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ORIGINAL ARTICLE

Intelligent retrieval method of mobile learning resources in the intelligent higher education system

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Abstract Mobile learning has become more important for the new generation. It helps students think better, pushes them to study more deeply, and leads them to significant knowledge production. Mobile learning (mobile learning) is a learning paradigm that enables students to get resources from mobile technology and the Internet everywhere and anytime. The mobile learning components should be appropriately arranged. The interactions between the different components should be combined effectively and optimally for m-learning to be successful and effective. It is important to arrange the features of mobile learning and how they are applied to mobile learning activities, the application procedures, and the duration of the application time well in advance. In this paper, Human-interaction machine-based intelligent retrieved (HIM-IR) method has been suggested to improve student performance using mobile education. In mobile learning, students would find information through the network. Thus, the retrieval of quality information in support services is quite crucial. Mobile intelligent recovery would help the intelligence engine for mobile learning. The existing web server has technology on the server that doesn't have great precision and intelligence. The input string format is necessary for the retrieval process. The proposed methods aim to define the fundamental aspects and features of mobile learning in new trends in technological development. HIM-IR can be beneficial for anyone engaged in mobile learning design, preparation, and implementation.

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1 Overview of human-interaction machine-based intelligence retrieved method in the higher education system

Smart education gives students an integrated learning experience in new technologies and fully prepares them for a fast-growing world in which flexibility is essential (Wen and Zhang 2014). Smart education is a paradigm change in student access to education (Liu et al. 2015). It's not simply improving the delivery of education; it's more than that (Onaolapo and Oyewole 2018). Teachers nowadays can find it challenging to absorb significant improvements to technology (Pham et al. 2021). Advanced academic achievement offers a method for educating students and teachers to utilize creative and innovative technologies (Li et al. 2021). Literate and experienced teachers are both a prerequisite for society's sustainment and progress (Abdel-Basset et al. 2019). A key part of mobile learning is a support service (Nguyen et al. 2016). An effective, adaptable, and effective support structure is essential for creating and implementing mobile learning initiatives (Manogaran et al. 2020). Support services are designed to establish the ideal learning environment to access a range of resources quickly and successfully by adopting the entire spectrum of learning services (Yurdagül and Öz 2018). Intelligent Agent, a key artificial intelligence distribution application, reduces the complicated use of technology and executes laborious activities that optimize productivity (Kadry and Barbar 2009). Intelligent education is becoming more important as a concept describing digital learning. This

article discusses the definition of intelligent education and provides a conceptual framework (Arun et al. 2020). To foster intelligent learners who need master's century learning skills, a four-tier framework of intelligent pedagogies and ten key features of intelligent learning environments is proposed (Amudha 2021). The world is changing quickly, and knowledge is growing phenomenally (Roushan et al. 2005). The usage of technology-related applications such as websites, apps, videos, live chats, etc., is rising daily (Gupta et al. 2021). Technology has become a defining factor in people's lives, and its importance spreads in one way or another to all fields (Wang et al. 2021). Everyone has their own opinions about upgrading schooling, and today would support many individuals with technology (Shakeel and Baskar 2020). A wide range of skills, attitudes, social and emotional skills, and the traditional skills of literacy and digitalism support successful performance in school—life skills contribute significantly to learner learning and are part of quality education (Saifi and Mehmood 2011). The relevance of technology in education has increased for various reasons because educational institutions take up the technology (Zheng et al. 2021; Wang et al. 2014). The interface between human and computer systems is an interdisciplinary area of research focused on computer technology design and, most significantly, human and computer systems interaction (Chi et al. 2016). HMI has evolved nearly all aspects of data technology architecture, first with computers (Ali et al. 2021; Wang et al. 2012). In remote regions, the educational institution is virtually the same (Gao et al. 2020). Schools operate, while education quality, facilities, and education methods are less than average and outdated. It is, therefore, necessary to focus on and enhance the quality of education (Wang and Shen 2012; Dilsizian and Siegel 2014).The type of advanced Web-based education systems that this introduction is mostly called adaptive Web-based training systems or intelligent Web-based educational systems.

The HIM-IR approach, which aims at improving student achievement through mobile learning, has been recommended for human interaction with machines. Understanding the underlying reasons that motivate academics to embrace mobile learning components and characteristics is a need for a greater understanding of theory-based research. The mobile learning components should be appropriately arranged. The interactions between the different components should be combined effectively and optimally for mobile learning to be successful and effective. Furthermore, it is important to arrange the features of mobile learning and how they are applied to mobile learning activities, the application procedures, and the duration of the application time well in advance. The main keyword for intelligent formation is personalised instruction and creativity-centered education. Australia is working to build an intelligent, multidiscipline student-focused education system through the following strategies: study resources, computerised management, monitoring and reporting, and online learning resources.

The main contribution of this paper is,

- Design Human-interaction machine-based intelligent retrieved (HIM-IR) method to enhance students' achievements in the higher education system
- Determine the mathematical model of HIM-IR to the smart retrieved method using mobile learning resources
- The simulation outcomes that show the HIM-IR increases the course participation ratio, assessment ratio, accessibility ratio, development of smart education, and error ratio

The remainder of this research article can be organized accordingly. Section 2 describes the literature study of smart education in higher education. Section 3 summarizes the proposed work that has been utilized in this paper. The numerical outcomes and discussion are defined in Sect. 4. Finally, Sect. 5 determines HIM-IR with a detailed discussion of the observation and results.

2 Literature review of mobile learning resource in smart education

There have been extensive studies on smart education in higher education, from the latest innovation to analyses student mental stability and achievements to modify teacher teaching methods.

Chatterjee et al. (2020) recommended partial least squares structural equation modelling (PLS-SEM) to discover the factors affecting mobile learning techniques focusing on rural education for females in India. The strategy gave educational leaders and technology managers praiseworthy insights to explore and encourage mobile apps to study and affect economically depressed Indian girls' schools. Every boy and girl in India has a fundamental right to quality education, which assists them in obtaining basic literacy and numeracy, enjoys learning free from fear, and feels valued, regardless of where they come from.

