

# TEACHING THE MODULE “STRUCTURE AND PRINCIPLE OF OPERATION OF HIGH FREQUENCY GENERATORS” USING THE “ROLE PLAY” METHOD

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## Abstract

The article deals with the role-playing technology and the role of modern teaching and role models and interactive methods used to teach the module “Structure and working principles of High frequency generator”. The second part includes theoretical and practical training modules concerning “Structure and working principles of High frequency generator”, and the didactic developments for independent learning.

**Keywords:** military student, education, radiolocation station, high-frequency generations, technology, pedagogy.

## “ROLI O‘YIN” METODI YORDAMIDA “YUQORI CHASTOTALI GENERATORLARNING TUZILISHI VA ISHLASH PRINSIPI” MODULINI O‘QITISH

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dotsent, qurolli kuchlar xizmatchisi, zaxiradagi podpolkovnik.

Chirchiq OTQMBYU QQ HHM kafedrasida Quruqlikdagi qo‘shinlar havo hujumidan mudofaa mutaxassislarini malakasini oshirish (qayta tayyorlash) sikli katta o‘qituvchisi.

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Chirchiq OTQMBYU QQ HHM kafedrasida Quruqlikdagi qo‘shinlar havo hujumidan mudofaa texnik vositalarini tuzilishi va ulardan foydalanish sikli katta o‘qituvchisi.

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**Annotatsiya**

Maqolada o'yin texnologiyalarining mohiyati va zamonaviy o'qitishdagi o'rni hamda "Yuqori chastotali generatorlarning tuzilishi va ishlash prinsipi" modulini o'qitishda foydalanilgan rolli o'yinlar va interfaol metodlar to'g'risida so'z yuritiladi. "Yuqori chastotali generatorlarning tuzilishi va ishlash prinsipi" moduli bo'yicha nazariy va amaliy mashg'ulot, mustaqil ta'lim uchun tayyorlangan didaktik ishlanmalar o'rin olgan.

**Kalit so'zlar:** kursantlar, ta'lim, radiolokatsion stansiyalar, yuqori chastotali generatorlar, texnologiya, pedagogika,

**Аннотация**

В статье рассмотрены сущность игровых технологий и их место в современном обучении, а также применённые ролевые игры и интерактивные методы в обучении модуля "Устройство и принцип работы генераторов высокой частоты". Теоритические и практические место занятия, дидактические разработки подготовленные для самостоятельного образования по изучению модуля "Устройство и принцип работы генераторов высокой частоты".

**Ключевые слова:** курсанты, образование, радиолокационные станции, высокочастотные генераторы, технология, педагогика,

**Introduction**

Today, we must further strengthen our activities in all areas that directly affect the human heart and mind, from the press, television, the Internet and other mass media, to theater, cinema, literature, music, painting and sculpture, in short, we must further strengthen the spiritual needs of the people, based on the requirements of the time, and raise them to a new level.

If we may say so, we can say that in our time, ideological training grounds are more powerful than nuclear training grounds.

Also, the Supreme Commander-in-Chief of the Armed Forces, the President of the Republic of Uzbekistan, in his holiday greetings to the defenders of the Motherland on the occasion of the 32nd anniversary of the establishment of the Armed Forces of the Republic of Uzbekistan, emphasized that it is necessary to fundamentally reconsider the activities of higher military educational institutions in the training of officer cadres with a high intellectual level, a broad worldview, and far-sightedness.

It is important to develop a new approach to planning activities for the training of troops. These activities must, first of all, correspond to the tasks assigned to military units, their level of training and support.

For us, the ultimate criterion in this regard is the practical result, that is, to focus all our attention on a real increase in the combat capability and readiness of the Armed Forces, their high level of unity and effective cooperation.

Improving the system of training professional military personnel at all levels should remain in the center of our attention. In implementing this task, we must introduce the latest methods and technologies into the educational process, equip classrooms with modern simulators, educational

and laboratory equipment, and computer technology. It is advisable to train the teaching staff of all higher military educational institutions, including their extensive use of advanced training opportunities in leading higher educational institutions abroad [1].

