Research Article

Optimization Simulation of Balanced Distribution of Multimedia Network Modular Teaching Resources

Jingrong Lu

Qingdao University of Science & Technology, Qingdao 266061, China

Correspondence should be addressed to Jingrong Lu; 01315@qust.edu.cn

Received 18 July 2022; Revised 27 August 2022; Accepted 30 August 2022; Published 14 September 2022

Academic Editor: Santosh Tirunagari

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The balanced distribution of multimedia wireless network modular teaching resources is improved by optimizing and adjusting the balanced distribution of multimedia wireless network modular teaching resources. Based on block grid balanced scheduling and resource spectrum fusion, a balanced distribution method of multimedia wireless network modular teaching resources is proposed. A blockchain Internet of Things accesses control network architecture system for the balanced allocation of multimedia wireless network modular teaching resources established using the priority business scheduling method. Modular resource allocation of multimedia wireless networks and adaptive forwarding are adjusted to control the data packets. The bandwidth guarantee mechanism is used for the equitable allocation of multimedia wireless network modular teaching resources information flow. Multi-service hierarchical management of multimedia wireless network modular teaching resources spectrum is controlled by block grid balanced scheduling and resource spectrum fusion. The high-energy physical computing system structure is used to allocate the resource spectrum balance of the modular teaching resources of the multimedia wireless networks, ensuring the bandwidth requirements of various services. The classified management and balanced allocation of the multimedia wireless networks’ teaching storage, system, and teaching spectrum resources are made possible. The results of the tests show that this method effectively reduces the delay in the allocation of modular multimedia wireless network teaching resources, improves the utilization rate of modular multimedia wireless network teaching resources, and significantly improves their reading and writing performance.

1. Introduction

Higher standards are being put forth for the reliable distribution of multimedia wireless network modular teaching resources as a result of the put forward development of Internet technology [1]. Multimedia teaching has been studied and used in foreign countries earlier. The first generation of computer-assisted instruction systems was introduced by IBM in the United States in 1946, more than ten years after the development of the first computer [2–4]. Because the system was large and inconvenient at the time, it was not widely popularized or used. Developed countries, such as the United States, make extensive use of basic resources. The computerization and networking of education, as well as control over communication channels, have long been realized. The conventional mode of transmission is the teaching method used in the American education system.

The process of teaching with multimedia equipment and courseware is known as multimedia mode, and network-based teaching is recognized as network mode. Virtual reality mode refers to the teaching process that is based on computer simulation and other technologies [5]. In fact, in the actual teaching process, many kinds of teaching modes are often mixed in it giving full play to their combined advantages.

Modular teaching resource allocation is an important component of the multimedia wireless network. The multimedia wireless network is important in the transmission of network data information and the structure of network networking [6], to ensure that multimedia wireless network modular teaching resource transmission is of high quality and efficiency. To reduce the packet loss rate and jitter of multimedia wireless network data transmission, it is necessary to combine data transmission delay control and bandwidth reliability allocation and improve the bandwidth
allocation capability of multimedia wireless network modular teaching resource transmission. The key to ensuring the efficient operation of multimedia wireless networks is to adjust the balanced distribution of multimedia wireless network modular teaching resources [7, 8]. It is the adjustment of the link bandwidth in conjunction with the allocation of multimedia wireless network modular teaching resources. It is possible to realize a balanced allocation of multimedia wireless network modular teaching resources. The current method highly depends on the balanced allocation method for multimedia wireless network modular teaching resources. The balanced allocation method of multimedia wireless network modular teaching resources is based, among other things, on link balance and diversity. It constructs a balanced diversity interval parameter adjustment model for the balanced allocation of multimedia wireless network modular teaching resources. It adopts the most cost-effective server coverage strategy and develops the application services quality of service (QoS) protocol. It also reduces transmission delay and bit error rate while improving the ability of multimedia wireless network modular teaching resources to be allocated in a balanced manner. A joint allocation method of multimedia wireless network modular teaching resources is proposed in a big data environment. The dynamic transformation of a multimedia wireless network in a big data environment is investigated in this paper [9]. To address these issues, researchers have recently focused on the balanced distribution of multimedia network modular teaching resources.