Aliyyah et al. (2020) suggested perceptions of online learning teachers in primary school during the Pandemic Period COVID-19. The data was collected by surveys and semi-structured 67 class interviews in high schools and teachers. Thematic analysis (TA) of qualitative data was used in data analysis. The analysis results found four key subjects: teacher instructional methods, difficulties, support, and inspiration.

Abd et al. (Troussas et al. 2020) planned the collaboration and fuzzy-modeled personalization for mobile game-based learning (FMP-MGL) in higher education for mobile game-based learning promotes engagement among higher education students. They further defined customized ideas for cooperation to improve student's learning outcomes. Computer science professionals had confirmed education of the application concerning the evaluation findings, and students recognized its good impact on learning and its value. Mobile learning is any learning activity which uses a mobile phone. Mobile learning strives to make students' ubiquity and unique capabilities available through mobile devices and create new learning experiences that help students interact with course content and the world. Mobile learning offers student support.

Mohd et al. (Abd Rahman et al. 2020) suggested a multimedia approach (MMA), a more immersive during pre-school children's learning by integrating different means, including audio, video, graphics, and other media, to promote children's children language acquisition. MMA's goal was to determine the level of preparation for early childhood literacy teachers based on experience.

Hossain et al. (2021) modeled augmented reality technologies (ART) that are feasible for early childhood learning. The data suggested that the teachers believe the study represents a positive way of engaging the learning process. The student performance appraisal reported improved by the recommended method of augmented reality (AR).

The paper proposed the HIM-IR and increased course participation ratio, assessment ratio, accessibility ratio, development of smart education, and error ratio**.** The following section discusses the proposed HIM-IR model briefly.

3 Proposed human-interaction machine-based intelligence retrieved (HIM-IR) method using mobile learning in higher education

HIM-IR method explains the technology, applications, and platforms for defining the smart learning system. The integrated strategic aspects of the site design the human–machine interaction-based intelligent learning framework and the use of various modules. The whole collection of asynchronous and synchronous interaction techniques given to the team are built into modern integration. A combination of sensors, smart devices, applications, and games is needed for the intended system in real-time. That's why intelligent classrooms improve the learning environment, providing students with high-quality data. This means increasing reliance on high-processed foods high in saturated fat, sugar and sodium and low in essential nutrients and fibre and 'ultra-processed' food for numerous families, particularly poorer families. Quality education is vitally required at a low price in rural regions. In these places, children's parenting has become very important as their digital counterparts for quality education.

Figure 1 shows the proposed Human-interaction machine-based intelligence retrieved method. A smart education system in higher education comprises student learning documents led by human intelligence techniques to increase student experience efficiency. The expert knowledge model contains the facts and regulations of the particular field to be communicated to the student, i.e., expert knowledge. Eliciting knowledge and data analysis can be a long-lasting process, especially in a complicated field with a huge quantity of knowledge and links to this knowledge. The primary aspect of implementing an expert knowledge model remains to examine how to incorporate data and display it in smart education. The expert knowledge model can be used to evaluate the overall development of the student in its capacity. Specific criteria for comparing degrees of knowledge have to be developed to achieve. The teaching strategy or pedagogy model refers to the teaching model. This approach includes information to make decisions about teaching tactics. It depends on the student model's diagnostic processes to determine what information to present, how and when to provide it.

The student model is typically seen as a subset of the model of the expert knowledge that changes throughout learning. During the teaching process, smart education in higher education is possible to adjust to a certain student. The student model can be assessed concerning many usefulness criteria. The following conditions are: The data-fitting student model refers to how the student model is utilized to replicate the quantitative and qualitative learning pattern for actual students, compatibility, flexibility, cost of creation, various possibilities at any level for educational choices. The time scale refers to the lifetime of the student model and practical learning benefits. Finally, the smart education method is the user interface module that regulates the interaction between the student and the computer. In addition to the obvious interface between human and machine functions, several contemporary systems featured natural language interaction, speech recognition, and the student's emotions. Technology of human–computer interaction (HCI) and its associated intelligent robot technologies are both essential and interesting research contents. These technologies study and seek to build a natural HCI environment from a software algorithm and hardware system perspective.

In m-learning systems, adaptive hypermedia and HMI drive the connection and customize teaching based on adaptation to the student's learning style. Smart

