Teaching Energy Efficiency: Integrating Servers with Student Engagement

Kayumova Nasiba Ashurovna, Begmatova Nodira Hakimovna and Saidova Dilfuza Ergashovna

Karshi State University, Karshi, Uzbekistan

Abstract: This article explores the intricacies of domain and hosting algorithms for crafting websites in an e-learning setting. It investigates server integration, worldwide server efficiency, and the impact of online platforms on training prospective computer science educators. Emphasizing the significance of server integration in the pedagogical software domain, the discussion encompasses both horizontal and vertical integration. The article aims to enlighten students about the critical role servers play in creating effective online educational sites. Furthermore, it underscores the global perspective on energy-efficient server integration, contributing to a comprehensive understanding of the interconnected facets shaping the education of future computer science teachers.

1 INTRODUCTION

Decree of the President of the Republic of Uzbekistan PF – 5847 dated October 8, 2019, "Concept of development of the higher education system until 2030" Emphasis should be placed on the effective use of e-learning environments in the educational process, based on the implementation of "cloud technologies," "blended learning," "feedback." As stated in the Resolution of the President of the Republic of Uzbekistan dated February 27, 2020 PQ – 4623 "On measures to further develop the field of pedagogical education," Introduction to a continuous system of travel, improvement of curricula and programs in the field of pedagogical education based on advanced foreign experience, creation and implementation of innovative teaching, educational resources, modern, highly cultured, committed to their profession, love of their subject, tireless teaching their subject has made it an important task to form a generation of hard-working, dedicated educators.

Research shows that in the process of training future teachers of computer science, it is necessary to train qualified, modern teachers, to teach them the integration of servers in the creation of web pages to expand and deepen their scientific knowledge. From the diversity of knowledge, we can see the diversity of integration processes.

This includes the coordination of legislative activities with strategic interests in political integration, kinship in social integration, division of labor, etc., industrial integration in production, transport, energy, etc., free trade in economic integration, customs union, tariffs, labor market, investment in financial integration, market capital, wealth, language field in cultural integration, cultural relations, etc., and in scientific and educational integration, the integration of pedagogical and information technologies, pedagogical and technical knowledge. O.G.

Gilyazova describes it as "Integration - a system of interconnected sciences, similar to the structure of the environment" – Gilyazova O. G. (2000). L.A. Shkutina in his doctoral dissertation (DSc) "Training of teachers of vocational education in the integration of pedagogical and information technologies" identified an automated learning system as a key component of the integration of pedagogical and information technologies - Shkutina, L. A. (2002). Huma Akrom, Yang Yangxiu, Northeastern Normal University, China, Ali Alhalifah (Huma Akrom, Yang Yingxiu, Ali Alkhalifah), Qassim University, Burayda, Qassim University, Saudi Arabia, COVID-19 offers.

According to their study, the COVID-19 pandemic has significantly changed education from the traditional to the online version, which is an emergency for teachers and students. The financial

situation thus increases the importance of the integration of pedagogical and technical knowledge in education, at which time teachers are required to update their skills accordingly - Akram, H., & et. al. (2021).

In our research, we have focused on improving the methodological system of computer science teachers in the integration of pedagogical and information technologies. In this case, we have tried to show the interrelated elements that make up the methodological system: the purpose, content, method, form, means of education, and the role of pedagogical and information communication technologies in control - Kayumova, N. A. (2018).

2 RESEARCH METHODOLOGY

The research methodology employed a thorough examination of scientific and methodological literature relevant to the subject, alongside a comparative study and analysis of websites offering server services both domestically and internationally. The investigation incorporated socio-pedagogical methods, encompassing techniques such as conversation, question-answer sessions, observation, abstraction, formalization, diagnosis, and generalization, specifically applied during interactions with students specializing in this field.

Utilizing these methodologies allowed for a comprehensive exploration of the subject matter, facilitating a holistic understanding of server services in the context of our country and globally. The triangulation of theoretical insights, comparative analyses, and hands-on engagement with students ensured a robust and multifaceted approach to the research, contributing to the depth and reliability of the study's findings.

3 RESULT AND DISCUSSION

The rapid development of information and communication technologies means that the ability to exchange information around the world is growing, with the integration of servers, which is the process that needs to be taught to future computer science teachers.

The process of understanding the integration of servers in creating an e-learning environment that facilitates the exchange of educational information around the world for students preparing to become future computer science teachers in higher education.

