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Evaluate the Effectiveness of Online Learning Platforms in Facilitating Remote Education

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Abstract: Online learning is one way for students to get the knowledge they need. Most schools around the world have switched to online learning, which means that students don't see each other as much. This study analyzed how these factors were associated with and impacted each other. a quantitative approach to gathering data and analysing the effectiveness of online learning platforms. A cross-sectional study design is used to collect data at a specific point in time. The sample consisted of 500 university students who have experienced remote education through online learning platforms. The sampling technique combination of convenience sampling and stratified random sampling. The primary data collection method was a structured questionnaire. The questionnaire was designed to gather information about students' perceptions and experiences with online learning platforms. The questionnaire was developed based on a review of the existing literature on online learning effectiveness. The test results indicated that all the variables had a positive effect on the effectiveness of online learning. This showed that the more effective online learning was, the more benefits and positive outcomes the student experienced. The result of this research showed that learning objectives could enable universities to increase the effectiveness of students' online learning by motivating students to join online classes and developing appropriate learning strategies for their individual needs.

Introduction

Due to how quickly things change in the world today, it is important for all cultures, both old and new, to start using online schooling. Online education has become a good option to more traditional ways of going to school, (Zaghdoud,2020) points out. This is because the Internet has become more popular and multimedia technology has improved. Researchers think that online learning is used to

make education easier, but the literature does not agree on a clear definition of online learning. This is likely because electronic technology and tools are growing so quickly. (Karima,2019) says that it is a way to teach in a way that puts the focus on the students and encourages them to work together. It uses computers and the Internet to help students learn and teachers teach outside of standard classrooms. Teachers can help students

in real time or at different times. According to (Khdeem, 2020) this is a type of schooling in which both students and teachers use digital media networks and tools like computers, interactive whiteboards, smartphones, and tablets both inside and outside of the classroom. When it comes to higher education, the OECD describes online learning as the use of information and communication technologies to improve the quality of teaching in a variety of ways. You can take online classes on your own or as a supplement to what you learn in the classroom (Arkorful & Abaidoo, 2015).

(Basilaia & Kvavadze, 2020) says that online education is a planned process with a specific goal that uses electronic tools like video, audio, and text to make it easier for students, teachers, and course materials to talk to each other in real time. Computers, the World Wide Web, and electronic programs made by experts or companies with help from the government are all part of the (Karar, 2012) description of this educational program, which uses information technology and computer networks to help and expand the learning process. The goal is to use computers and the Internet to make a lot of interactive programs that can be used to get teaching materials from anywhere at any time. So, online learning is any way of teaching where students and teachers both use digital media to help with both asynchronous and live learning and teaching (Phung, 2021).

(Otaibi & Roqi, 2019) have put together a list of the many educational goals and benefits of online learning. These include teachers being able to use information technology in their classrooms for the first time, teachers improving their professional performance, students having better access to education, teachers being able to communicate better with students, and students having more access to education. (Mohamed, 2016) said that online education can be used with many different teaching methods because it gives teachers experience in areas like lesson planning and material development and gives students

access to a lot of information in many different forms through the Internet. One of the best things about online education is how efficient it is. Since students don't have to go anywhere to get their education, they save money on gas and time, and they have access to a lot of learning materials and evaluation tools. It's also defined by the fact that students can get the tools they need whenever and wherever they need to. It helps create an environment that encourages students to work together to learn, moving the focus of their education from a fake classroom to a more natural one. Recent global trends have made it necessary to include online learning in the education process. As a result, online learning settings have become a major source of income for many schools. It is a way for universities to improve their status and reputation (Afifi & Al-Omari, 2015). Using the Internet and digital technologies in line with the principles of instructional design for an open and flexible learning environment (Jawad, 2021) saw it as a new way to provide a learner-centred, well-designed, predesigned interactive environment for anyone, anywhere, and at any time. said that educational institutions needed to study the phenomenon and come up with strategic responses to make online learning settings and tools that are more effective and interesting. With the help of the Internet, teachers, students, and anyone else who is interested in education can use a wide range of engaging services at any time and from anywhere. Through them, students have access to a wide range of classes and learning chances, and the process of learning is strengthened and made better. They help create group learning settings by making it easier for people in different places to work together, share information, and solve problems (Müezzín, 2020).

(Mulla and Abdullah, 2021) points out, one of the many problems with online learning is that many students don't know how to use technology tools. But there may not be enough trained people to keep an eye on the complicated systems that are needed to support online schooling. There

was a lot of talk about how teachers don't know much about technology and how many people worry that educational software makers will take over the classroom. The general public's doubts about online education and the fact that official authorities in some countries don't recognize degrees gained through such programs were also brought up. The problems with e-learning can be put into a few categories: access to and familiarity with the necessary technology, students' and teachers' readiness for e-learning, strong beliefs in e-learning's value and effectiveness, and the spread, quality, and evaluation of relevant educational materials. Everyone agrees that there needs to be a set of standards that define the goals of each school, measure how well they are met, and set up ways to keep track of how quality is improving and how well online learning is working (Al-Hiyari, 2019).