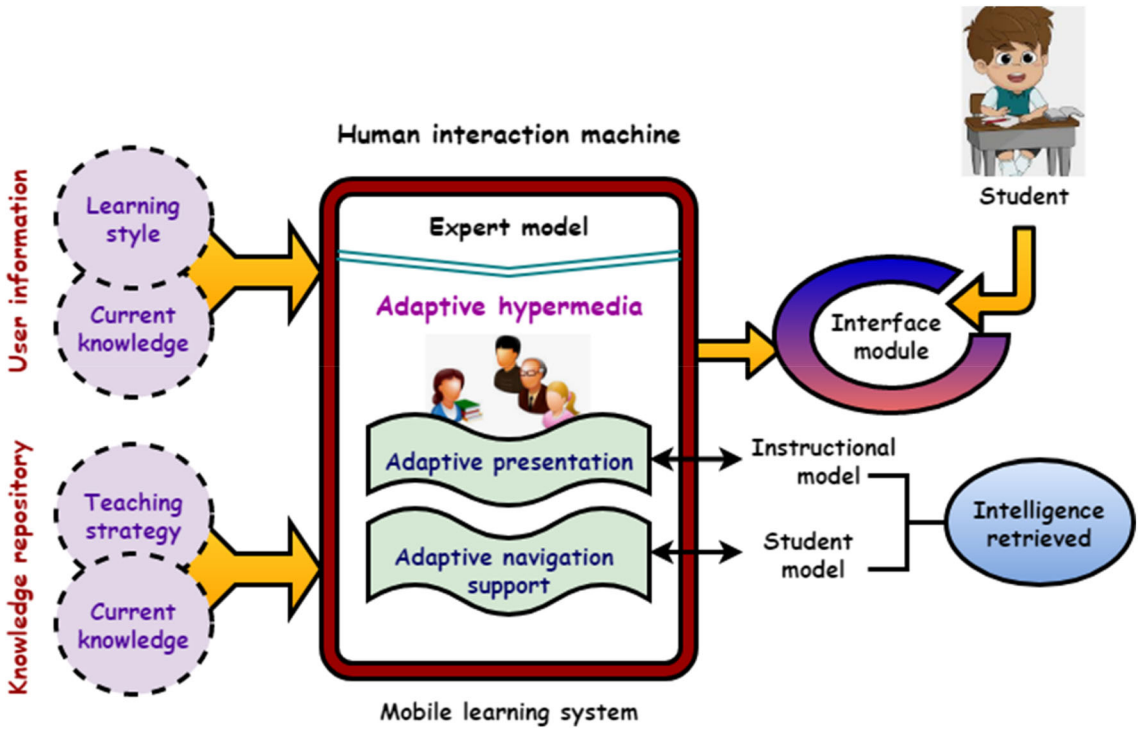

Fig. 1 Proposed Human-interaction machine-based intelligence retrieved method

education in higher education should change the telecommunications content, decision rules, and the expert model factual basis and measure learning performance. Two types of adaptive learning are discussed, i.e., adaptive presentation and adaptive navigation. Intelligent technology is an adaptive system that customizes training to the characteristics of an individual student. There are three main approaches to intelligent education: curriculum sequence, which improves learning experience, intelligent solutions analysis, which provides students with detailed information on incomplete or erroneous solutions. It helps them to learn from mistakes and helps them solve problems with a building approach. In addition, several smart education is created with the students polled for interactive learning. Smart retrieval planning is the use of learning methods to retrieve information from very big databases effectively. Significant gains in efficiency can be achieved by using strategies. New technology development makes it easier for students to learn more efficiently, flexibly and comfortably. Learners use smart devices to gain access through a wireless network to digital resources and to immerse themselves in personalized and efficient education. Intelligent education is a concept that describes learning in the digital age.

Various techniques have been given throughout the education classroom, including online engagement. The term HMI describes the changes in image detection by the use of smartphones is shown in Eq. (1),

$$s(x|\omega,\pi) = \pi x^{n}(1-\omega_{n}) + \omega_{n} \tag{1}$$

As shown in Eq. (1), x^{n} denotes towards the general direction of training, ω_{n} Is performance monitoring in intelligent learning, s indicates teaching of an individual student. The correlation of each patcher is based on g_{n} and the sampled G picture of a particular range of patches $G = \{g_1, g_2, \ldots g_n, .. g_j\}$ should be taken into consideration. Equation (2) shows K_g the commonalities with the following description,

$$K_g = \frac{1}{j}\sum_{x,y}\frac{(g_n(x,y) - g_n)}{\vartheta g_n} \tag{2}$$

As shown in Eq. (2), Only if the patch (x,y) Is used with the same rating and ϑ is greater satisfaction can the system be updated. Other patches concern media j and are not included in the updating process.

Use the system model to predict the system status at the future instant. As the real system state is $U(m|m-1)$, the system prediction is estimated according to Eq. (3) as per the system status W.

$$U(m|m-1) = WA(m-1|m-1) + XB(m) \tag{3}$$

As shown in Eq. (3), It is predicted the result of m time with $m-1$. The $XB(m)$ control system is the optimum outcome for $m-1$ time. The simulation monitoring system is 0 because no extra control is performed.

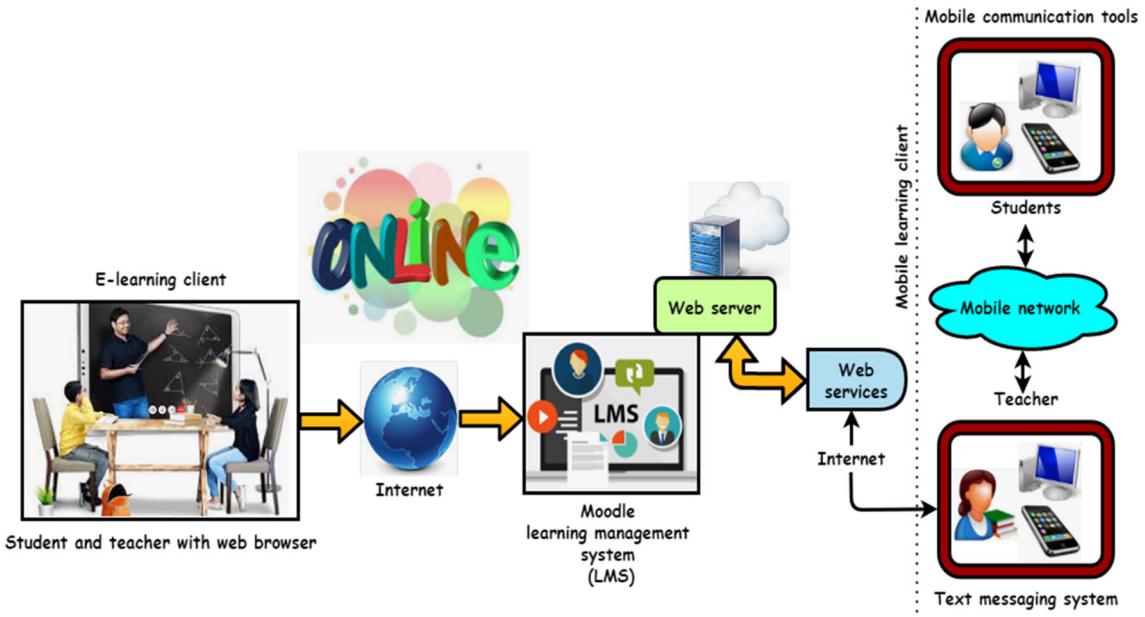

Fig. 2 Architecture of smart education system using m-learning

Figure 2 shows the architecture of a smart education system using m-learning. Mobile learning enhances the capacity of students to learn at their leisure. However, the physical isolation from their students and teachers involved in online learning can lead to a loss of communication, interaction, and poorer membership in the classroom community. This affects the motivation of students and can lead to poor performance, unhappiness, and abandonment. Effective contact can positively affect the motivation, involvement, and interest in learning of students. New communications technologies—especially mobile technology—appear efficient due to their capacity to stimulate contact between students and instructors to satisfy students' difficulties regarding motivation in online courses.