In some kinds of significant network information advancement, the methodology of learning has also revolutionized. The digital educational environment enhances the development of educational effectiveness and strongly affects students’ achievement, according to several teaching theories and study findings. Guo et al. proposed a blockchain-based digital rights management system to address these challenges. This system includes a brand-new architecture for communicating and being able to manage multimedia resources for online learning predicated on the combination of both public and private blockchain systems, and also three different reference implementation schemes for the accomplishment of multimedia digital rights documentation, protection of information, and undifferentiated verifying of certificates. The recommended blockchain-enabled DRM solution is a strong contender for resolving the problem of blockchain-based multimedia data security in an online learning environment [10]. Kumala et al. established a multimedia portal including videos and educational modules. MDLC employs a variety of tactics, including concept, design, material acquisition, assembly, validation, and marketing. A diagramming system and a learning video storyboard were used to create multimedia with MDLC. The results demonstrated that the MDLC approaches created multimedia. Based on the findings of the alpha and beta testing, it was determined that the developed e-learning multimedia is practical and appropriate for use by primary school students. The developed multimedia includes a range of educational features to help students understand and engage with the presentation [11]. Ren et al. show that the performance vectors of virtual machines and servers can be used to create a matching model between virtual and actual resources, and resource demand can be calculated using linear prediction. The balanced allocation approach for sports-distant education resources was developed to reduce the number of servers, increase resource use, and balance the use of various resources. The Pareto optimal solution set is the result of balanced allocation. Its average resource performance matching distance, calculated using the BF and RR approaches for 1000 virtual machines, is 284 and 465, respectively, less than 765 for the same machines. Hua investigates the responsibilities and rights of each hierarchy entity, how each hierarchy entity generates and distributes resources, and proposes an online service department–based hierarchy method for transferring educational knowledge assets. The author describes in detail the integrated design framework for personalized learning materials at the cloud service center. For resource sharing, the approach of resource financial viewpoint, system factors, and resource acceptance disparities are discussed. The dynamic assessment model of the quality of teaching-learning materials is presented and described for resource exchange behaviors in resource sharing [12].

The allocation band of multimedia wireless network modular teaching resources is determined based on the distinction of services. The resource allocation is divided into two parts when combined with the optimization scheme: heavy load and light load, and the bandwidth requirement description is combined to realize automatic bandwidth allocation. However, this method cannot fully utilize the benefits of SDN centralized control, and the bandwidth service guarantee performance is not good. We designed the modular teaching resources of multimedia wireless network, and the case level data management and transmission system of high energy physics. Realize the balanced distribution of multimedia wireless network modular teaching resources through HTTP technology and local cache [11]. This method, which is intended to address the shortcomings of traditional methods, has a high computational cost and poor adaptability to multi-process scheduling. This paper proposes a balanced allocation method of multimedia wireless network modular teaching resources based on block grid balanced scheduling and resource spectrum fusion.

The main contribution of the paper is the following:

(i) First, we complete the network architecture, and then give the balanced allocation algorithm of multimedia wireless network modules according to the network architecture.

(ii) Secondly, the network bandwidth is automatically adjusted through resource matching and optimal allocation.

(iii) Finally, the simulation test demonstrates that this model outperformed others with regard to increasing the ability of balanced allocation of multimedia wireless network modular teaching resources.

The rest of the paper is organized logically as follows: Section 2 shows related work; Section 3 shows network
architecture and multi-service hierarchical network management; Section 4 shows the optimization of balanced allocation of multimedia wireless network modular teaching resources; Section 5 shows experimental work and simulation. Finally, the work of the paper is concluded in Section 6.