The system of training, retraining and advanced training of military personnel has been fundamentally put on a completely new basis.

In the early years of independence, local officer cadres accounted for only 0.6% of the total number of military personnel in our country. Officer training was carried out in three military academies and in only three military specialties. As a result of the work done, three new, modern military educational institutions were additionally established, and the cadet training system was established on a multidisciplinary basis.

At present, as a result of the consistent reforms being carried out in our Armed Forces, the requirements for officers are increasing even more.

Officers must be loyal to the President of the Republic of Uzbekistan and the Motherland, strong-willed, and have excellent theoretical and practical knowledge.

In modern combat conditions, where the situation is constantly changing, the effective and reliable operation of radar stations consisting of high-frequency generators is an important factor in studying and assessing the air situation in air defense units of ground forces and making decisions on the destruction of targets.

Therefore, special attention is paid to the organization of radar reconnaissance at all levels of unit management.

Modern radar station equipment is the basis for reconnaissance of the air situation in the troops and one of the main tools that ensure the decision-making of troops on the destruction of air attack vehicles. In other words, without a "radar station", that is, without reconnaissance equipment, no air defense unit can fulfill its combat missions in a timely manner.

The combat activities of military units, units and formations, the effective use of weapons and equipment in each branch of the Armed Forces, are inconceivable without the participation of radar stations. The level and condition of their technical readiness determine the ability of troops to effectively perform combat missions.

In particular, one of the main elements of all radar stations used in the air defense units of the Armed Forces of the Republic of Uzbekistan is high-frequency generators, and their various types are widely used.

A high-frequency generator (HFG) is a radio technical device designed to convert direct current energy into high-frequency current energy, that is, to obtain high-frequency harmonic electrical oscillations.

Radar stations with high-frequency generators are suitable for use in dry and humid, moderate and tropical, air temperatures from -500C to +500C, and can also be used in areas at an altitude of 4000 m above sea level, which allows for their widespread use in Central Asia.

In modern conditions, a tradition has been formed in higher military educational institutions to use game technologies as a type of innovative training.

The game is a leading type of activity that determines the spiritual development of a person at every stage of his life. Only in and through the game does the child learn about reality, including social relations, behavior, and actions of people.



In the process of historical development, the game has managed to occupy a special place not only in the lives of children, but also in the lives of adults. In modern conditions, game models that contribute to intellectual, computer, economic, military, professional, sports, and household leisure have also become widely popular among adults.

In modern pedagogy, games are used to increase the effectiveness of the educational process and enhance the learning and cognitive activity of students.

The psychological mechanisms of game activity create the opportunity to satisfy the basic needs of a person, including self-expression, determining his place in life, self-management, and realizing his potential.

The game is defined as a type of activity in situations aimed at mastering and recreating social experiences, and in the process of the game, a person's control over his own behavior is formed and improved.

Increasing the activity of cadets in the educational process has always been one of the important pedagogical requirements. Today, this requirement has become even more relevant. The activity and purposefulness of cadets ensure the effective conduct of the pedagogical process, which has a management nature.

Among the types of education organized in modern conditions, games also occupy an important place. In order to fully understand their essence, it is necessary to be aware of the content of the concepts of "game" and "game technologies".

**Play is an important type of human activity and a form of assimilation (copying, imitation) of the content of social relationships by children.**

In all periods of human historical development, play has been recognized as the first and most important type of subject activity. Consequently, along with important types of individual activity - labor, study, play also plays an important role in its formation and development. Through games, the life experience accumulated by the older generation, the acquired knowledge, the basics of lifestyle and social relations, and cultural values have been consistently transmitted to the younger generation[2].

The game has the properties of educating, developing, and educating the individual. Due to its existing properties, games have been used by people for educational and educational purposes since ancient times. If games that serve to develop physical behavior in children develop agility, dexterity, endurance, and determination, then intellectual, constructive games teach them to think, reason, and logical thinking.

