

The Design and Realization of the Evaluation Model for Enhancing the "Second Classroom" Education by Using the Multimedia Interface

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The design and realization of the evaluation model for enhancing the "second classroom" education by using the multimedia interface

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Abstract

The increasing challenges in improving the educational system such as innovation, are gaining much greater attention in the media in classrooms. Technological innovations have a significant potential to improve the learning and teaching process. The standard online learning method cannot effectively recommend the required learning content, which leads to poor learning and no visible improvement of student performance after learning. In this paper, online multimedia learning-based teaching performance analysis (OML-TPA) has been proposed based on the virtual network function structure to improve the teaching effect appropriately. The first is to develop a classifier for online educational tool learning, build on the student's capabilities and then develop a multimedia online education dataset. This indicates that the design of network-based virtualization features interactive multimedia educational management method can enhance students' learning effect. According to student data, the teaching management system can automatically analyze student learning capacity such that students can be graded by the level of attention they are required to receive. Finally, the interactive multimedia education control system is designed to realize online multimedia education management based on virtualization architecture in the network. The OML-TPA is evaluated using simulation analysis and observed the highest accuracy ratio (93.7 %), performance ratio (92.6 %), learning rate (95.1 %), feedback ratio (91.8 %), the efficiency ratio (96.7 %), precision ratio (94.3%) and learning outcome ratio (97.6 %) compared to other methods.

Keywords : Teaching performance ,virtual network , Education dataset

1. Significance of evaluation education system using the multimedia interface

The online learning method has gradually be enhanced with the development of internet innovation. Multimedia online learning has significantly developed in recent years [1]. The benefits of online multimedia learning are multiple interactions, information and technology to achieve student-to-student interactions and exchanges that can enhance the communication between teachers and students, encourage and focus on promoting student self-studying and student collaborative efforts [2]. Digital technology provides online multimedia learning with educational opportunities and a student-developing learning process that divides the traditional concept for school attendance [3]. Overcome the limitation of the traditional education in time, in the distance, in age and economic terms and forces education to the front of educated students while pulling educational content to the focus in the network, by the needs of educational institutes, faculty, courses and teachers [4,5].The multimedia online education system has developed into the major influence of the mass education and reality learning system, becoming the main strategy for governments to achieve higher learning and knowledge, intelligence and educational technology, an emerging idea in the global education development [5,6]. Online multimedia learning using different media as a communication medium has provided an ongoing stream of knowledge for the evolution of the individual community [7, 8].The economies around the globe support this kind of education method and success can be attributed to its flexible resources and the monitoring and management of modern scientific and technological achievementsdirectly transforming productivity with application prospects [9, 10]. The traditional online education method does not fully allow for the content to be learned by students and neither is the performance greatly enhanced after management [11, 12].Therefore, students of multimedia online learning environments need to analyze

online learning mode and develop the most appropriate educational evaluation scheme based on the virtual structure of the network functions [13].

The constant and rapid development of technology resulted in the online education system being implemented. The introduction and new technologically advanced in higher education are currently being focused on learning [14]. The implementation of teaching changed how classroom instruction is conducted online using blackboard and multimedia indicators to promote student interaction and online assessment [15]. Teaching and learning are usually related to the learning system that offers information using technological infrastructure such as the online and internet. Multimedia innovation has greatly affected how learning is conducted these days [16, 17]. Multimedia is one of the most effective methods for learning in the online learning environment. In multimedia learning, media such as books, statistics, and textual materials have easily accessible and interactive online and virtual communities [18]. As a result, the implementation of, enabling them to present interactive learning material and respond to various learning styles benefited students positively [19]. Students with various subjects can be effectively comfortable and reduce the time each student takes to understand how students can learn and, in turn, spend more time studying the content of the class. [20, 21]. With the daily increase in student participation in multimedia learning courses, creating and delivering high-quality interactive online and virtual learning content is equally important [22, 23]. For online learning is effective, developing, designing, and implementing higher multimedia content in online learning classes [24]. Using a standard approach to introduce and develop multimedia in an education system allows students to access and acquire information in a comfortable, interactive environment with easy accessibility to related information [25, 26]. Implementing multimedia learning within a given framework can facilitate content creation and benefit from the online as a tool for teaching and learning

[27,28]. This paper discusses developing an online learning system based on multimedia and virtual network function.

Hung, H. et al. [29] described the learning approach as more focused, allowing students to learn at any time and everywhere, from traditional face-to-face lessons, online learning, synchronous learning to even mixed learning approaches. This study used educational data analysis to analyze learning behavior in a mixed learning course produced by students. Two classes of Programming language learning activities connected to first-year students in the university collected experimental results. In addition, they used this data analytics and learning algorithms based on symmetry to study comportations of learning. This study could define the patterns of students, including a positive interactive group, steady study group, positive educational materials group and lower academic achievement group by a hierarchical cluster high-level view. The results of these studies enable teachers to use the medium-term forecasting approach to identify semester-long high-risk groups and remediate learning outcomes patterns.

Shukla T. et al. [30] determined the integrating technology into education through online teaching can improve the learning experience combined with traditional interactive approaches. Online classes could help people in rural and underprivileged regions of the world in providing educational opportunities. An online learning environment provides students the possibility of using technology to teach and learn effectively. A well-designed learning environment can integrate traditional approaches with technological developments to make the education system increasingly accessible and successful. The association between the dimensions and the structure of effectiveness was explored by correlation. Two elements, including student attributes, platform features and teacher quality, were already evaluated, and two factors were

identified. The study findings provide insights into how online courses effectively and initiate actions to deal with online learning challenges.

Chien, S. et al. [31] evaluated the effect on student performance on a technology-based assessment (TBA) by students in both student's academic settings. TBA allows teachers to assess the sophisticated skills of their students and had carried on in past years by big and international evaluation programs. Although certain aspects, such as students' commitment and the teachers' views of evaluation, it was relatively unknown how the elements affect students' performance at different levels about TBA. The results showed the importance of the involvement of students in related learning activities and their academic ability at the individual and the school levels. In addition, although none of the variables of teachers at the educational institutions, such as the time spent teaching TBA and their motivations to use TBA, had major effects on student performance, the school's influence on learning by students could be determined by an important moderating effect of TBA use by teachers.

Louhab, F. et al. [32] introduced the learning process increasingly using various methods and approaches due to technological development. Learners can use learning management systems and the classroom environment concept to discuss the learning process. The unavailability of an integrated adaptive system to govern the learning process for students was restricted this platform. The system was evaluated by smart adaptive management for the flipped learning (SAM-FL) module. The proposed technique was based on several hierarchical agents that allow for modular content and test limits. The approach was examined objectively by comparing student production levels to admission levels and providing a high-quality educational experience. The results revealed the model's effectiveness in identifying the quality of students and supporting their solutions.