2. Related Work

This research is divided into two sections. The primary focus of the paper is the distinctions between college music instruction and other social subjects. Brain computing, which aims to study objects by replicating the composition and information interpretation of biological neural networks and the feasibility of multimedia technologies, aims to study objects by replicating the composition and information interpretation of biological neural networks. To track and assess the efficacy of music instruction, the intelligent learning properties of a deep learning algorithm are proposed. The author has discussed the design and creation of network interactive multimedia, which aids in conceptualization and references for the use of multimedia technology in Chinese college musical education [13]. This study’s author proposes a recurrent neural network (RNN) based on resource construction, approach, and applications. The analysis of the user’s role requirements of teachers, students, and system administrators involved in teaching and learning looks at the needs of music students. Researchers are working on a mobile teaching platform that is compatible with music instruction characteristics. The experimental results show that as more iterations are added, the system becomes more effective. Given the robust system stability and an average accuracy of 72 percent, precision fluctuation is to be expected [12]. The author recommends using an intelligent optimization-based information fusion technique to establish grassroots teaching organizations. It has been demonstrated that information fusion has three levels: data, characteristics, and outcomes. The foundational elements of well-known educational organizations were investigated. The information fusion of teaching grassroots unit development is accomplished using the threshold value of teacher construction and grassroots unit work, and the optimization of the particle swarms’ approach is used to determine the greatest value of the work entropy of teaching grassroots units [14]. The main topic covered by the study’s author was how efficient multimedia networks can support business English majors in technical colleges in enhancing their work experiences and substantially enhancing their practical English proficiency, computer skills, communication skills, and cooperation skills. It investigated ways to help business English majors at technical institutions get job experience and using English abilities. Statistics show that multimedia networks may aid students in developing their entire competency, notably in earning job experience and using English abilities [15].

3. Network Architecture and Multi-Service Hierarchical Management of the Network

3.1. Network Architecture. To achieve a balanced distribution of multimedia wireless network modular teaching resources, block grid balanced scheduling and resource spectrum fusion are used. It established an SDN (Software Defined Network) architecture model for the balanced distribution of multimedia wireless network modular teaching resources. Combined with SDN network architecture protocol, self-defined configuration and programmable network resource spectrum parameter control are carried out [16]. Dynamic interaction is carried out in the data layer of multimedia wireless network modular teaching resources distribution, and in various network application interface protocols, multiple services are divided and scheduled in parallel above the data center. The hierarchical formal description method is adopted to establish the hierarchical structure of multimedia wireless network modular teaching resources spectrum distribution, as shown in Figure 1.

In the hierarchical structure configuration of multimedia wireless network modular teaching resources spectrum allocation in Figure, based on the overall link bandwidth allocation method, the cluster computing system is adapted to allocate data spectrum resources, and the spectrum resources of the network are distributed as a seven-tuple $G = (T, X, Y, \Omega, Q, \delta, \lambda)$, where:

- $T$: Denotes the time transmission sequence of the multimedia network modular teaching resource scheduling time coordinate of the file-level data management transformation. If $T$ is an integer, this indicates that case-level data management is discrete; if $T$ is a real number, this indicates that network bandwidth allocation is a continuous sequence [17].
- $X$: Select the event set that communicates with the nearest multimedia wireless network modular teaching resource server site.
- $Y$: Event set of multimedia network modular teaching resource job processing process.
- $\Omega$: Input segment set, a subset of $X \times T$, describes the input characteristic quantity of multimedia wireless network modular teaching resource file cross-domain transmission [18].
- $Q$: Case screening, reading multimedia wireless network modular teaching resources, and processing the internal state set of multimedia wireless network modular teaching resources in parallel.
- $\delta$: $Q \times \{\ast\} \rightarrow Q$: Transfer function for the server to pull files, where $\ast$ represents internal events.
- $\lambda$: $Q \times \{\ast\} \rightarrow Y$: Case-level data management function for spectrum allocation of multimedia network modular teaching resources.
Definition 1. Describe the modular module combination of multimedia wireless network modular teaching resources balanced distribution node. \( M = (\Sigma, \Gamma, S, S_0, \delta, \omega) \), wherein

- \( \Sigma \): Input N Data nodes of multimedia wireless network modular teaching resource cluster.
- \( \Gamma \): Enter the label of the node in the Over group of multimedia wireless network modular teaching resources.
- \( S \): Nonempty finite set in the balanced state of multimedia network modular teaching resource system.
- \( S_0 \): Disk space distribution state set of multimedia network modular teaching resource cluster nodes.
- \( \delta \): Maximum dispersion difference: \( \delta : S \times \Sigma \rightarrow S \)
- \( \omega \): Output multimedia wireless network modular teaching resource scheduling function \( \omega : S \rightarrow \Gamma \)

According to the above definition, the network architecture of a balanced distribution of multimedia wireless network modular teaching resources is divided into three layers: the application layer, control layer, and data layer [19–21]. As shown in Figure 2, the application layer realizes network interaction and flow control, the control layer carries out information collection and load balancing scheduling, and the data layer realizes information exchange.