By their very nature, play is a leading type of activity that determines the spiritual development of a person at every stage of his life. Only in and through the game does a child learn about reality, including social relations, behavior, and actions of people.

In the process of historical development, the game has managed to occupy a special place not only in the lives of children, but also in the lives of adults. In modern conditions, game models that contribute to intellectual, computer, economic, military, professional, sports, and household leisure have also become widely popular among adults.



One of the technologies that serve to increase the educational activity of cadets in higher military educational institutions is game technologies. Game technologies increase the interest of cadets in learning knowledge about organizing professional activities. Due to the freedom in the game process, they freely express their thoughts. In addition, they sometimes have the opportunity to compete in solving educational problems.

The great thing about play is that it is both development and learning at the same time.

Games used in the educational process are determined by the specific purpose of education and the expected pedagogical result.

Pedagogical games are characterized by the following game style: subject-specific; plot-based; business, imitation, dramatized games. All pedagogical games used in the higher education system are considered role-playing games by their content. Because they are usually developed within the framework of a specific academic discipline: roles and plots are determined, various situations are imitated. That is, role-playing games used in the higher education system include all the components of pedagogical games [3].

Role-playing games used in higher military educational institutions help to master and consolidate new educational material, develop the creative abilities of the cadet, and form general military skills and competencies.

In the educational process, various forms of role-playing games are used, namely:

1. Imitative;
2. Operational;
3. Business;
4. Theater;
5. Psychological;
6. Sociological-dramatic games.

The essence and structure of the game ensure the formation of certain skills, competencies, abilities and qualities in each participant throughout the game. When using game technologies in the educational process, the teacher must be able to clearly express his pedagogical tasks in the script.

The psychological mechanisms of game activity create the opportunity to satisfy the basic needs of a person, namely self-expression, determining his place in life, self-management, and realizing his potential.

The game is defined as a type of activity in situations aimed at mastering and recreating social experiences, and in the process of the game, the person's control over his own behavior is formed and improved.

The main motive of educational activity is the educational-cognitive motive, and the most important motivation for educational activity is the cadet's interest in the profession he has chosen and is mastering the basics of. The cadet should be emotionally satisfied with the knowledge, professional qualifications and skills acquired in the educational process. In solving



this problem, the use of game technologies in the educational process is of particular importance. Game technologies also develop the creative abilities and creative thinking of cadets.

Game technologies serve to prepare students for a specific process, to form initial skills and qualifications for their direct participation in certain life realities and events. Performing various roles as participants in the educational process (students, parents, members of the pedagogical team, heads of institutions, representatives of public organizations, etc.) helps cadets to achieve theoretical, practical and psychological preparation for the effective organization of certain activities based on the opportunity to familiarize themselves with the content of pedagogical activities.

As in all games, in the process of pedagogical games, participants-cadets are active, enter into interaction with their partners, and also learn themselves by comparing their views with those of their partners, establishing the necessary relationship with the team.

When using games in the pedagogical process, it is necessary to pay attention to certain aspects. In particular:

- preparing a game script;
- drawing up instructions;
- equipping the audience in accordance with the essence of the game.

The script and its essence are important. After all, it is the script that provides the opportunity to achieve the appropriate educational, educational and developmental goals. Teachers should pay special attention to the preparation of game scripts and have the skills to prepare scripts. When using game technologies, roles are distributed by drawing lots. Small pieces of paper with the names of the roles written on them can be used. The distribution of roles among the cadets based on a draw prevents possible disagreements. During the game, compliance with the established time (regulations), communication etiquette, activity and continuation of the game to the end guarantee the expected result [2,3].

No one should interfere during the game. Only the presenter, if necessary, can correct the actions of the participants, direct them correctly.

Like any process, at the end of the game, a discussion should be held on its organization and conduct. During the discussion, the participants of the game, spectators (members of the team who did not participate in the game), experts express their opinions and suggestions on the organization and conduct of the game.