Momani, A. et al. [33] showed the E-learning, mainly in the educational setting, was one of the largest developing fields of high technological innovation. The teacher was a very significant part of the learning process benefits of e-learning change the role of the teacher. E-learning offers everyone the opportunity to learn quickly and personalized. Several accessible learning management systems LMS are currently offering electronic teaching and learning resources on the economy. One of the most challenging and complicated decisions in any education was choosing the appropriate LMS that matches the needs and demands of the teacher and the student. Therefore, there is an increased demand for a computerized tool to enable make such a decision. It described an easy way to evaluate learning management systems (EW-LMS) web-based decision support systems. The method for many attributes was created to identify the appropriate LMS according to student's requirements.

Hwang, G. et al. [34] introduced the multilevel concept mapping-based question-posing approach (MCM-QPA). findings indicate that the integration of portable apps, wireless communication and sensing techniques could improve the learning and productivity of students in authentic environments. Effective learning strategies were vital to the successful learning of inquiries. An increased learning strategy was identified, such as question-taking techniques to allow students to integrate their material into the question learning process. However, asking questions was a challenge for many students and could significantly reduce cognitive stress if no adequate buffering was available. In experiments, the implementation of the different learning systems was taught based on multilevel concepts and question-posing. The control group learned the all-embracing learning method based on a question-posing approach. The results showed that in terms of learning achievements and outcomes, the students in the experimental group exceeded those in the control group significantly.

Many criteria have been considered in some existing TBA, SAM-FL, EW-LMS, and MCM-QPA methods, such as accuracy ratio, performance ratio, learning rate, feedback ratio, efficiency ratio, precision ratio, and learning outcome ratio. Based on these criteria, the proposed model has been evaluated compared to the above-mentioned existing models.

The main objectives of this paper are,

To analyze patterns and developments in the online learning sector regarding integrating interactive multimedia technology as a tool for education. Associations between online multimedia learning and virtual structure network to the various forms of integration. Evaluate how efficient online multimedia learning technologies can improve the quality of learning and teaching performance analysis. It analyzes the positive and negative impact of Interactive online multimedia learning on student's and teacher's performance analysis.

The remaining paper is organized as follows: Section 3 discusses the proposed system with elaborated theoretical and mathematical validations. Section 4 demonstrates the experimental results and forum compared with an existing method, and Section 5 concludes the paper based on the previous section's analysis and discussion.

2. Online multimedia learning-based teaching performance analysis(OML-TPA)

This paper can develop a realistic method for teaching, leading teachers to focus on students with little flexibility and not active learning such that teachers can properly teach. As students have numerous qualities, their values show the varied distribution and artificial sample analyses consumption time, moment, effort and accuracy. This study develops the multimedia teaching management system using the network virtualization architecture function. Increasing content access, collaborative online

communities and interaction techniques with digital media are using multimedia technologies. In modern online learning technology, the integration of multimedia is important. Multimedia-based technologies lead to flexible content delivery anytime and improve the student's effective knowledge and learning outcome. Different multimedia such as audio, video and animation assist online multimedia learning, aiming at providing routes for various types of learning content. The integration of communications virtual networks by accessible and digital technology enhances the environment of multimedia learning, in which students can use the technology in their environments anywhere. The student has been assessed based on multimedia elements and can answer questions correctly to obtain additional information.

This is found that self-efficiency, personalized learning skills, interactivity and multimedia instructions are the major portions of learning based on teaching performance analyses. To support video-based interaction learning, content generation in multimedia formats has been established that help students visualize the content easily. Virtual network learning gives students active learning information in visual simulation environments. The formulation of multimedia teaching and the production of learning content require communication standards. Various tools can be used to develop multimedia learning content based on the information. The online multimedia learning management system is a standard requirement for approving content, evaluating students and providing learning content to students. Students received several types of approach sequences based on their abilities and background experience to enhance student efficacy for learning. Multimedia interactive motivation increases students learning potential and it enables knowledge transmission by retention and gives impossible to obtain interactive experiences in standard classroom environments. Effective learning rate is achieved by interaction with multimedia content and based on feedback on the activity students have carried out to improve their skills.

Online multimedia learning needs to motivate students by giving them in-depth experience and enabling the knowledge transfer between effective students. The availability of multimedia content has the greatest impact on the student, allowing them to access learning easily. Compared with the online multimedia learning management approach, the traditional online teaching technique is based on this paper's virtualization network function architecture. This enables online multimedia education management based on network function virtualization architecture to be indicated in the experiments mentioned to improve student learning performance fulfill the needs of online multimedia learning and provide some assistance for other multimedia online learning management.