In the process of research, comparative study, and analysis of scientific, methodological literature, sites providing server services in our country and around the world, the use of socio-pedagogical methods (conversation, question-answer, observation, abstraction, formalization, diagnosis, generalization) with students in this area.

The process of creating an e-learning environment in the educational process also involves the creation and use of e-learning resources - in a static state and the use of a distance learning system in a dynamic state.

The arrival of the COVID-19 pandemic in our country is an emergency for teachers and students, which has led to a change in education from the traditional to the remote, online version. This, in turn, has highlighted the need to create and use an e-learning environment.

Prospective computer science teachers differ from other science teachers in their broad knowledge of information and communication technologies and tools. Today, it is time to create an e-learning environment and have a domain and hosting from special servers for use in distance learning.

Domain means the address or "name" of this site on the Internet. Students should not confuse domain and site too often. A site is a web page that is displayed on the Internet, that is, its content, while the domain of the site means its specific "address". If our site does not have a domain, users will not be able to find their way and will not see the content.

Domains can be structured hierarchically: they consist of parts or levels, tertiary domains are created on the basis of secondary domains, and secondary domains are created on the basis of primary domains.

For example, let's analyze the domain name "shilqi.qarshidu.uz". This domain name consists of: .uz-high-level (first) domain zone. Domains at this level will be geographic and thematic. For example, .uz – Uzbekistan, .ru – Russia, .eu –European Union, .ua – Ukraine, .uk – Great Britain, .fr – France and so on.

The secondary domain is the domain name we chose during registration, i.e. the word "against" in our example. Keep in mind that a domain name must be unique, we cannot register two domains with the same name.

The third level is also called the domain-subdomain, i.e. the word "external" in our example. If we own a domain name, you can create an unlimited number of sub-domains. There are also primary domains related to the field of activity, for example, .som – commerce, .biz – business and now used by private education, individuals, non-profit and semi-

commercial organizations, .gov – for US government agencies, .edu – education. intended for institutions, etc.

Hosting is the physical location of our site, a place separated from the server. It is impossible to create a site that creates an e-learning environment without a domain and hosting.

There are several hosting and domain service companies in Uzbekistan, such as Billur COM (https://billur.com), aHost (http://ahost.uz), Airnet (https://airnet.uz/) and others. We can learn about their services at https://www.hosting-obzor.uz/.

When we analyzed hosting and domain service companies, we found that they had services such as a virtual server, server space, and rental server, and we clarified these concepts.

A server is a computer with relatively high computing capabilities designed to respond to requests from client computers, store data on the network, and transmit it to other points on the network, and its main service is to connect users to the Internet.

A virtual server is a virtual object created in special software that can be hosted on any physical server and has the same features as a normal physical server.

On one technical site, we can run several virtual servers at the same time with their configuration, separate management. Every user using a virtual server should know exactly the virtual server processor capacity and the amount of RAM allocated, the specified amount of system resources to be placed on the virtual server.

Restrictions apply only to allocated system resources. The tenant who owns the hosting and the domain manages the databases, sites, and the number of users who access them.

Server Location is a server hosting service that is a type of service where our network or server equipment can be located in a data center. In addition to the host, and domain service, the company also provides server allocation services.

A rental server is a type of service that is performed by transferring certain powers to a physical server, i.e. a computer. The service is configured according to the tasks of the project, in particular, it involves the placement of large amounts of virtual servers or sites that require significant processor resources. It could be an online store, a conference, or traffic.

We voluntarily choose one of the hosting service companies listed above and present the registration algorithm. For example, we aHost. we chose uz. In the window that opens, we present a sequential registration algorithm.

aHost. To register from uz, enter it in the address field of the Internet and press Enter;

In the window that opens, select "Register" and enter the domain name that the user likes (we selected kayumova.uz).

Go to "Settings" and select the duration of service of the domain and its cost.

Click "Next", then browse the "View and Pay" window and click "Oformit" to pay;

In the "Oformit" window, the personal data of the domain recipient are entered and documented and sent to the company manager.

As soon as the manager of the company draws up a "contract", the payment is made by selecting a type of payment (Payme, Click, etc.) from "Choose sposob oplata". We will receive a message within a day that we have the domain.

We have our domain; now we need to get hosting. Domain and hosting can be obtained from different companies and countries. This takes into account their capabilities: offering a large volume of space, offering high speed, and so on.