Thus, game technologies occupy an important place among the types of person-oriented education. The fact that game technologies can give cadets a certain degree of freedom, are based on active movement and communication, and sometimes have a competitive and competitive nature, serves to create the necessary conditions for the thorough mastery of educational materials through them. Game technologies used for pedagogical purposes have the character of teaching, upbringing and development. The use of role-playing games in the educational process is selected based on the purpose, objectives, content, guiding ideas of the educational material, as well as the results it serves to achieve. Educational activities organized using game technologies can be equally interesting for all cadets. This requires each teacher to actively use game technologies in the educational process [6,7,8].



**Role-playing game scenarios for the module "Structure and principles of operation of high-frequency generators" [4,5].**

1) Game called "Excursion to the Museum of High-Frequency Generators"

The lecture was organized in the form of an excursion-game called "Getting to Know High-Frequency Generators". The excursion game was called "Excursion to the Museum of High-Frequency Generators".

The purpose of the game: to familiarize the cadets with various high-frequency generators through an interesting and lively organization of the training session.

The objectives of the game:

1. To familiarize the cadets with theoretical knowledge.
2. To ensure that the cadets feel free during the training session.
3. To support each other and form a sense of mutual assistance among the cadets during the game.

Game participants (roles):

1. Guide (leader; museum employee) - 1 person.
2. Visitors (cadets) - 15 people.

Duration of the game: 80 minutes.

Conditions of the game:

1. Follow the rules of the excursion (walking in an orderly manner, not making noise, not disturbing others, not speaking loudly, not laughing inappropriately, not attracting the attention of others, etc.).
2. Listen carefully to the guide (leader).
3. Ask questions where necessary.
4. Express gratitude to the guide (leader) at the end of the excursion.

Game progress:

1. The guide (leader) introduces museum visitors to the structure of high-frequency generators using diagrams.
2. The cadets record the main information.
3. The cadets periodically ask the guide questions and clarify the issues.

Issues covered during the game:

1. The function of high-frequency generators.
2. Technical classification of high-frequency generators.
3. General structure of high-frequency generators.

Questions asked by the guide:

1. What is the function of high-frequency generators?
2. What is expressed in the technical classification of high-frequency generators?
3. What parts does the general structure of high-frequency generators consist of?
4. What are the capabilities of high-frequency generators?
5. What are the capabilities of high-frequency generators to generate harmonic signals?
6. How much do high-frequency generators weigh?
7. What is the nominal voltage source of high-frequency generators?
8. Which of the studied generators are high-frequency generators similar in their operating principles?



End of the game:

The guide will ask the cadets blitz questions. They are:

Blitz-survey questions on the topic:

1. Purpose of high-frequency generators.
2. Capabilities of high-frequency generators.
3. Technical characteristics of high-frequency generators.
4. Components of high-frequency generators.
5. Types of high-frequency generators.

2) Intellectual-competitive game “Structure and principles of operation of high-frequency generators”

The group exercise was held in the form of an intellectual-competitive game.

The purpose of the game: to familiarize the cadets with high-frequency generators by organizing an interesting, lively training session.

The objectives of the game:

1. To familiarize the cadets with theoretical knowledge.
2. To ensure that the cadets feel free during the training session.
3. Support each other and form feelings of mutual assistance among cadets during the game.

Game participants (roles):

1. Game leader (cadets) - 1 person.
2. Team leaders (cadets) - 2 people.
3. Game participants (cadets) - 10 people.
4. Experts - 3 people.

Game procedure: participants compete in two groups.

Game duration: 80 minutes.

Game conditions:

1. Follow the rules of the competition (maintaining mutual respect, being able to listen to others, taking turns answering, following the regulations, etc.).
2. Listen carefully to questions and tasks.
3. At the end of the game, express gratitude to the leader and team members, as well as the opposing team.

Game progress

1. The rules are determined.
2. The presenter takes turns explaining the questions.
3. When the teams have their answers ready, they explain their solutions.
4. The presenter evaluates the teams' solutions with the participation of experts.