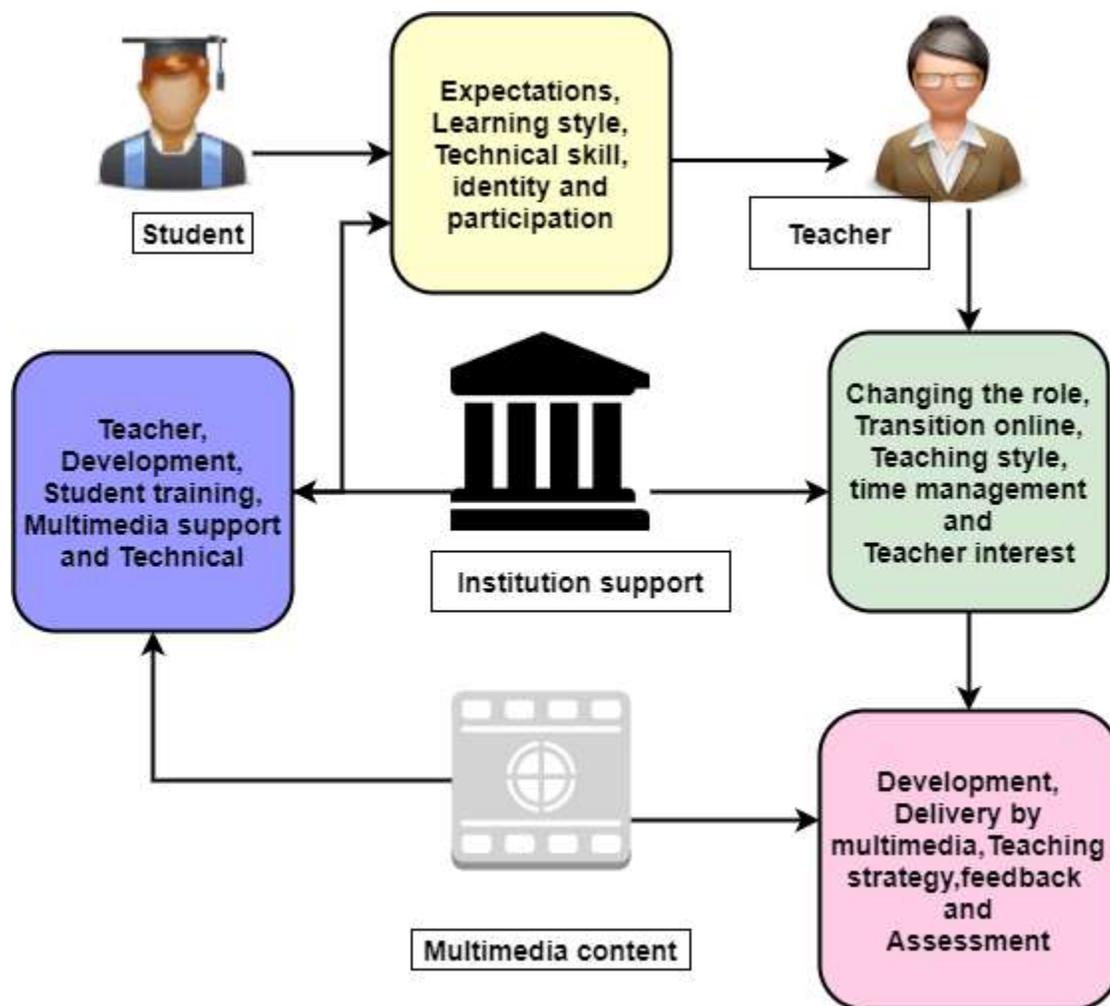


Figure 1. Three key components of the online learning environment and related challenges

Figure 1 depicts the three key components of the online learning environment and related challenges. An evaluation of the issues and challenges associated with online learning is conducted using a multimedia learning virtual network structure. There have been three main findings, consisting of online students, teachers and content creation challenges. Figure 1 even illustrates the correlation between the three major classes and supporting information. Student's issues included expectations of teaching and learning, preparation, identification and involvement in online classes. Content-related issues include the function of access network teachers, multimedia content integration, and establishing full educational strategies and content development consideration. Teachers' issues included the four specific teaching staff categories: face-to-face to online transfer, time management, and teaching approach. This review concludes that higher education institutions have to give teachers, student management, and technical support to develop and implement online classes to address online education challenges and improve online teaching and learning effectiveness. The quality of online education by providing teachers, students and content creation is important to educational institutions. The three components of teachers, students, and content constantly influence each other institutional support equally influences three components, as shown in Figure 1. Education online is a dynamic world. It is very beneficial to provide an appropriate framework. It shows important difficulties of online multimedia learning and educates students on the challenges that must be addressed to improve online multimedia learning quality. Several studies showed the importance of promoting the quality of online multimedia learning in educational institutions. However, a short overview of the issues that educational institutions can support is presented in the study. This paper

show identifies and analyzes the main challenges for teaching and learning online courses. Higher education institutions are supposed to consider such obstacles and provide online teachers, education for students, and enough technological assistance and multimedia integration to enhance the quality of online learning.

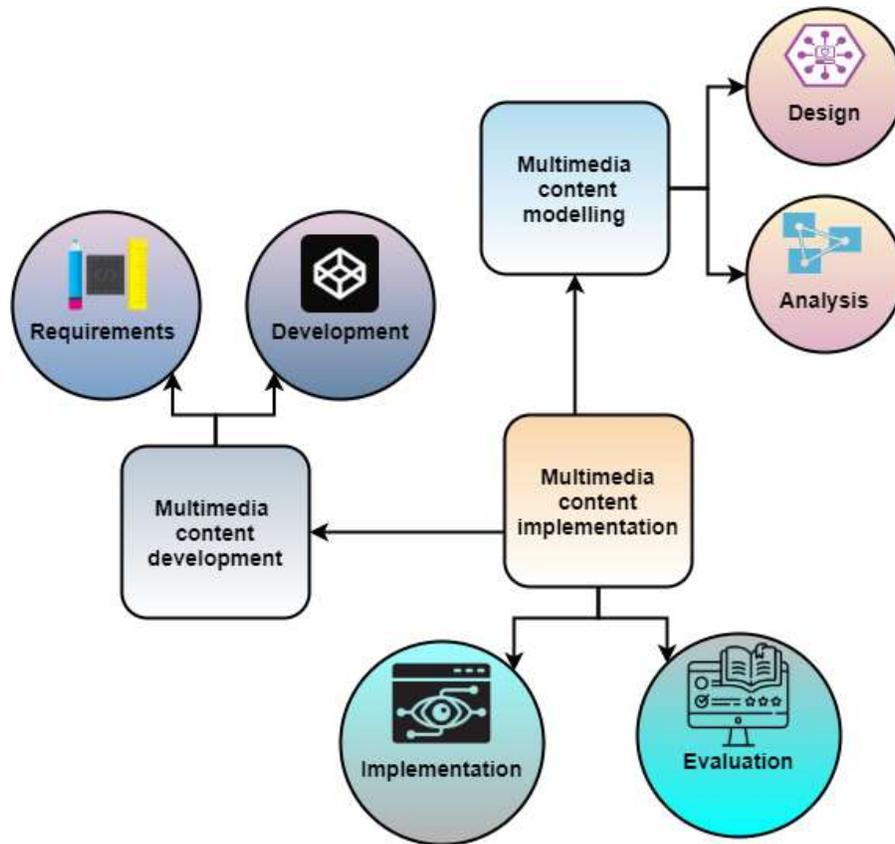


Figure 2. Multimedia based online learning

Figure 2 shows multimedia-based online learning. Multimedia content integration has become an important element of current e platforms. This paper provides a framework for multimedia content design and integration with online learning and teaching systems. The method is based largely on a sequential development model based on the highest approach. This approach focuses on the most important and each step is performed after the following step has been completed. The objective of this model is to be complete and to construct multimedia online learning systems. There are three

different phases of the model. This approach aims to provide a fundamental and stable framework for the design and integration of multimedia in online learning platforms.

- i) Content modeling of multimedia content
- ii) Development of multimedia content
- iii) Integration of multimedia content
- iv) Content modeling of multimedia content (Analysis and Design)

This is the initial step in multimedia content development. This step aims at collecting the needs and providing a basic structure for designing and implementing multimedia content. This activity is focused on understanding students' requirements. Students can determine the available technology and multimedia content that can be produced for the system during this stage. This phase includes activities such as potential student discussion. This activity identifies prospective student needs, content requirements for multimedia and organizational requirements. The next design activity is completed once this activity is ended and requirements are established. This is the second act during the design stage of multimedia education. Design requirements constantly implement all information received during this phase. This stage describes and analyses the sequence of achievement of the goals. This phase defines the results of learning that focus on the objectives of performance. The multimedia to be used in the content and delivery plan is defined in this phase. The media can be supported to maintain the system's quality and subsequent evaluation. This activity can underline the interface design and accuracy of the method. This activity documents student preference over usability, navigation, interaction, presentation and visual design.