E-learning is an organized course or an electronically delivered learning experience; it can include content supporting performance. E-learning courses are generally run and administered using a learning management system (LMS). Electronically released study materials are digital learning resources or e-learning materials: electronic textbooks, e-workbooks, educational videos, e-tests, and other information. In principle, E-tasks are developed and consist of teachers under the direction and organization of Innove. The Internet is an extensive network connecting computers worldwide. The Internet allows individuals to exchange and interact through an internet connection from everywhere. Web service (WS) is either an electronic device service delivered over the World Wide Web to another electronic device or a server that operates through the computer device that responds to requests through a particular port and serves web pages.Intelligence artificial is nothing more than machine intelligence (Computer) that uses artificial methods for intelligence. It is about simulating artificial intelligence on machines or making machines intelligent as human beings.

An extension of Moodle LMS, which is employed by interactive mobile applications, is used as the mobile communication tool for the experiment. The diagram above covers the e-learning client, server, and m-learning. The e-learning client has been the learning items supplied by a network web browser.The advanced web-based education systems are adaptive web-based training systems or intelligent web-based educational systems, which we call them. The words are not synonymous. When speaking of adaptive systems, we stress that these systems try to differentiate between different students and groups of students with information collected in the individual or group models.The researchers have used certain user interfaces adapted to the tools in Moodle's layer of presentation. Another component is its server that provided course information to the (desktop or laptop) browser in a database and the needed web services (translating LMS requests for the mobile devices). The last aspect is the them-learning client, which includes the SMS and mobile communication tools. The initial teachers can send texts from Moodle to individual students, the latter being used to access Moodle by students on their mobile phones.HIM analyzed students' motivation towards the e-learning system utilizing subjective (self-évaluation) and objective behaviors to evaluate motivation. A questionnaire to determine learning motivation and thoroughly identify validity and reliability is created and tested for the

subjective evaluation.All integrated string features are deterministic except the FORMAT function. This means that when a certain set of input values is requested, they return the same value. See Deterministic and Nondeterministic Functions for more information on function determinism.

When the predicted values are assessed, there will be illogical results if the average performance of the whole class is very excellent or extremely low. The condition in which the student is more popular or whose performance has to be improved is difficult to detect. To minimize the inaccuracy of these predictions, HMI utilizes the device to compute the optimal approximation of the present system based on $\boldsymbol{H}(\boldsymbol{\theta})$ system predictions and measures in Eq. (4) for each student.

$$\boldsymbol{H}(\boldsymbol{\theta}) = \sum_{\boldsymbol{n}} \boldsymbol{R}^{(\boldsymbol{n})}(\boldsymbol{y}^{(\boldsymbol{n})} - \boldsymbol{\theta}^{\boldsymbol{T}}\boldsymbol{x}^{(\boldsymbol{n})})^2 \tag{4}$$

As shown in Eq. (4), $\boldsymbol{R}^{(\boldsymbol{n})}$ is the weight plus error rate produced in the overall class performance Eq. (5) is the exponential $\boldsymbol{y}^{(\boldsymbol{n})}$ Function of decay, which can be adjusted $\boldsymbol{n}$ to obtain the best-predicted model. Finally, the matrix $\boldsymbol{\theta}^{\boldsymbol{T}}$ coefficients that match every student may be discovered, and $\boldsymbol{x}^{(\boldsymbol{n})}$ Can be built using a single prediction scoring model.

Mapping continually changes between its electrical signals and activities at this point. This enables students to learn to achieve the right prediction of the outcomes of sensory-motor instructions. The Eq. (5) parameter is estimated using gradient descent of the mean squared error $\mathbf{P}$.

$$\mathbf{P} = \sum_{\mathbf{j}}^{\mathbf{j}+1}[\mathbf{K}(\mathbf{j}) - \overline{\mathbf{L}}(\mathbf{j})]^2 + \mathbf{m}(\mathbf{n}+1) \tag{5}$$

As indicated in Eq. (6), $\mathbf{K}(\mathbf{j})$ is the robot for interactive read-only activity, and $\mathbf{L}(\mathbf{j})$ the audio content of the students. Many students $\mathbf{m}(\mathbf{n}+1)$ Cannot understand that informal classes are crucial to ordinary education.The MSE $\mathbf{Msqu}_{\mathbf{error}}$ is estimated for each calculation, the average k-fold computation is calculated in Eq. (6),

$$\mathbf{Msqu}_{\mathbf{error}} = \frac{1}{\mathbf{i}}\sum_{\mathbf{j}=1}^{\mathbf{i}}(\mathbf{B_j} - \mathbf{S}(\mathbf{A_j}))^2 \tag{6}$$

As shown in Eq. (6), $S(\mathrm{A_j})$ is the forecast for jth that—$\mathrm{B_j}$ gives for further growth. The concept of mobility $\mathrm{H(x)}$ can be significantly increased by communication is given in Eq. (7),

$$\mathrm{U(x)} = \frac{1}{1+\mathrm{e^{-t}}} + \mathrm{h}(\mathrm{A_{ij}}) - \mathrm{g}(\mathrm{B_{ij}}) \tag{7}$$

As shown in Eq. (7), $\mathrm{h}(\mathrm{A_{ij}})$ student data predicts that the proportion infected t and the mean worm impediment $\mathrm{g}(\mathrm{B_{ij}})$ are related to a given t value. The analysis indicates that the beneficial effect of mobile learning is to encourage students to learn. Mobile learning for improved academic achievement shown a favorable correlation. Finally, the results showed that M-learning improved the learning habits of the student.

Figure 3 shows the interactive m-learning opencast platform. Students can see the video, listen to the audio of the ORL, or download it as interactive mobile learning. While viewing a video, the comments can be posted. Interaction between students and students, between students and lecturers, is a major part of this method. These commentaries enable the weak students to grasp the lectures after seeing the ORL. This engagement is helpful after a face-to-face lecture to students who have restricted access to the teacher. The remarks made in several official languages in India by students from other ORL countries can be seen.Opencast Matterhorn is a free, open-source platform that supports educational material administration and can make the recorded lectures more efficient and productive. Most higher education institutions create numerous lecture recordings preserved in an archive; opencast provides access to this storage when necessary. Broadcast works with a range of content production and distribution tools and applications, whereas Opencast Matterhorn delivers all essential functions as one integrated unit. This function minimizes the manual effort needed to produce media objects across different subsystems.