Issues covered during the game

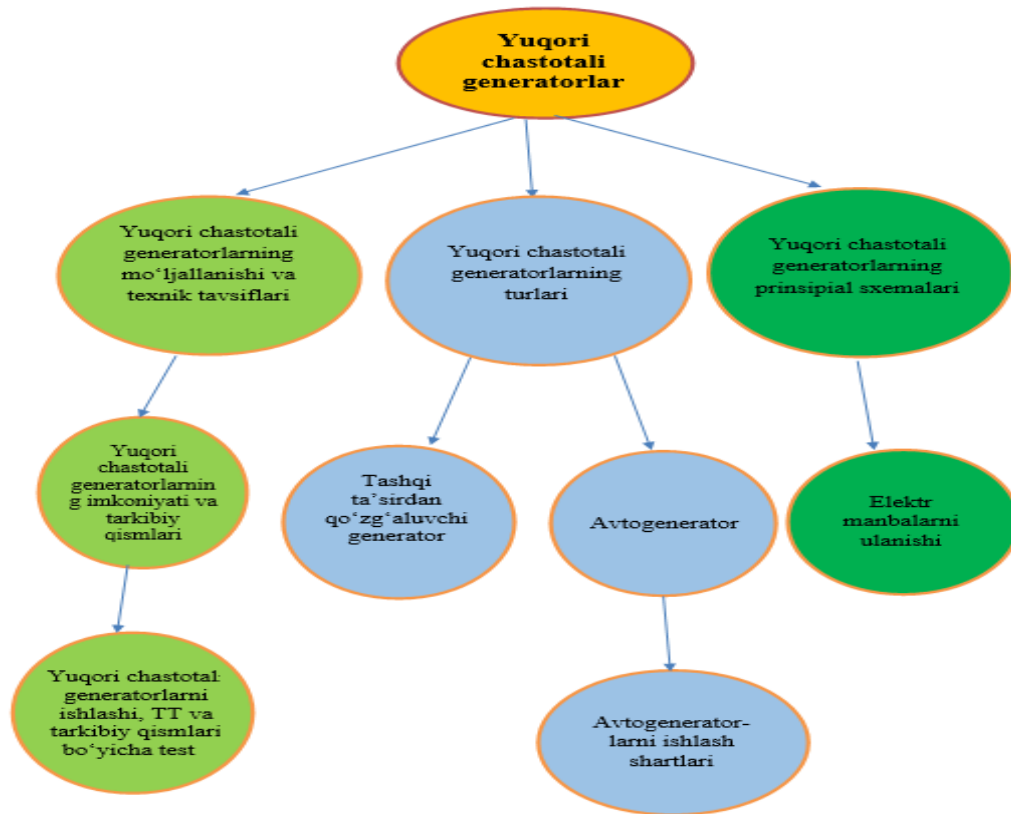
1. “Clarification of the structure and technical characteristics of high-frequency generators” according to the “Cluster” technology.
2. Representation of the “Problem of malfunctioning high-frequency generators” in the “Fish skeleton”.
3. Answering questions on the general structure of high-frequency generators using the “T-table” method.