- i) Development of multimedia content (Technical requirements, Content development and content integration)

The role of each participant in the development process is defined at this stage. In this step, the learning content is developed based on the design in the content modeling phase. The availability of resources can develop the content. In this phase, the technical specifications for systems development are defined, such as technologies, platforms and environments. Technical requirements are established, such as internet speed, audio and video capability. All these needs are extensively defined with these technical specifications being established for the system. All the multimedia content objectives specified during the design phase are used to develop visuals, describing everything displayed and heard. The content, pictures, audio and videos to show on a screen are defined in each visual on the screen. The editing continuously reviews the Visuals and requires the authorization of access. The stakeholders assess each visual developed in this activity and its feedback is continuously applied to each student multimedia interface. At this stage, each design is checked, and each approved visual is advanced to the next phase. This process is referred to as active learning. All the approved design is developed for this purpose during this process and integrated. In this step, text, audio, video and media files are created. All multimedia produced are assembled with the help of online development and some editing technology to create operating and distributed editions of the courses. Integration of multimedia content (implementation and evaluation)

This is the last phase of the development of the online learning system of multimedia content. In this phase, the course is given to students by connection establishment and access for the students to implement. To implement the course content, the subject specialists, teachers and course administrators can be integrated. When the multimedia content is deployed in a successful online learning system, it needs to be assessed for certain objectives. To ensure the quality of the course, the evaluation of the system built is implemented. The evaluation of the system, once it is online learning, is important. In

this phase, the accuracy and quality of the content can be evaluated. The technology is developed as it is intended to, multimedia-based online learning system effectiveness. The system is evaluated both for its student's engagement and its functioning at this phase. Assessment can be done based on the student response in learning, activity, and student performance outcomes. The response of Students can be evaluated using assessments and analyses. Evaluation of learning can be performed according to objectives. The performance can be evaluated based on the student's involvement in the course and the results can be evaluated based on changes in the quality of the course.

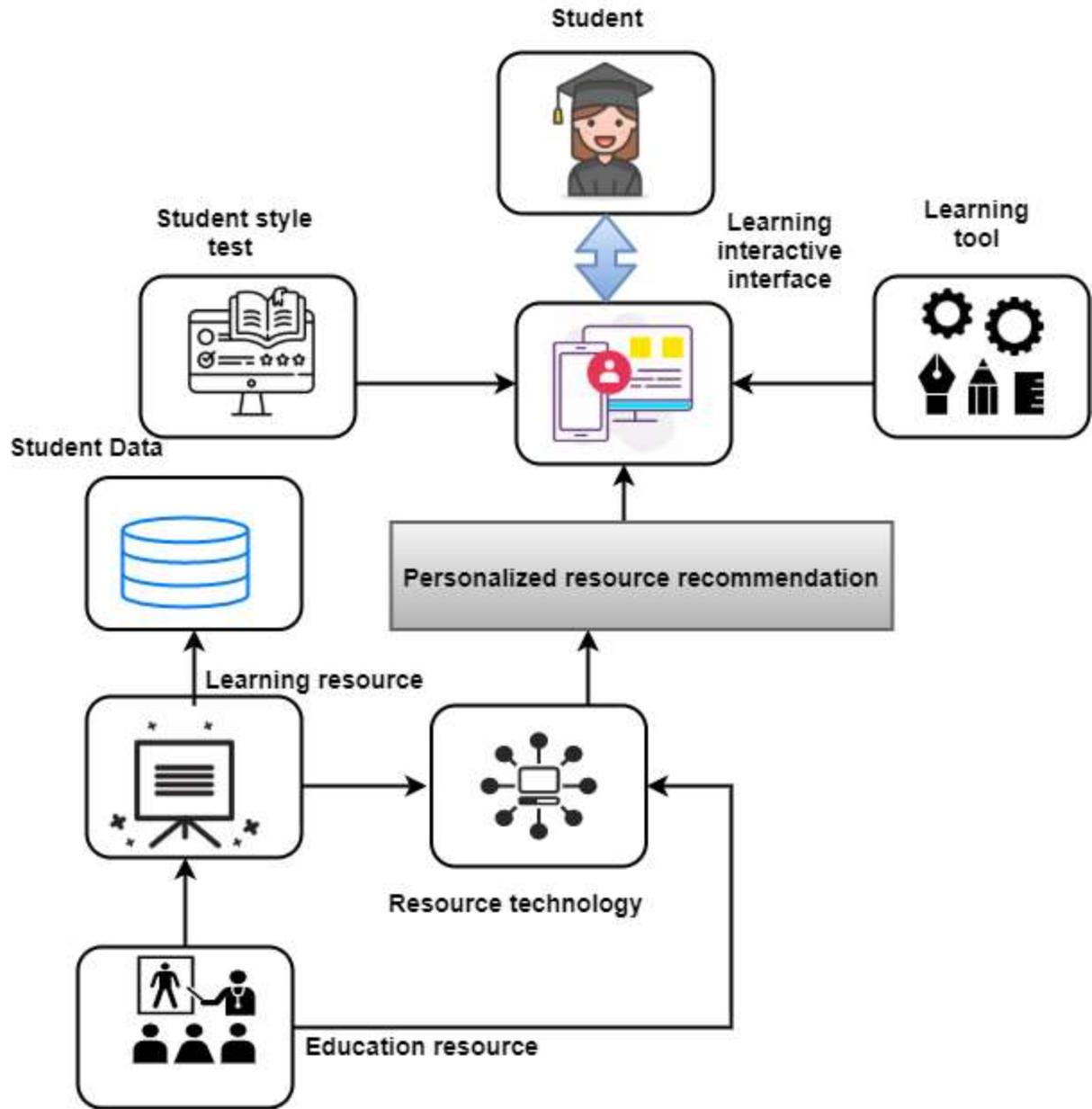


Figure 3. Personalized network-based architecture for virtualization and online learning

Figure 3 illustrates the personalized network-based architecture for virtualization and online learning. The multimedia method of managing online learning based on the architecture of functional virtualization network provides primarily individual classes

for students to increase the impact of management of education. The multimedia management mechanism of online learning is to evaluate the learning requirements of the current students using the virtual network architecture and to supply personalized learning resources and learn help and support using encouragement technology. The collection, analysis, and evaluation of students' personal qualities, according to online learning standards and personal learning requirements, is the basic requirement to implement a suggestion process for personalized learning platforms. The active student learning is tested using the measure and the outcomes are entered in the database of the student multimedia model. The learning resources database is used primarily to hold learning content, including teaching software, video, audio and other digital communication. The teaching approach database is used to hold teacher-designed patterns for several learning processes, including learning activities. During system operation, the recommendation technology is used to obtain meaningful data required from the database. The content of the resources that meet the needs of current students, by analysis and transformation of the system dataset, can be presented in turn to achieve a dynamic resource personalization recommending effect. When students initially enter the internet, they have to enter basic personal data, mainly name, gender, login name, login password, background and other basic information, to complete the registration. At the same time, the students must use the learning module to assess their learning styles under the system's guidance. The student models process information and save it in the database of the simulation framework. During the teaching, the course resources learned by students can be measured and recorded in real-time by recording and the learning records data are updated at any time. At the same time, the resource recommendation mechanism has extracted the personal information of the current student from the student model database to determine the type of learning and use the suggested approach to obtain from the resource database and the teaching strategy database a dynamic recommendation for resources matching the student's learning

methods. After the research, students can become self-study using the web-based unit assessment module. Academic performance can be collected to assess students' cognitive level when dynamically proposing the resources in the student model database in real-time. The technology of findings is the core of the intelligent impacts of the personalized education system and it contains the system concept of recommendation.

