is one of the urgent problems. Educational methods have a great role in solving this problem. In particular, in the method used above, students' opinions were realized through the game. It created healthy competition between them. This will help the student to acquire knowledge in the future topic. In addition, it gave a fair and reasonable result in the evaluation of students. Time-saving and efficient use by the teacher was achieved.

This article No. AM-PZ-2019062031 was written based on the pedagogical analysis of the materials prepared within the framework of the innovative project "Creation of multimedia textbooks for bachelors and masters in the fields of "Nuclear energy", "Nuclear medicine and technologies", "Radiation medicine and technologies". and we thank the authors of the textbooks.

References

1. Fazilat Boriyevna Khudaykulova, Peculiarities of formation of professional competence in future pedagogues Pedagogical education cluster: problems and solutions-articles collection. Chirchik 2022.



2. Семина, Е. А. (2010). Компетентностная модель выпускника педагогического вуза-будущего учителя математики. *Альманах современной науки и образования*, (5), 133-136.
3. Muslimov, N. A. (2013). *va boshqalar. Kasb ta'limi o'qituvchilarining kasbiy kompetentligini shakllantirish texnologiyasi/Monografiya. T.: "Fan va texnologiya" nashriyoti.*
4. Митина, Л. М. (2004). *Психология труда и профессионального развития учителя.* Издательский центр " Академия".
5. Rasulova, Z. D. (2020). Pedagogical peculiarities of developing socioperceptive competence in learners. *European Journal of Research and Reflection in.*
6. Расулова, З. Д. (2020). Дидактические основы развития у будущих учителей креативного мышления. *European science*, (2-2 (51)), 65-68.
7. Расулова, З. Д. (2018). Значения обучающихся технологий направленной личности на уроках трудового обучения. *Ученые XXI века*, 47(12), 34-35.
8. Rasulova, Z. D. (2020). Conditions and opportunities of organizing independent creative works of students of the direction Technology in Higher Education. *International Journal of Scientific and Technology Research*, 9(3), 2552-2155.
9. Бозоров Э.Х. & at al. (2018). *Таъриба натижаларини хисоблаш методлари.* Тошкент. Дарслик. 400 бет.
10. Бозоров Э.Х, Зарединов Д.А. at.al. (2020). *Дозиметрия ва радиацион хавфсизлик,* Дарслик, Тошкент. 300 бет.
11. Бозоров Э.Х и др. (2019). *Основы медицинской техники.* Ташкент, Учебник, 400 стр.
12. Бозоров Э.Х, Зарединов Д.А. at.al. (2020). *Рентген аппаратлари ва уларнинг тиббиётга қўлланилиши,* Дарслик, Тошкент, 264 бет.
13. Abdullayev, B. X., Xudayqulov, S. I., & Sattorov, S. M. (2020). Simulation Of Collector Water Discharges Into The Watercourse Of The Ferghana Valley. *Scientific-technical journal*, 24(3), 36-41.
14. Abdullayev, B. X., & Rahmankulov, S. A. (2021). Modeling Aeration in High Pressure Hydraulic Circulation. *Central Asian Journal of Theoretical and Applied Science*, 2(12), 127-136.



15. Madaliev, M. E. U., Maksudov, R. I., Mullaev, I. I., Abdullaev, B. K., & Haidarov, A. R. (2021). Investigation of the Influence of the Computational Grid for Turbulent Flow. *Middle European Scientific Bulletin*, 18, 111-118.
16. Abdullayev, B. X., Xudayqulov, S. I., & Sattorov, S. M. (2020). Simulation Of Collector Water Discharges Into The Watercourse Of The Ferghana Valley. *Scientific-technical journal*, 24(3), 36-41.
17. Abdullayev, B. X., Xudayqulov, S. I., & Sattorov, S. M. (2020). Variable Flow Rate Flow Along A Path In A Closed Inclined Pipeline. *Scientific-technical journal*, 24(4), 23-28.