We choose another optional hosting site. For example, Freehosting.com. This site is a German site and we will register it as in the previous algorithm. Given its capabilities, we choose the option of getting free hosting from Freehosting Free! - and register and get hosting using the above algorithm.

The main process is aHost. We need to show that the kayumova.uz domain from uz will be implemented in the integration of hosting from FreeHosting.com. Bunda

The "Choose a Domain-Domain Select" window allows users to select three types of domains.

1. "Register a new domain" - registration of a new domain
2. Transfer your domain from another registrar-registration from other registrars

I will use my existing domain and update my nameservers. The user selects any of these three items. We have aHost. There is a domain kayumova.uz from uz, so we select the third item and enter our domain (Figure 1).
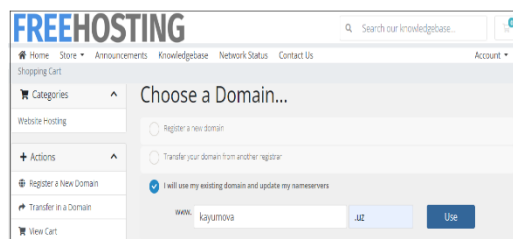

Figure 1: The domain input window from aHost.uz.

Here, Freehosting.som hosting is aware of the domain (kayumova.uz) it needs to work with. Now, aHost has been assigned the location code (ns1.freehosting.com and ns2.freehosting.com) from the server provided by Freehosting.som. This allows the uz hosting to recognize the domain it should operate with. In the domain window obtained from the site, input the server in the designated hosting space and click "Save Change" (Figure 2).

Figure 2: The aHost.uz window for entering server names from Freehosting.com.

In this scenario, aHost.uz supports the operation of Freehosting.com with its own domain, and conversely, Freehosting.com supports the operation of aHost.uz with its own hosting. This is where the integration of hosting on aHost.uz server in Uzbekistan with hosting on Freehosting.com server in Germany is demonstrated. Server integration knows no boundaries worldwide. The user will be able to host from any country, have a domain from any country, and use them integrated, as mentioned above.

So far, in pedagogy, interdisciplinary integration, the integration of pedagogical and information technologies, and the integration of pedagogical and technical knowledge have been covered, studied, and researched. In the process of teaching the subject "Pedagogical Software" to students, we experimented with the process of creating an online educational site using server integration and creating an offline e-learning tool. The results obtained at each stage of the experimental work were systematically analyzed. In the experimental group - 215 students, in the control group - 220 students. In determining the effectiveness of the research, the level of students' mastery of the task was studied based on mastering criteria, and the criteria were used (Table 1).

Table 1: Initial Findings: Pedagogical Experiment's Student Test Results.

University	Group	Qty. students	fine		well		satisfactory		not satisfactory	
			5	%	4	%	3	%	2	%
Karshi State University	experimental group	59	5	8.50%	16	27.10%	31	52.50%	7	11.90%
	control group	60	6	10.00%	17	28.30%	28	46.70%	9	15.00%
Ferghana State University	experimental group	78	7	9.00%	18	23.10%	41	52.60%	12	15.40%
	control group	79	8	10.10%	19	24.10%	38	48.10%	14	17.70%
Gulistan State University	experimental group	78	8	10.30%	19	24.40%	38	48.70%	13	16.70%
	control group	81	8	9.90%	18	22.20%	43	53.10%	12	14.80%
Total	experimental group	215	20	9.30%	53	24.70%	110	51.20%	32	14.90%
	control group	220	22	10.00%	54	24.50%	109	49.50%	35	15.90%

The creation of an online learning site with server integration demonstrated increased efficiency (1.16%). This success has prompted further expansion of teaching process ideas, emphasizing an integrated approach in pedagogy.

4 CONCLUSION

The integration of servers within the process of training future computer science teachers presents a pivotal advancement in educational technology. By comprehensively understanding server integration, prospective educators can facilitate global exchange of educational resources, crucial especially in the context of the COVID-19 pandemic's shift towards remote learning.

Through exploring hosting and domain services, students acquire practical skills in navigating the intricacies of server management, including virtual servers and server locations. This hands-on approach empowers them to create and maintain e-learning

environments effectively, transcending geographical boundaries.

The experimental integration of server technology into pedagogy not only enhances educational outcomes but also underscores the importance of interdisciplinary collaboration. As evidenced by increased efficiency in online learning site creation, the fusion of pedagogical and technical knowledge opens new avenues for innovative teaching methodologies, emphasizing the need for an integrated approach in modern education.

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