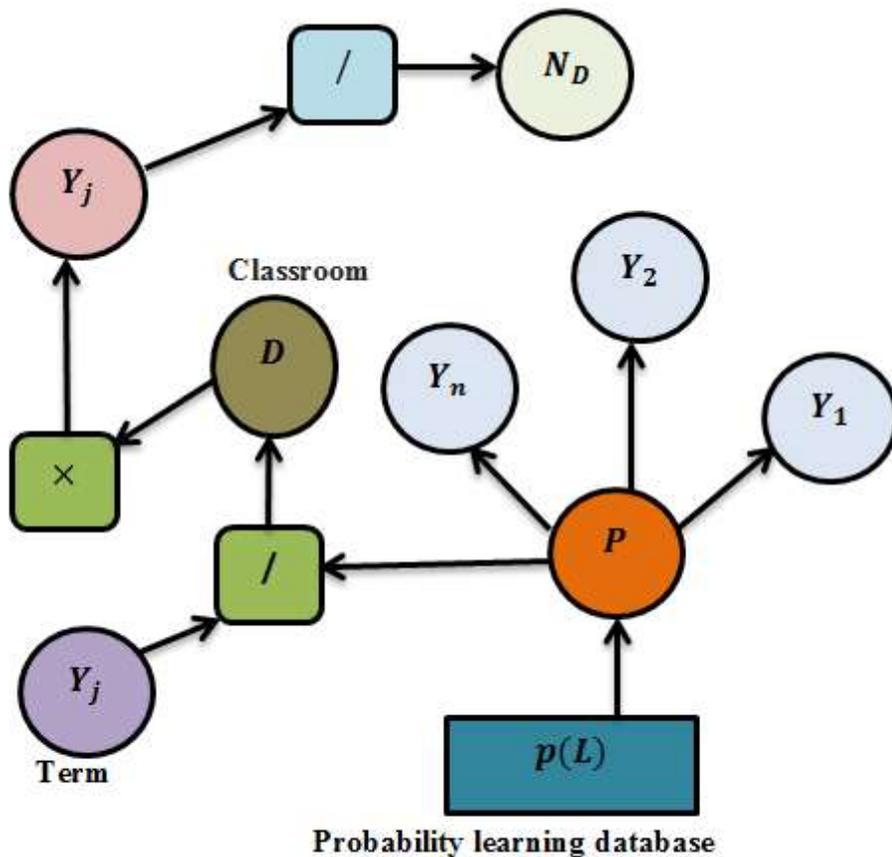


Figure 4. Student learning performance

Figure 4 gives the student establishments' visible and dynamic student representations and student's system understanding. A great model for students is consists of all the qualities and knowledge of the user that influence their learning and performance. All

these processes complete the extraction of student attributes' individual qualities, which supplies the important information for the multimedia management of virtualization architecture in online learning. At the end of the education, students can learn about self-study through the multimedia system testing module. Their assessments are stored in real-time in the user model database as the basis for evaluating students' cognitive levels when dynamically proposing multimedia materials.

$$P(L) = P \frac{(y_1, y_2, \dots, y_n)}{D} = \sum_{i=1}^n P \frac{(y_i)}{D} \times \frac{g(y_i, D)}{N_D} \quad (1)$$

As equation (1) $P(L)$ represent the probability in the learning database of classroom D and multimedia content. The following equation has been used to evaluate the assumptions of conditions and the number of elements that skip a meaning of organizational forms in multimedia learning content. Term y_j can specify learning contents repeatedly if the content contains the number of elements n . The probability of indefinite content in the classroom is the whole output of student learning is increased. A multimedia content g is learned for students in the classroom D by online learning.

$$\varphi = \sum_{j=1}^M \frac{X_j \beta_j}{\theta} \times (y_j) \quad (2)$$

$$H(y) = \varphi + \rho(Y) - a + \sum_{j=1}^M \frac{X_j \beta_j}{\theta} \times (y_j) \pm a \quad (3)$$

Equations (2) and (3) calculate the division and hyperplane of the designed network with a set of Input M and vector y_j , resolved in two categories by label θ and visualization function X_j , a and b maps vectors into a parallel space where both category are separated, one can identify a dividing hyperplane in H , a division of φ , that increases the reliability P between the two categories and expresses as a probability distribution β_j . Based on the updated student profile, the systems can recommend the relevant learning resources.

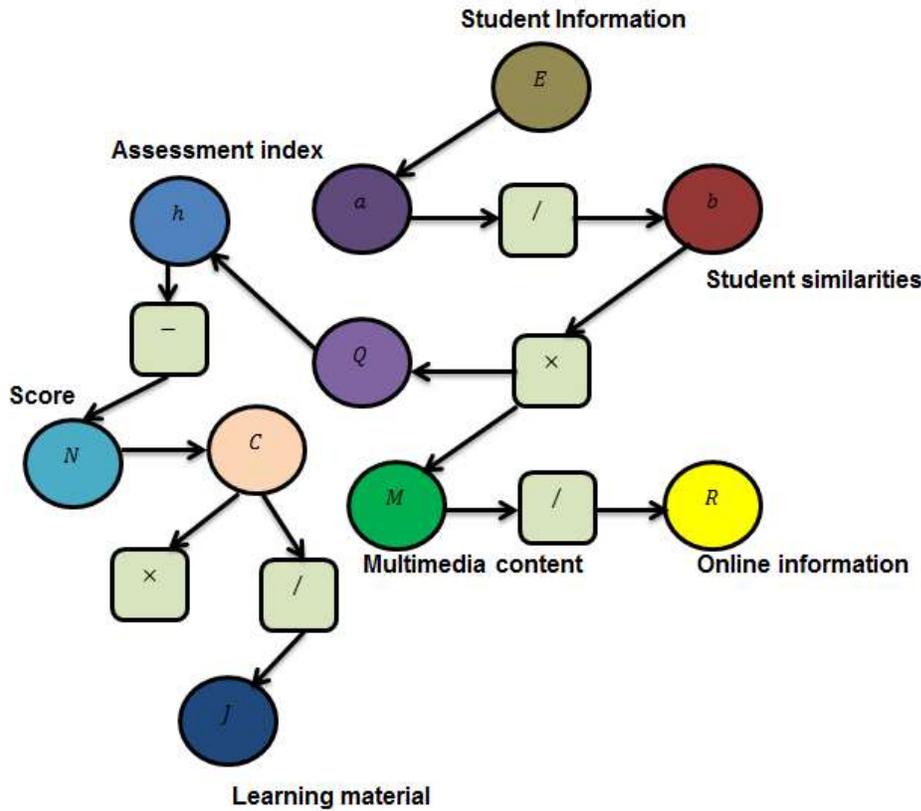


Figure 5. Suggestion strategy for online learning resources

Figure 5 explores the online learning resources. During the learning process, this paper can calculate, store and update learning resources learned by students in real-time by a data acquisition system; Simultaneously, the resource recommendation can extract personal information from the application concept database from the student account to determine the type of learning process. The ideologies can extract from the resource database and teaching strategy database the dynamic recommendation of resources that match the student's learning strategy.