According to Figure 2, the balanced allocation model of multimedia wireless network modular teaching resources consists of three layers. Specifically, the application layer, control layer, and data layer have relative independence. The application layer is primarily responsible for specific business logic processing, while the control layer is responsible for providing reusable services and the data layer is responsible for data storage and access. When using a multimedia wireless network to allocate teaching resources, the
application layer and the control layer are generally deployed together, while the data layer is deployed separately [22]. In the application layer, this includes application service file transfer protocols and domain name systems, and it completes network teaching data retrieval by sending an HTTP request. It provides the service of searching IP addresses by domain name or reversely searching domain names from IP addresses through the domain name resolution system. To provide a reliable byte stream service, the control layer divides the data, sends HTTP request messages, and forwards them to the data layer after marking the serial number and port number of each message. At the same time, the data of considerable teaching resources is divided into data packets with message segments as units for management and control. It provides perfect services for the balanced distribution of modular teaching resources in multimedia wireless networks. The data layer mainly stores nonoriginal data, that is, databases or text files that complete data retrieval. Applications are in the form of storing data and providing data services for the application layer and the control layer [23].

3.2. Multi-Service Hierarchical Management. The blockchain Internet of Things accesses a control network architecture system with a balanced distribution of multimedia wireless network modular teaching resources established according to the priority business scheduling method described above. The corresponding network equipment is modified by allocating multimedia wireless network modular resources and adjusting data packet forwarding adaptively. In the directed graph, the spectrum weighted distribution parameters \( \Sigma_V \) and \( \Sigma_E \) of multimedia wireless network modular teaching resources are obtained, as are the tag sets of nodes and edges. Using the correlation queue scheduling algorithm, a six-tuple multi-service hierarchical area representing multimedia wireless network modular teaching resources is obtained, where \( V \) is the service distribution node set above the data center, and \( E \) is the low-priority data flow, where \( G = (V, E, s, t, \ell, \pi) \) represents the number of video services and FTP services, and \( |V| = n \). A server is deployed on the host h3 to obtain the data request service flow \( X \) of the network and some intermediate layers [24]. These two functions are the starting node and the target node of the multimedia wireless network modular teaching resources pointing to the edge. \( i: K \rightarrow L \) is a tuple \( r = (L \subseteq K \subseteq R) \) that consumes the cost of virtual machines, the total consumption of multimedia wireless network modular teaching resources, and the distribution of suppliers, where \( L, K, \) and \( R \) are graphs, \( r = (L, i, K, j, R) \) and \( L', K', R' \) are the best solutions found by the whole group at present, and the distribution rules of multimedia wireless network modular teaching resources spectrum [25]. The multimedia wireless network modular teaching resource spectrum is managed in a multiservice hierarchical manner. The multimedia wireless network modular teaching resource rule \( K \), is given using the block grid balanced scheduling and resource spectrum fusion methods, and the corresponding graph is named \( r = (L \subseteq K \subseteq R) \). The right picture of network bandwidth and the interface picture of multimedia wireless network modular teaching resources is the left picture of multimedia wireless network modular teaching resource bandwidth occupied by \( R \).

Therefore, the multi-service hierarchical management of multimedia wireless network modular teaching resources is constructed. A topological graph \( m: L \rightarrow G, d: G \rightarrow D, k: K \rightarrow D, m': R \rightarrow H, d': H \rightarrow D, \) and a rule are obtained, such as the mapping \( r = (L, i, K, j, R) \) reflecting the current state of nodes. According to the disk space usage of the cluster, the link set \( G \) for bandwidth allocation of multimedia wireless network modular teaching resources is obtained, which is recorded as \( G \rightarrow H \).