The education community provides the Opencast Matterhorn a rich, technological, and pedagogical medium for educational research. Increasing engagement, universal access, and enhanced discoverability can be accomplished by connecting to the proper environment for student instruction or mobile devices. Lectures with Opencast should be captured and recorded for continuity and persistence outside a classroom without persistence. Opencast Matterhorn offers a means to capture and record lectures in higher education and hence make them persistent. Users believe that when students download ORL on mobile devices, the educational potential of Opencast Matterhorn is fulfilled, as most students possess the mobile device. In addition to students who have difficulty with face-to-face language lessons, part-time students must have a mobile version of the Opencast; for example, mothers have to wait in the waiting room for an hour in the hospital. On their mobile devices, students can watch and watch the ORL.

The class models have worked well over centuries, the front and centre of the teacher, the eyes of the student who trained on the teacher. But traditional approaches to today's needs were ineffective.

The student can navigate across navigation pathways in dashboards. This allows students to demonstrate connections between distinct data groupings without creating a new visualization. The process of content development

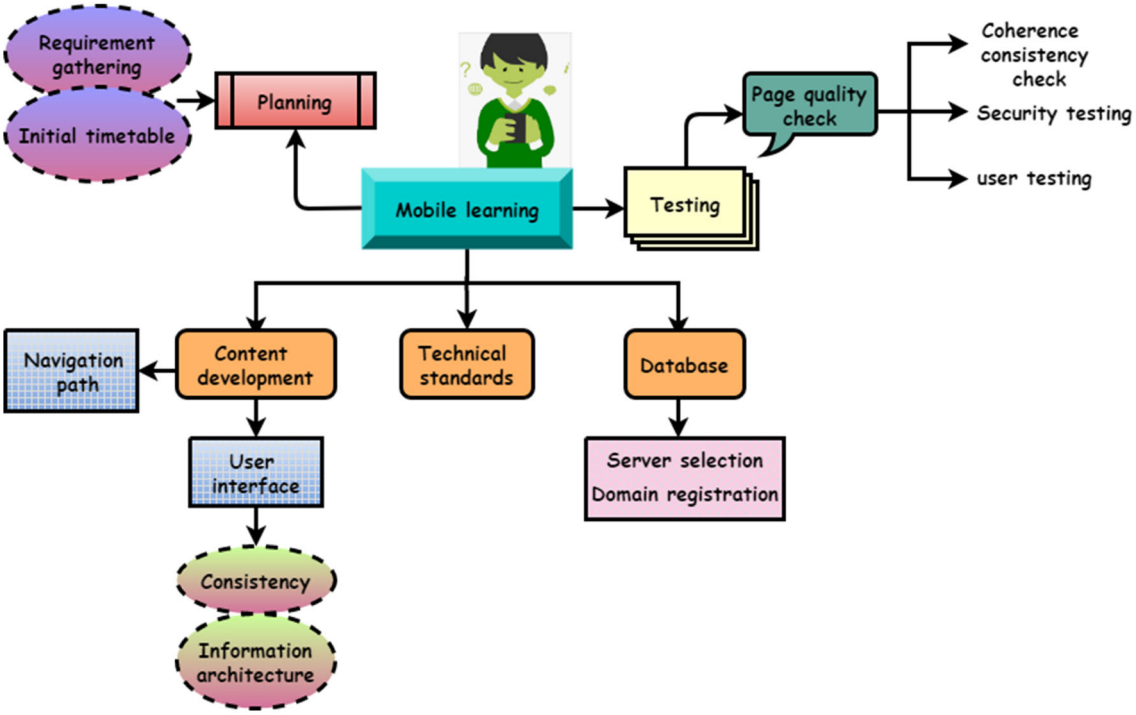

Fig. 3 Interactive m-learning opencast platform

involves investigating, authoring, collecting, organizing, and publishing information. Content creation is producing, editing, manipulating, and preserving content to provide students with knowledgeable information. Education Database includes elementary, secondary, and higher education literature, special education, home education, adult education, and hundreds of related subjects.They are permitted to search for information and communicate across and within the countries using computers at schools and outside schools. Students in each subject group interact with their peers via e-mails and online live chat conferences, which occur several times during the simulation process.The quality of the page is a measure of Google's importance for a website. Google uses actual individuals known as search quality raters to assess the general quality of a web page.

Figure 4 shows the information quality in mobile learning.Quality of information is a crucial component for information systems' performance. The analysis found that the success of information quality depends on the efficacy of the LMS design. They observed that information quality is a crucial component of the efficiency of education systems. Quality of information is one of the key factors in m-learning adoption and has a strong beneficial influence on student beliefs. These findings can lead to improved use of the e-learning system for students. The primary predictor of satisfaction and desire to utilize is the quality of information. To synchronize notes into or across cloud apps such as OneNote by text, handwriting, images and audio clips. Shared notebooks enable users to view documents or edit them together. Windows, Mac OS, iOS, and Android are available on the Web.

Moreover, prior research showed that information quality has a substantial influence on e-learning system satisfaction and intention. However, few analyses have examined the influence of quality information on satisfaction and the inclination to use mobile devices. Various criteria, including relevance, breadth, accuracy, timeliness, integrity, and efficiency, evaluate the information's quality. The quality criteria and dimensions should be selected under the research environment. In education systems such as m-learning and web-based learning, content design quality and content quality are the most common features. Go in two or three groups. Put away your device if you do not feel safe. If not in use, place your device in a secure position such as a zip-box or a pocket where you can feel it against your body. These features are the basis for describing and evaluating the quality of contents and content design as quality factors for information quality. Mobile learning is virtual of tremendous advantage to students due to the extensive material of the mobile learning application. The abundance of content and varied educational activities supplied by the m-learning application can lead in comparison to other learning environments (conventional and online learning) to a sense that m-learning is helpful. The mobile learning application is