$$E = \sum \frac{a}{b} \times \frac{M}{R} \quad (4)$$

Equation (5) shows E is the student's basic information, a and b are the evaluation parameter for student similarities, R the online information, M the basic information for the multimedia learning content.

$$Q = h - NC \times \frac{C}{j} \quad (5)$$

Equation (6) defines Q as a student who can learn multimedia learning content, N is a student who evaluates the score calculation factor, C is a characteristic feature of the learning materials J , h is an index for the assessment of the learning objects.

3. Experimental results

The education technique of development has changed considerably in the modern virtualized environment. With online learning, students can interact and develop their understanding with academics and researchers from all around the globe. Online multimedia learning is widely utilized in education, and the focus of teachers and students is appropriate. Online learning is necessarily limited to housework and evaluation, a loss of educational content. At the same time, according to the standard online management method of multimedia education, the learning achievement is poor. Therefore, a management approach for online multimedia learning is developed based on the virtual network element structure. The experiment shows that the students' performance following management of the design technique is higher than after conventional method management. Since the teaching management system can dynamically analyze students' learning status based on students' data in classifying students according to their level of attention. Teachers can undertake effective teaching to improve the learning effect by this classification. This paper addressed the interaction of information management between students and teachers with online learning to various model integration and adoption, semantic communication and learning

methods for different multimedia technologies. It offers visibility into the important elements of online multimedia learning.

Table 1. Student online multimedia learning outcomes

Parameters	TBA	SAM-FL	EW-LMS	MCM-QPA	OML-TPA
Accuracy Ratio (%)	60.1	74.5	81.2	89.9	93.7
Performance Ratio (%)	58.2	69.3	76.1	85.7	92.6
Precision Ratio (%)	56.3	62.7	73.4	82.3	94.3
Learning Rate (%)	66.2	69.3	74.9	88.5	95.1
Feedback Ratio (%)	58.3	72.7	83.2	87.5	91.8
Efficiency Ratio (%)	59.2	73.1	81.	89.8	96.7
Learning Outcome Ratio (%)	65.8	75.5	83.61	90.7	97.6

Furthermore, web-based multimedia accessibility enables independent online learning classes, low-cost video service, improve student interactions by virtual network function. Table 1 shows the student's online multimedia learning outcomes. This paper evaluated learning and teaching processes and developments in online learning in interactive and emerging multimedia innovation as an educational learning tool,

highlighting learning to compose and integrate. Finally, this paper discussed the various approaches to online multimedia learning with an associated positive and negative impact on both students and teachers of interactive multimedia in online learning virtual network function.

i) Accuracy Ratio (%)

The accuracy of the estimations depends mainly on the performance of the situated learning information. To properly perform the learning analysis, accurate data must be generated in the collection and interpretation. Accuracy is important as it can be essential to establish educational initiatives to improve students' learning process, time, and commitment. The assisted study method has enhanced the exactness of the estimation of involvement. The domain information plays an important role in achieving high accuracy development predictions. The study aims to demonstrate how various pre-processing approaches gradually improve the resulting learning and teaching systems. Following implementing various pre-processing approaches shows the evolution of the assessment criteria. At every stage, the findings of the learning model are considered as the reference values. Understand that accuracy shows as a learning percentage and the results provided are the average of the values shown here. Their completed development in this part has been evaluated. In addition, a complete study is offered to evaluate the possible effect of every input variable on the predicted accuracy of student engagement utilizing different online multimedia learning algorithms for both classification and regression activities. These parameters match educated systems with the accuracy of the models. It can be challenging for students to select an appropriate evaluation algorithm to predict students' interests. Their memory and accuracy depend on the risks in parameters, features and educational fields. As a

result, the implementation of integrated assessment methodologies has now gained considerable interest due to its high accuracy and learning performance. The accuracy ratio (%) is shown in figure 6.

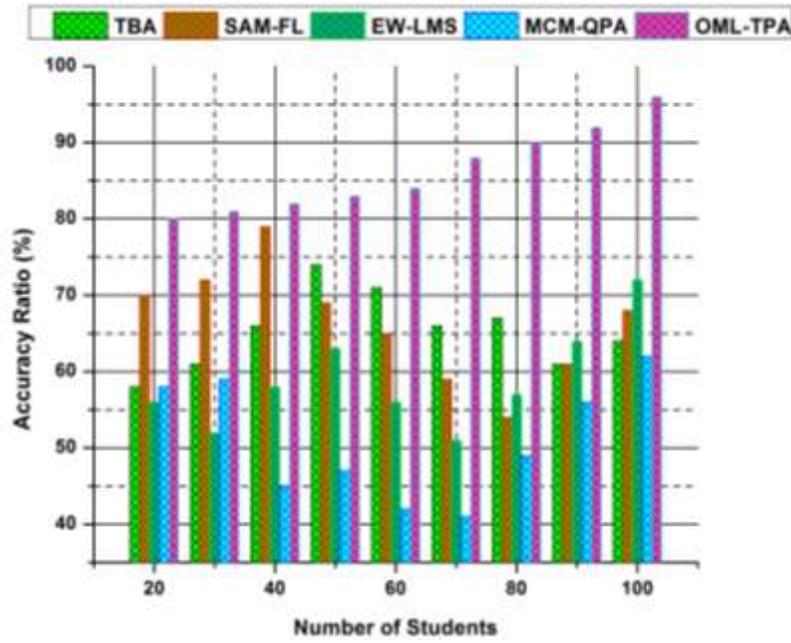


Figure 6: Accuracy Ratio (%)

ii) Performance Ratio (%)

The adaptive student multimedia interface evaluates student understanding in online courses at and after the entrance level. The adaptive platform measures students' performance following any module to see if the next content can be hidden or displayed. The adaptation of multimedia content helps students understand their needs and deliver relevant content based on student performance. Multimedia content based on the academic results and priorities of the students helped students focus and perform more effectively. The effectiveness of online learning courses has been analyzed by three elements: interactivity, cognitive presence, and teachers' presence. In addition, students can reflect, develop a culture and share ideas and learn new things. When students become actively involved in discussions and forums, their cognitive learning,

self-confidence and performance are improved. Social connectivity encourages critical thinking, enhances learning performance and student engagement and learning outcomes. In the use of technology in the classroom, performance is increased and students with varied socio-economic backgrounds reduced accessibility inequalities. Frequent interactions between students and teachers are proportional to better online learning, improved learning and student results. Comparing traditional blackboard and entirely virtual classes, combination classrooms have been thought to be highly effective. In comparison with the non-mixed classes, combined courses have been followed to increase student performance. Figure 7 (a) performance ratio (%) and 7 (b) learning rate (%) are shown based on multimedia learning.