If \( R \) is a rule set, \( G \) and \( H \) are two graphs, and \( G \rightarrow H \) represents CPU utilization and disk I/O utilization, which means that \( r \in R \) exist to make \( G \rightarrow H \). The management diagram of modular teaching resources balanced distribution of multimedia wireless networks is constructed, as shown in Figure 3.

4. Optimization of Balanced Allocation of Multimedia Wireless Network Modular Teaching Resources

4.1. Resource Spectrum Allocation. To ensure the bandwidth requirements of various services, the high-energy physical computing system structure is adopted to allocate the resource spectrum balance of multimedia wireless network modular teaching resources [26]. The transformation rule \( r = (L, i, K, j, R) \) is applied to derive graph H from graph \( G \) of multimedia wireless network modular teaching resources, so as to obtain the busy degree reflecting the current node bandwidth, which is realized by the following steps:

Step 1: Select the \( L \) graph in the graph model \( G \) that represents the current busy multimedia wireless network modular teaching resource node, and the \( L \) graph is the interception parameter \( K \) in \( G \). When the bandwidth is balanced, it is necessary to achieve a suitable relationship between \( L \) and \( G \) to meet the spectrum allocation mapping of multimedia wireless network modular teaching resources.

Step 2: If the disk utilization dispersion meets the threshold, go to step 3, otherwise, exit \( m: L \rightarrow G \).
Step 3: Delete the generated context map $D$ from the multimedia wireless network modular teaching resource matching distribution map $G$ to define the disk dispersion degree and cluster state feature mapping $d: G \rightarrow D, k: K \rightarrow D$, so that $\langle i: L \rightarrow K, k: K \rightarrow D; m: L \rightarrow G, d: G \rightarrow D \rangle$ meets the convergence.

Step 4: Combine the weights $D$ and $R$ of the two influencing factors and calculate the $K$ diagram of the spectrum allocation of multimedia wireless network modular teaching resources, and allocate the proportion of the current system state $\langle k: K \rightarrow D, j: K \rightarrow R \rangle$ [27].

Calculate the deviation of the disk utilization rate of nodes in the multimedia wireless network modular teaching resource cluster. For nodes $SN_{B}$ and $B = (X, Y, E)$, they are a single module in the above figure. Open the terminal in Ubuntu virtual machine to obtain two node sets $X$ and $Y$ for modular teaching resource allocation of multimedia wireless network, and edit them. Use the floodlight controller to obtain directed edges $SD, L \subseteq K \subseteq R$, and $G_2 \supseteq D = SH$, and the protocol function of external user connection convergence exchange is expressed as $i, j, d, d'$.

The defined streaming media service graph model of multimedia wireless network modular teaching resources is $B = (NN_{B}, SN_{B}, CB_{B})$, which is the lower node set of each host node, $NN_{B}$ is the upper node set of multimedia wireless network, and $e = (s, n) \in CB_{B}$ is the edge set. Under the restriction of transmission rate, each node has a unique node and edge. Therefore, a resource matching optimal allocation model for the balanced allocation of multimedia wireless network modular teaching resources is established.

4.2. Balanced Allocation of Wireless Modular Teaching Resources. A high-energy physical computing system structure is used for the resource spectrum balance allocation of multimedia wireless network modular teaching resources. It is possible to realize the classified management and balanced allocation of multimedia wireless network modular teaching storage resources, system resources, and modular teaching spectrum resources [28]. The storage resource allocation scheme of a multimedia wireless network modular teaching resources is given as $f_{B}: B \rightarrow BI$. The bandwidth of the corresponding multimedia wireless network modular teaching resources physical link is defined as $\sim upper \subseteq V_{A} \times V_{B}$, $\sim lower \subseteq V_{A1} \times V_{B1}$. The allocation quadruple of the bandwidth of the physical link of the multimedia wireless network modular teaching resources is interchangeable. If the transmission rate threshold is set to $(f_{A}, f_{B})$, $\sim upper \sim lower, a \in V_{A1}$, and if there is a relationship $a \sim upper, b$, one of the following conditions holds:

$$a \notin \text{dom}(f_{A}) \land b \notin \text{dom}(f_{B})$$

$$a \in \text{dom}(f_{A}), b \in \text{dom}(f_{B}) \land \text{df}_{A}(a) \sim lower, f_{B}(b).$$