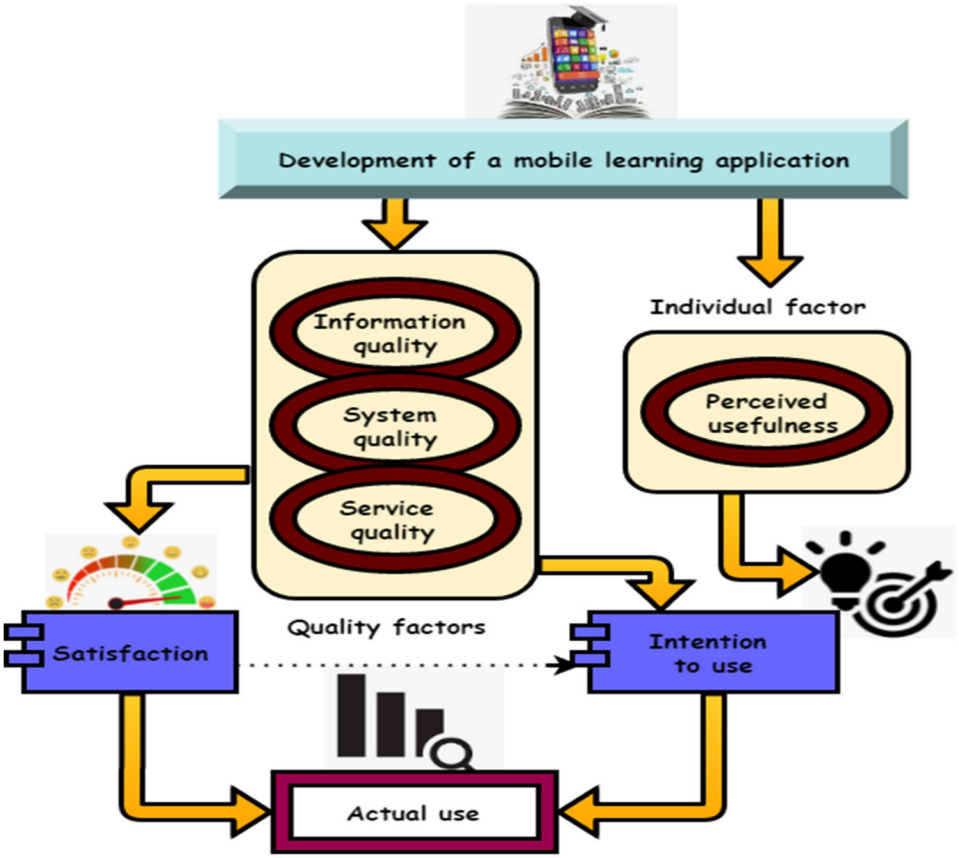

Fig. 4 Information quality in mobile learning

seen as a practical and easy-to-use tool when the design of the mobile learning content fulfills students' requirements and desires through the use of multiple formats and easy access to different sorts of learning materials. The adoption of smartphones isn't yet complete for students, but is very high and growing. The young age people in the USA have a smartphone, and we have seen that smartphone ownership is almost universal amongst urban college students. The quality of the system determines the efficiency and operation of the system. The required information system capabilities can be described as system quality. The quality of the system depends on the success of the information systems. The system quality impacts the satisfaction and intention of students, which means that the student better uses the m-learning system. Analyses of information systems in educational contexts thus show that interactivity, the user interface design, is the most prevalent aspect of system quality.Quality of service concerns the quality of the information system services. Quality of service is the entire service quality that the information system students perceive and request. Investigators say that service quality should be a subsidiary of the system's quality,and some state that IT systems have an independent variable in recent years. However, the success of an information system depends on the quality of service.

The perceived ease of use reflects the effort that the end-user expects to do. In information systems, the student questionnaire is satisfied that the system fulfills their requirements and requirements. System services are pleased, and both the intention to use and the actual usage are crucial indications to satisfy the student. Satisfaction Prior research has shown that satisfactory usage of an m-learning system has a favorable influence. The intention to use is described as measuring the strength of the student to conduct a certain action.

Figure 5 shows the process of information retrieval in education. Computers have grown ubiquitous and are very prevalent, especially in the previous three decades. This process collects enormous amounts of heterogeneous data, which can be used using data mining technologies and tools to detect undiscovered patterns and trends and hidden connections. Different areas can benefit through different goals, such as pattern extraction, behavior prediction, or trend description. A standard data mining method starts with integrating raw data from many sources, cleansed for noising, duplicated, or inconsistent data deletion. Then the cleaned data is converted into a compact format that can be interpreted by data mining tools using filtering and aggregation procedures. The analytical stage next discovers existing, intriguing patterns to better visualize.

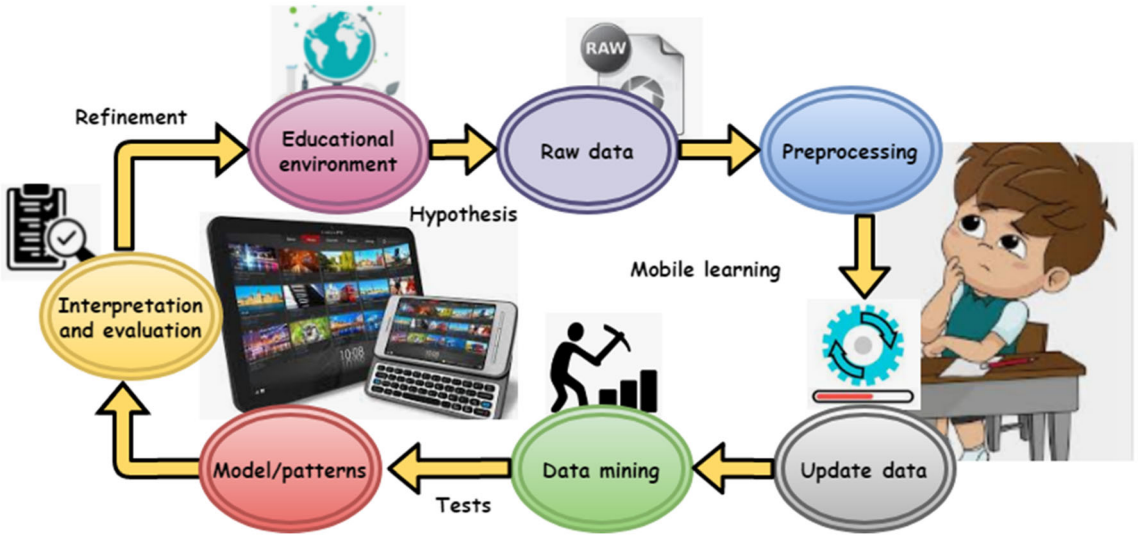

Fig. 5 Process of information retrieval in education

Data mining has been used in a range of sectors, including healthcare, industry, and education. Many educational databases are built throughout the development of education database management systems that enable datamine valuable information to be extracted from those data. This procedure led to the development of Education Data Mining (EDM) as a separate area of inquiry. EDM is currently playing an important part in discovering knowledge patterns, including performance, educational phenomena, and learning.Data mining has been utilized to predict several important educational outcomes, such as performance, retention, success, satisfaction, performance, and dropout rates. The EDM process comprises the creation of hypotheses, testing, and refining of knowledge. Despite many publications on educational data mines, including case studies, it remains challenging to apply such approaches successfully to the unique academic difficulties, particularly if one is a newcomer to the area of data mining. Several selections and parameter settings directly impact the quality of the output received.