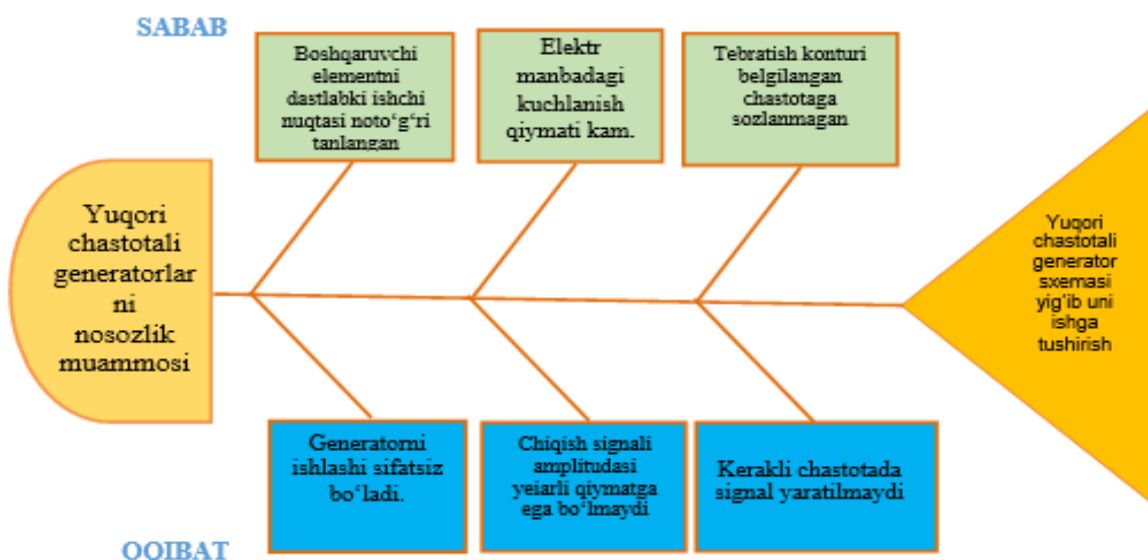
**O'yinning borishi**

**1. "KLASTER" metodi bo'yicha "Yuqori chastotali generatorlarning tuzilishi va texnik tavsifini yoritish".**



**2. Yuqori chastotali generatorlarning nosozlik muammosini "Baliq skeleti"da ifodalash**

"Baliq skeleti" – bir qator muammolarni tasvirlash va uni yechish imkonini beradi. Tizimli fikirlash tuzilmaga keltirish, tahlil qilish ko'nikmalarini rivojlantiradi.



**3. "T – jadvali".**

T – jadvali – bitta konsepsiya (ma'lumot) ning jihatini o'zaro solishtirish (ha/yo'q, ha/qarshi) uchun mo'ljallangan va tanqidiy mushohadani rivojlantiradi.

TTQGning tarkibiy qismlari	
Ha	Yo'q
Tashqi ta'sir signali	Qabulqilgich
Boshqaruvchi element	Generator
Tebratuvchi kontur	Kuchaytirgich
Elektr manba	Musbat teskari aloqa

AGning tarkibiy qismlari	
Ha	Yo'q
Musbat teskari aloqa	Qabulqilgich
Boshqaruvchi element	Tashqi ta'sir signali
Tebratuvchi kontur	Kuchaytirgich
Elektr manba	Generator

**Conclusion**

1. Game technologies occupy an important place among the types of person-oriented education. The fact that game technologies can give cadets a certain degree of freedom, are based on active movement and communication, and sometimes have a competitive and competitive nature, serves to create the necessary conditions for the thorough mastery of educational materials through them.
2. Game technologies used for pedagogical purposes have an educational, educational and developmental nature. The use of role-playing games in the educational process is selected based on the purpose, objectives, content, leading ideas of the educational material, as well as what results they serve to achieve.
2. Training sessions organized using game technologies can be equally interesting for all cadets. This requires each teacher to actively use game technologies in the educational process.
3. Interactive methods and role-playing games create an opportunity for effective teaching of the module "Structure and principles of operation of high-frequency generators". In this case, the teacher should develop scenarios for role-playing games based on the nature of the module and the nature of the specified plan questions.
4. It is important that the scenario contains as many roles as possible. Because role-playing games should cover as many cadets as possible. Only then will the participation of each cadet in educational games be ensured.
5. High-frequency generators are designed to generate high-frequency harmonic signals. High-frequency generators are divided into types of external excitation and autogenerator. It is part of any radar station and has its own established technical characteristics.

6. The general structure of high-frequency generators reflects the main parts and mechanisms that make up it. It is extremely important for cadets to have complete information about them as future specialists.

Practical and methodological recommendations:

1. Study the possibilities of using game and interactive methods in teaching all topics of the module “Transmitting and receiving devices of anti-aircraft complexes”.
2. Summarize advanced work experiences on effective teaching of training modules using game and interactive technologies in higher military educational institutions.
3. Consistently study and analyze work experiences and foreign approaches on effective teaching of training modules using game and interactive technologies in higher military educational institutions of the republic at scientific conferences and consistently introduce them into educational practice.

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