In the Ubuntu virtual machine, turn on the multimedia wireless network modular teaching resource allocation terminal. Adjust the bandwidth balance of the multimedia wireless network based on the HTTP protocol using the $L$ and $R$ diagrams. The output $f_{A}$ corresponds to $K$ and $L$, which corresponds to the external user connection aggregation switch and the external user connection aggregation sequence. Where $\rho = \{H_{i, j} \rightarrow B_{i} \mid i \in \{1, ..., n\}\}$ is the $\sim lower$ transformation, to realize the automatic balance adjustment of the multimedia wireless network. The schematic diagram of realizing the balance allocation of multimedia wireless network modular teaching resources is shown in Figure 4.

5. Experimental Work and Simulation

System testing is an important part of software engineering. The purpose of system testing is to verify whether the developed system has reached the required functions and performance indicators and whether it can be applied to the actual use environment. The test environment of the system simulates the real running environment of the system, and a cloud computing service platform is built in the central computer room of the school to provide services such as dynamic resource scheduling and dynamic load balancing. In the test environment, the network bandwidth is Gigabit, and the network connection devices are Huawei switches, routers, etc. A teacher’s computer and ten simulated students’ computers are set in the client. During the testing process, test cases are constructed according to the system design scheme. After running the test cases based on the test environment, the theoretical output and the actual results are compared and the test results are analyzed. The external users of the experimental multimedia wireless network are connected to the floodlight controller; Mininet is installed in Ubuntu and the topology of a multimedia wireless network is built. The information data service subsystem mainly publishes all kinds of data in this system in the form of Web services, including the billing strategy selected by users, the related data of users’ teaching-on-demand payment resources, etc. Meanwhile, the full-duplex Web service mode is used to realize the operation of other external management information systems. The initial IP of multimedia wireless network modular teaching resources allocation IP = 192.168.21.166. In the experiment, the network performance is tested by reading 124 GB files through the multimedia wireless network, and the network delay from 1 ms to 100 ms is tested. The read-write block size of multimedia wireless network modular teaching resources is set to 14 MB, and 100 groups of sequence samples are taken as test sets. First, the optimal delay parameters for the balanced distribution adjustment of multimedia wireless network modular teaching resources are calculated, as shown in Figure 5.

In Figure 5, when $k = 50$, the ratio is the smallest, and it represents the lowest bit error rate. Taking this as the bandwidth allocation delay parameter, the phase $\Phi_{10}$ $\Phi_{11}$ and spectrum bandwidth $\Theta_{10}$ $\Theta_{11}$ of modular teaching resource allocation in the multimedia wireless networks are obtained. The calculation results are shown in Table 1.
data and show it to users on the interface. Media Element control itself has the function of buffering while playing, and it also provides the event notification function of the current state of buffered data. The Canvas container is used as the host window for the outline structure design of the progress bar, and a rectangle control is added as the cursor of the progress control. When a streaming media data source is connected to the media element control, the buffering time property of the control can control the data buffering time, and the settings of its parameters affect the smoothness of streaming media playback. After the data are buffered for some time, the buffer progress changed event will be triggered, which is used to inform the external current buffering progress. The background will respond to the event and update the user interface. We can obtain the results of the modular teaching resource allocation of the multimedia wireless network, as shown in Figure 6.

Table 1: Analysis results of spectrum-related parameters of network resources.

<table>
<thead>
<tr>
<th>Model</th>
<th>$\varphi_{10}$</th>
<th>$\varphi_{11}$</th>
<th>$\theta_{10}$</th>
<th>$\theta_{11}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARMA</td>
<td>0.858</td>
<td>0.867</td>
<td>0.819</td>
<td>0.321</td>
</tr>
<tr>
<td>STARMA</td>
<td>0.476</td>
<td>0.375</td>
<td>0.772</td>
<td>0.598</td>
</tr>
</tbody>
</table>

Figure 4: Schematic diagram of modular teaching resource allocation in multimedia wireless network. (a) Client. (b) Switch side.