HIM-IR is intended to solve the need that has been highlighted by offering a full guide to facilitate access to data mining methods and applying them to the educational area. In the proposed method, the challenge of predicting the academic achievement of higher education students is focused specifically. To this end, State-of-the-Art is gathered into a systematic procedure, which covers and explains all associated decisions and criteria in detail. The proposed Human-interaction machine-based intelligent retrieved (HIM-IR) method achieves course participation ratio, assessment ratio, accessibility ratio, development of smart education, and error ratio.

4 Numerical outcome

The proposed Human-interaction machine-based intelligent retrieved (HIM-IR) method of the simulation result has been performed. This paper analyzed the course participation ratio, assessment ratio, accessibility ratio, development of smart education, and error ratio.

Figure 6 shows the course participation ratio. Enhance teacher-student participation and better quality of instruction with courses employing this mobile platform. Another hopeful feature is that it has altered homework and significance for many students during the education process. In the other case, students will utilize an m-learning network to register through e-mail to acquire their username and password. They used electronic devices and courses and have submitted assignments on the Internet. The rate of enrollment is slightly greater, and the students are not present in school. The participation of students requires the use of innovative approaches such as mobile characteristics and virtual scenarios. It means supporting, personally benefiting from the training, and incorporating it as a social and emotional environment in the classroom.

Table 1 shows the assessment ratio. The URL view (with a brief Homework Tutorial) has been recorded, and the homework upload action is successfully accessed to solve and submit the necessary homework task. Students are required to examine thorough and useful web information to execute an m-learning system. Several studies motivate students to perform homework and to improve their qualifications. Teachers who provide useful evaluations, provide remedial training, offer second-hand opportunities for students to demonstrate accomplishments, improve their education and assist students in learning. Clear, easy to assess, the individual and group results of

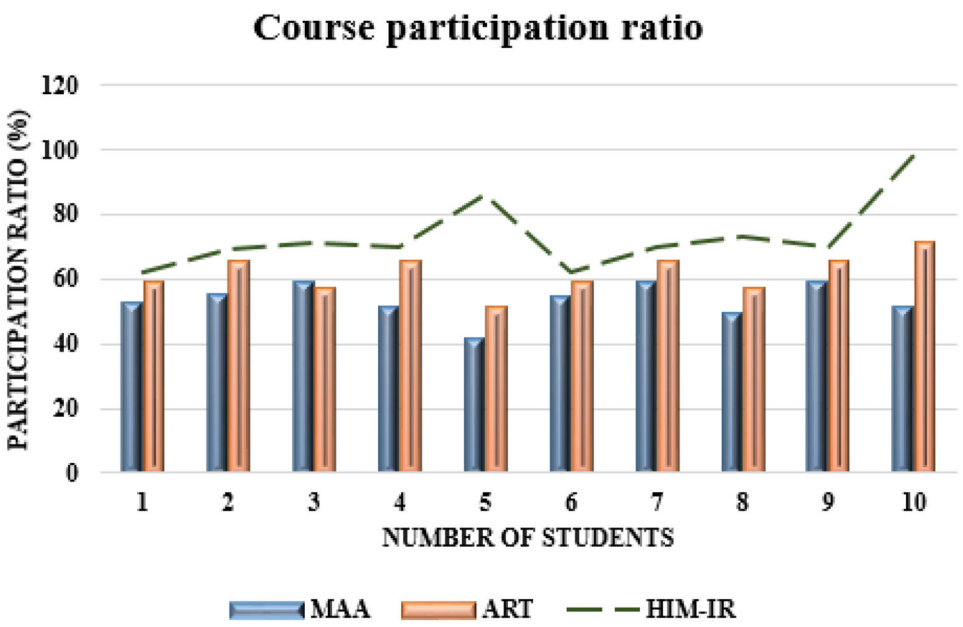

Fig. 6 Course participation ratio

Table 1 Assessment ratio

Number of Students	PLS-SEM	ART	MAA	HIM-IR
10	43	58	72	72
20	51	57	68	78
30	48	65	71	70
40	55	51	67	84
50	40	59	62	81
60	52	65	69	71
70	55	57	71	76
80	59	65	70	79
90	51	51	64	84.4
100	41	55	67	95.8

students. Assessment is the systematic basis for inferences on learning and student growth. It defines, selects, develops, collects, analyses, interprets and uses the information to enhance the education and development of the students.

Figure 7 shows the accessibility ratio.The teacher observed the rising reduction in the level of protection utilized for the learner logout alternative. Most participants chose not to join up because they used the proposed platform. As a result of utilizing personal computers, this procedure can be accepted, and their behavior is to dismiss the window without logging off. This situation is common among students for all sites using an authentication interface. The teacher has tallied a total number of user login and logout activities. Mobile devices will be able to develop technical distinctions for use in education in the future. Each set of students progresses and improves learning.Above all, accessibility can be encouraged if higher education providers listen to and improve their students' concerns and wishes. They can guarantee that the content of the courses fits all students' demands and helps them reach their intended learning results.

Figure 8 shows the development of smart education. Innovations and technology applied by smart education are modern requirements. It implies the growth of knowledge in smart education science is necessary for a newly established degree. One way of improving the education level is the establishment of smart educational institutions. Intelligent education is a phrase in schools that combines technology or contemporary gadgets to learn more. Smart education technology is interconnected during the apprenticeship time with teachers' pedagogical, systematic and practical expertise. The educational training offers improvements in the teaching process, successful representations of society and culture, and enhanced contextual education. Technology teachers can capture the attention of the student and the technical field of communication. In a rural environment, intelligent schooling is now expanding; the student learns on the mobile phone. The participation in training (97.9%) is increased, and the error rate recommended a reduction in HIM-IR experimental results (92.8%).