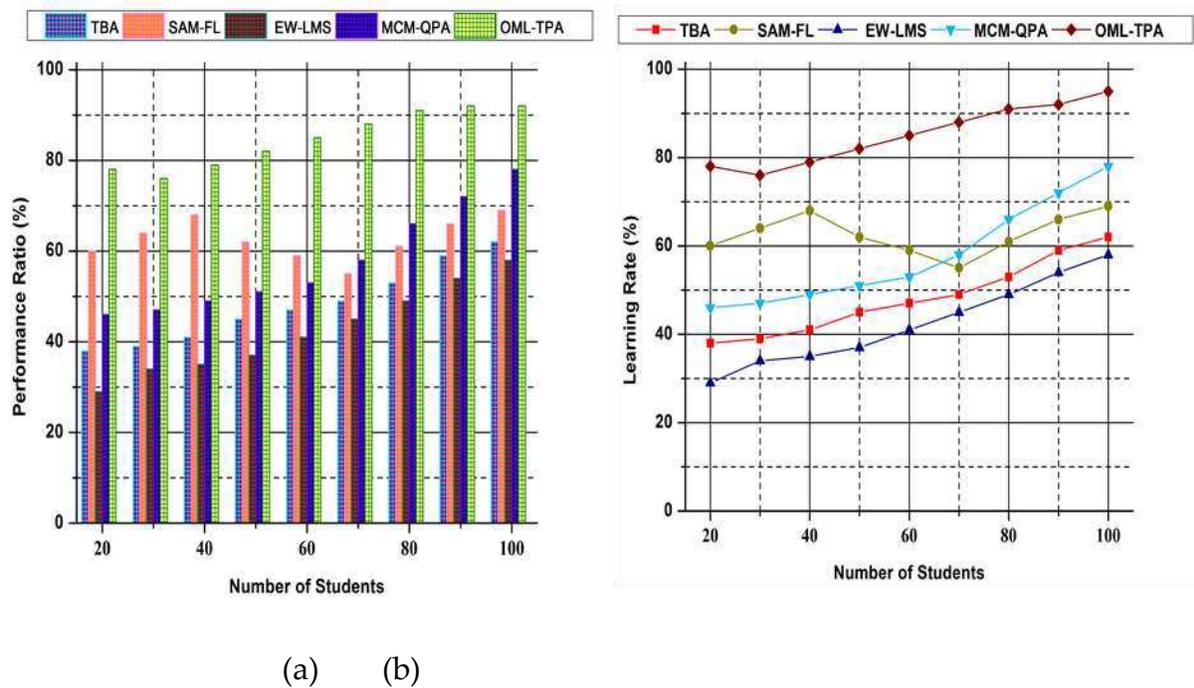


Figure 7 (a) Performance Ratio (%) and figure 7 (b) Learning Rate (%)

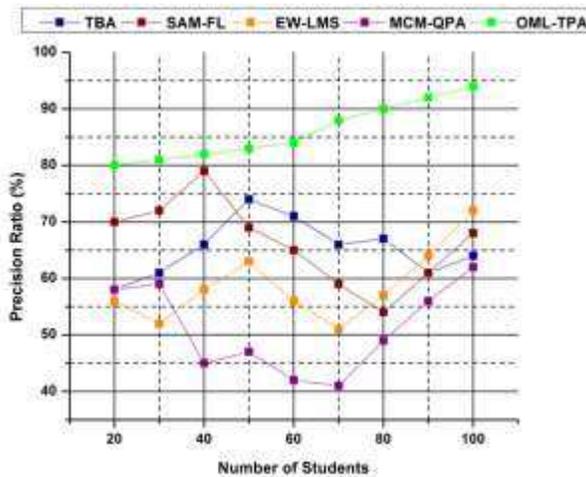
The way of learning can influence students' motivation to complete the courses and the integration of learning techniques in courses design and execution can influence students' dropout rates. The study found substantial preferences for interactive, visual

and sequential student styles. Flexibility and cross-interaction with new technologies and methods of learning contribute to the improvement of learning quality. The pre-test and post-test results indicate student learning ability combined with and separately using the multimedia content-based learning system. The study results reveal that the learning system presented considerably increased the learning quality of teaching and learning based on the online multimedia classroom model. The student's engagement in the learning activities is noticeable in focus. Qualitative survey results show that educational online multimedia learning affected the motivation of students to learn. This can lead to students rushing into different learning activities. The educational multimedia content inspires students to concentrate on their learning. The students evaluated at the end of the study reported that it is useful to know the learning environment delivered using the proposed learning system. Although the materials for both systems are similar, this survey can conclude that the student's views are significantly influenced by the course content and by conventional multimedia subjects. Therefore, the present study indicates that educational robots can benefit students by relating learning videos to student performance and individual learning goals. With the availability of the proposed education system, the teacher can have additional time to understand the content of the lessons while maintaining the learning experience of other students in the presence of the suggested educational learning system.

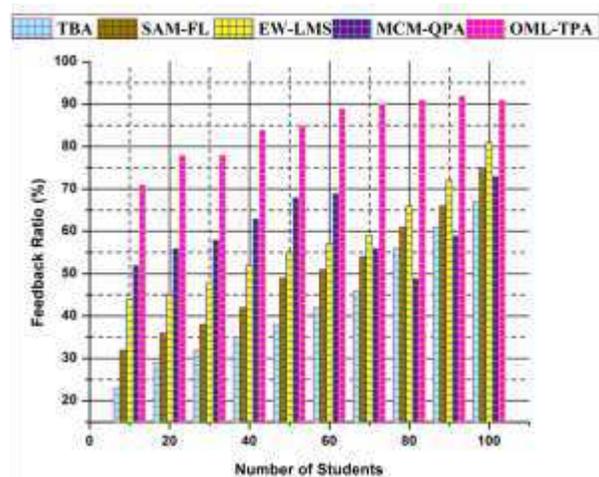
iii) Precision Ratio (%)