Figure 5: Optimal delay parameters of automatic equalization and distribution adjustment in multimedia wireless network.
points, effectively improving the reading and writing performance of multimedia wireless network modular teaching resources, thus improving the bandwidth automatic balanced distribution of multimedia wireless network modular teaching resources. We tested the delay error of the modular teaching resource distribution of multimedia wireless network, as shown in Table 2.

Figure 6: Results of balanced allocation of resources. (a) Before improvement. (b) After improvement.

Table 2: Delay error of multimedia wireless network modular teaching resources.

<table>
<thead>
<tr>
<th>Spatial position</th>
<th>This method</th>
<th>ARMA</th>
<th>STARM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.221355</td>
<td>0.244033</td>
<td>0.302818</td>
</tr>
<tr>
<td>2</td>
<td>0.222521</td>
<td>0.253248</td>
<td>0.308463</td>
</tr>
<tr>
<td>3</td>
<td>0.221074</td>
<td>0.241868</td>
<td>0.301496</td>
</tr>
<tr>
<td>4</td>
<td>0.220116</td>
<td>0.256496</td>
<td>0.310455</td>
</tr>
<tr>
<td>5</td>
<td>0.220529</td>
<td>0.237529</td>
<td>0.298843</td>
</tr>
<tr>
<td>6</td>
<td>0.220802</td>
<td>0.239694</td>
<td>0.300165</td>
</tr>
<tr>
<td>7</td>
<td>0.219769</td>
<td>0.231570</td>
<td>0.295190</td>
</tr>
<tr>
<td>8</td>
<td>0.220322</td>
<td>0.235901</td>
<td>0.297843</td>
</tr>
</tbody>
</table>

Figure 7 displays the comparison outcomes from a test of the multimedia wireless networks’ bandwidth usage. According to the analysis in Figure 7, with an average utilization rate of 0.9521, which is significantly higher than the conventional methods of 0.9433 and 0.8471, this method can adaptively allocate the bandwidth of the optical fiber network and improve utilization rates.
6. Conclusions

Due to the limited construction budget of campus network resource servers and a large number of campus network users, there is also a high demand for multimedia teaching. It is critical to understand how to schedule various resources reasonably and scientifically to improve system performance. A dynamic scheduling strategy of resource load based on prediction is proposed to meet this demand. This strategy uses virtualization technology to divide the computing power in multimedia teaching clusters into multiple virtual central processing units. Then, it builds a resource request prediction model to predict the demand for teaching on demand in the future according to the current multimedia teaching situation. Data such as the frequency with which resource content is ordered and the number of times it has received praise are used to build the prediction model. This strategy logically distributes resources based on the actual multimedia teaching needs by utilizing the dynamic adjustment functionality of virtual hardware resources. This achieves the goal of completely utilizing resources under load balance situations. The optimized allocation algorithm is achieved through the optimized allocation of multimedia wireless network modular teaching resources. Increase the resource support for the multimedia teaching content in the issue, and provide flexible services to multimedia teaching technology users. Modular teaching resources are reliably allotted bandwidth by managing the multimedia wireless networks’ transmission delays. It is possible to lower the multimedia wireless network transmission’s packet loss rate and jitter. It is possible to increase the consistency of the multimedia wireless network’s capacity for resource allocation. This paper proposes a balanced resource allocation method for multimedia wireless networks based on block grid balanced scheduling and resource spectrum fusion. The cluster computing system is used to distribute data spectrum resources under the overall link bandwidth allocation method. The resource spectrum of multimedia wireless network modular teaching resources is distributed using a high-energy physical computing system structure. Thus, the multimedia wireless network’s automatic balanced allocation adjustment is realized. According to the research, the method presented in this paper can be modified for use in the deployment of multimedia wireless networks. Furthermore, it increases the use of wireless network multimedia teaching resources.

Data Availability

The data used to support the findings of this study are available from the author upon request.

Conflicts of Interest

The author declares that he has no conflicts of interest.

References