Table 2 shows the error ratio. Teachers consider that human error or additional copy/paste solution is responsible for the error rate. For example, authentication information (user and password) is sent by e-mail, and the sender's password is collected from the e-mail and duplicated on the platform as a password during operations of copying/pasting (with one extra space). It reflects on the

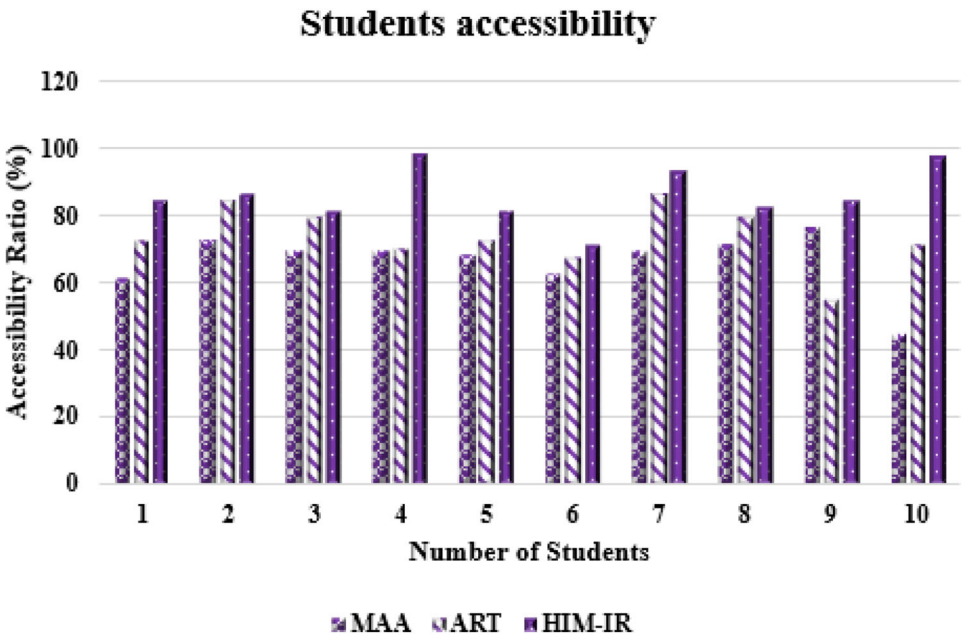

Fig. 7 Accessibility ratio

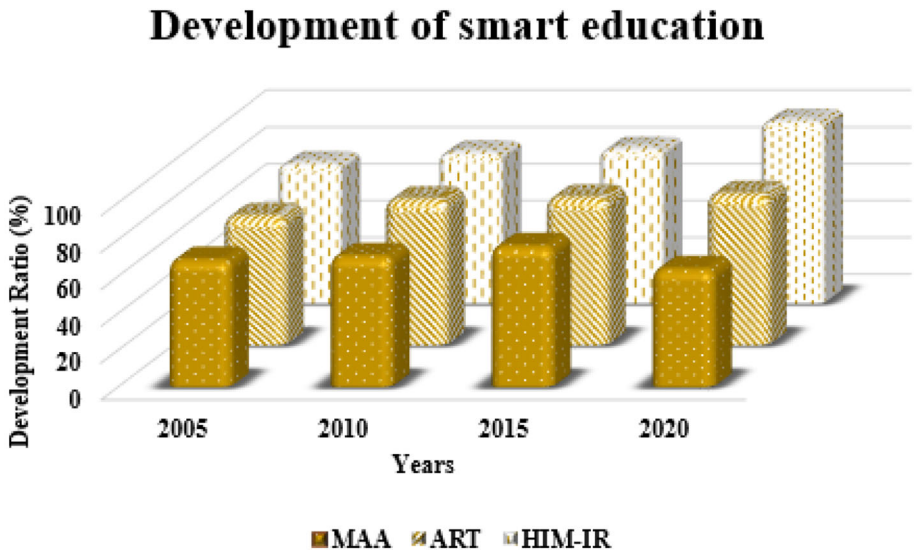

Fig. 8 Development of smart education

influence of screen sizes on documentary m-learning from an empirical investigation.

In summary, the numerical findings show that, despite the screen size of a mobile telephone, students tend to be reasonably enthusiastic about m-learning. To look at the video, their comprehension of the relevant area has drastically dropped.

5 Conclusion

This study proposes an intelligent HIM-IR technique to enhance student performance through mobile education based on human-interaction machines. Students can find information over the network through mobile learning. The retrieval of quality information in support services is therefore very important. The education systems track the learning of students to answer these questions.

Comparative international analyses can expand and enhance national scopes by identifying students' performance levels in other countries and providing a wider framework for the interpretation of national results. Mobile devices recovery would help the mobile learning intelligence system. The mobile platform provides a framework through its technological characteristics and affordances, which are content-dependent and content-independent. The student system is being recommended to enhance student commitment and teamwork. It promotes its inventiveness

Table 2 Error ratio

Number of Students	PLS-SEM	ART	MAA	HIM-IR
10	52	55	62	72
20	55	58	69	78
30	59	58	71.8	70
40	51.9	65	70	84
50	41	57	64	81
60	54	67.8	62	71
70	59	62	70	76
80	49	53	73	79
90	59	72	70.5	74
100	51	65	85	97.9

and responsibility to resolve and implement the best assignment within a time limit.The importance of life skills is understood, there is a possible lack of alignment between traditional curricula and the agenda and a failure to comprehend how these can be developed across the education cycle. This strategy for future courses and expands the utilization of m-learning for every academic staff in higher education. There is no high precision and intelligence technology on the server on the present web server. For the recovery procedure, the input string format is required. The approaches suggested are intended to describe key aspects and characteristics of mobile learning in new technologies. The experimental outcome recommended HIM-IR to enhance course participation ratio (97.3%), assessment ratio (95.8%), accessibility ratio (97.2%), development of smart education (98.2%), and error ratio is reduced by (97.9%).

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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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