In general, increasing the limit reduces false positives and thereby improves the accuracy. On average, increasing the limit minimizes false positives and thereby increases accuracy. The precision for the minority class is consequently computed with precision. The accurately predicted positive examples ratio is computed as divided into the total number of expected good instances. Students are better able to study and select interactive learning methods. In various learning environments, students who can

better their education can be identified. To calculate and test student capabilities and learning, online multimedia learning is adjusted by responding to various abilities and fields. Students can understand and choose immersive methods of learning more effortlessly. Students who can improve their education can be found in several learning contexts. The interactive approach is updated to measure and evaluate student skills and learn in numerous domains and methods. This paper highlights the importance of precise educational performance predictions for admission and better decision-making. Figure 8 (a) shown a precision ratio (%) and figure 8 (b) shows a feedback ratio (%)



(a)



(b)

Figure 8 (a) Precision Ratio (%) and figure 8 (b) Feedback Ratio (%)

The student's feedback on their purposes can provide insights into the development of content, design, delivery and interface evaluation. In addition, online learning can provide important information on different students learning profiles. Little information on their use pattern has been shared in the existing online course environment. The level of student's performance can provide feedback and change the information and design of courses. It can provide significant insights for design,

learning and implementation improvement. The study identified the type and quality of courses offered to students with little resources and who are not qualified academically. The following measures can evaluate student participation in online classes: frequent feedback and instructions from the teacher. The effective online platform for learning is identified by the highly planned development of the curriculum, motivation, effective pedagogy, strategies and satisfaction of the demands of various students. Involvement in interactive online learning discussions and platforms improves student learning and student feedback. The data is analyzed to identify the connection between orientation, quality of the teacher, collaboration, and student motivation—online learning using correlation methods feedback, resources, evaluation, dedication, and total efficiency values. Collaboration and discussion with student groups and teachers are important because communications can help students learn, receive feedback and participate in active learning. Providing correct feedback, create connections of learning, material and support is important for retaining and completing the curriculum.

iv) Efficiency Ratio (%)

The component of the multimedia learning material is used to improve efficiency, by structured learning, as a standard book and online learning, as well as classroom instruction and other teaching approaches. In education, the focus is essential and the intensity of concentration for effective access to information is essential. The optimization of the learning programs can involve high-efficiency education and education institutions and education courses in higher education institutions. Institutional materials and community engagement of resources and approaches are essential to students' survival and influence resource efficiency. Students can learn essential lessons by themselves. As in education, teachers can encourage students to learn differently to improve the classroom's efficiency. Increase teaching efficiency and complete development of the students through the

establishment of an excellent learning environment. Teachers and students can experience and learn strong views and activities of students in integrated education, create learning subjects and raise the efficiency of the activity. The innovation of online multimedia learning for students can effectively integrate the present condition of education and update concepts and ideas. The study results have resulted in efficient knowledge and teaching strategies, improved learning activities, strengthened cognitive strength and improved education efficiency. The analysis showed that student learning is efficiently improving the significance of performance, learning engagement and awareness by increasing the involvement of students in the decision and classification of learning participation. The paper attaches great significance to the goals for the evaluation process and has been able to understand and analyze other goals efficiently. Table 2 shows the efficiency ratio (%).

Table 2. Efficiency Ratio (%)

Number of Students	Efficiency Ratio (%)				
	TBA	SAM-FL	EW-LMS	MCM-QPA	OML-TPA
10	51.8	64.9	73.8	81.2	90.6
20	52.4	65.7	74.7	82.3	90.7
30	53.9	66.6	75.4	83.6	91.3
40	54.0	67.9	76.5	84.9	92.5
50	55.8	68.3	77.7	85.5	93.7
60	57.5	69.2	78.2	86.4	94.6
70	57.7	70.2	79.3	87.6	95.7
80	58.9	71.0	80.2	87.2	95.9

90	58.7	72.1	80.	88.6	96.3
100	59.2	73.1	81.	89.8	96.7

v) Learning Outcome Ratio (%)

Academic data can depend on the findings for the implementation of education programs using active learning classrooms. The assessment of current teachers using these methods and the perception of teachers' education on learning outcomes and self-motivation is particularly significant for teaching methods. Today's students can be tomorrow's teachers, which might be of considerable significance. And their views on techniques and methods can influence the current environment the student curriculum and teaching decisions that can influence their student's educational learning. Given the understanding of student's evaluations of student learning, the outcomes of classroom management in their ability to suggest learning processes are evaluated. This paper created an observation level to evaluate the structure, methodology, phases and the proposed assessment of these activities. This paper can see the means and standard differences, the minimum and the maximum, of students for each of the variables by group members and for groups that refer to study results to be capable of proposing educational programs for educational teaching. The analysis of the outcomes of the students' learning by evaluating the teaching units has been acceptable. However, this level is lower than the learning's self-perception. After the teachers' evaluations, the students believed they had learned more than the outcome. For the teachers of teaching, the organization of the learning units and their activities are the best outcomes. To analyze student learning outcomes to generate education teaching methods for early education and perceived learning performance. Table 3 shows the student learning outcome ratio (%).

Table 3. Student Learning Outcome Ratio (%)

Number of Students	TBA	SAM-FL	EW-LMS	MCM-QPA	OML-TPA
10	54.2	66.2	75.4	83.7	91.4
20	58.6	67.8	77.5	84.8	92.5
30	58.4	68.6	79.7	85.7	92.7
40	59.9	69.8	80.9	86.7	93.9
50	60.4	70.4	72.3	87.9	94.3
60	61.5	71.8	75.8	88.8	94.8
70	62.8	72.5	79.3	89.6	95.3
80	63.4	73.6	81.9	89.8	96.9
90	64.3	74.3	82.5	90.5	97.5
100	65.8	75.5	83.61	90.7	97.6

The proposed method ensures a high accuracy ratio, performance ratio, learning rate, feedback ratio, efficiency ratio, precision ratio and learning outcome ratio when compared to technology-based assessment (TBA), smart adaptive management for the flipped learning (SAM-FL), easy way to evaluate learning management systems (EW-LMS) and multilevel concept mapping-based question-posing approach (MCM-QPA).

4. Summary

The students learning things are changing fast as technology progresses, from traditional blackboard to projector, enabling classrooms and multimedia learning through the online platform. This paper presents the design of the online multimedia learning environment in a classroom such as a virtual network world, breaking limits

globally. The outcomes with students have shown that the virtual learning environment is generally comfortable and can be used to develop online multimedia learning and students. Students are negative and clearly expressed that traditional teaching methods are preferred. Combining interactive online multimedia learning environments with higher education can improve students' engagement and potentially better learning. Several virtualized facilities simulating the structure of the educational institution can in specific, have been implemented. Finally, an online multimedia evaluation study can improve the effectiveness of the virtual and multimedia learning online environment. The simulation analysis evaluated the accuracy ratio, performance ratio, learning rate, feedback ratio, efficiency ratio, precision ratio and learning outcome ratio shows that the proposed framework is effective.

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Ethics Declarations

Conflict of interest

The authors declare that they have no conflict of interest.

Ethical approval

This article does not contain any studies with human participants or animals performed by any of the authors.

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