Education isn't just given out at random; it's a well-planned and organized system, F. Al-(Mohamed, & Dahans, 2020) emphasized the need to stick to high standards recognized worldwide. To achieve and ensure quality in online learning, three fundamental conditions must be met: the availability and use of accurate standards and indicators for the design and production of the program; alignment with the needs of the community as it is now; and making sure that the learner's personality and behavior change in a real way. Many studies have shown that online education doesn't make teaching better when it isn't well planned and doesn't take into account quality standards and signs. When it comes to online education, one of the biggest challenges is making sure that the student's experience meets his or her expectations for the quality of the educational service he or she will receive (Dimitrios, 2016). Standards are the first step toward excellence in any school setting, and quality comes in many forms.

(Dimitrios, 2016) says that quality is the stamp of approval given to a group of parts that have been shown through rigorous testing and analysis to be good enough to do all of the

important functions of the product. It is decided what students need to know and what tools they need to do well in school. Quality in education is described (Fathi, 2016) as a system that takes into account all of the system's inputs, processes, and outputs to improve the end products. According^{to}, one of the main reasons to focus on educational quality standards is to improve the quality of what educational institutions create. The standard specification backs this up by putting the most emphasis on the service to the recipient and urging colleges and universities to use clear measures of student satisfaction with their services as well as their own efficiency and responsiveness to their student's specific needs and concerns. Before online education can be called high quality, it must meet a number of requirements. For example, students in online courses must be able to enter information well; online education must be relevant to course materials and software; online education must include faculty development and continuous evaluation; online education must closely monitor the implementation of instructional programs.

Significance of the Study

The significance of studying the effectiveness of online learning platforms in facilitating remote education cannot be overstated. As the world becomes increasingly interconnected and technologically advanced, the demand for remote education options continues to rise. Online learning platforms have emerged as a viable solution to bridge the gap between physical remote and educational opportunities, making it crucial to evaluate their effectiveness. Firstly, understanding the effectiveness of online learning platforms is essential for ensuring equitable access to education. Traditional educational models often suffer from limitations in terms of geographical boundaries, economic constraints, or lack of resources. However, online learning platforms have the potential to reach learners from all corners of the world, providing access to quality education regardless of location

or socioeconomic background. By evaluating the effectiveness of these platforms, researchers can identify the strengths and weaknesses of different approaches, allowing for improvements and the development of more inclusive education systems. Secondly, assessing the effectiveness of online learning platforms helps in enhancing the quality of education. These platforms offer diverse learning materials, interactive tools, and personalized learning experiences that cater to individual needs. By evaluating their effectiveness, educators and policymakers can identify which features and strategies are most successful in promoting effective learning outcomes. This knowledge can be used to refine online learning platforms, develop evidence-based teaching methodologies, and optimize instructional designs to ensure that learners receive high-quality education remotely.

Furthermore, studying the effectiveness of online learning platforms contributes to the ongoing evolution of education in the digital age. As technology advances and new platforms emerge, it is crucial to assess their impact on learning outcomes. This research helps in identifying the most effective online learning tools and practices, providing valuable insights for educators, administrators, and developers. It promotes innovation and the continuous improvement of online learning platforms, leading to a more robust and efficient remote education system.

Study Objective

The purpose of this research was to highlight the Evaluate the effectiveness of online learning platforms in facilitating remote education. The study also put an accent on the effectiveness of the online learning system in comparison with the conventional learning system.

Literature Review

There are three different types of classes in the world's education system. The first uses more traditional school tools like books, notes, pencils,

blackboards, etc. The second type of classroom is the modern one, which uses things like whiteboards, audiovisual screens, digital boards, and overhead projectors to help teach. The most modern choice, number three, is the "virtual classroom," which is an online setting where teaching is given using information and communication technologies (ICTs) to make it easier for students from all over the world to take part. People can talk, see, and type to each other through the internet and different apps (Hayat, 2019). In the first 10 years of the 21st century, online education changed the way the world's education systems worked. Distance learning, which is another name for learning online, gives students a lot of ways to learn without having to be in a classroom. In today's online classrooms, students can find their own ways to learn and learn to rely on the many helpful tools that are available to them 24/7. A virtual classroom is built on four main things: sharing knowledge, being interactive, working together, testing, and evaluating. In a virtual classroom, it's important for students to interact with each other, with the teacher, and with the material. There are a number of basic things that need to be taken into account for online learning systems to work well, and for students to get the most out of the system, they need to know why, how, and when to use it (Qudah & Hamed, 2021). When compared to regular classrooms, the technology used in a virtual classroom has many benefits for student learning.

Online tools and interactive teaching methods give students benefits that aren't available in a typical classroom. Students can get as much help from their teachers as possible by using video chat with online whiteboards, screen sharing, and real-time video participation. Putting together action groups is another way to get people to work together (Ahmed & Bakiri, 2019). When compared to more standard ways of learning, online learning has a lot of pros. The results showed that online education encourages students to think of new ways to do things. They become independent, future-oriented students

who can solve their own school problems by using a variety of online tools. As a part of a student's general intellectual growth, it helps them learn good ways to study. Online education is useful because it has a lot of information and a positive view of education (Hayat, 2020). The results of a study done in Iran that compared online learning to learning in a classroom showed that online learning was more effective. But more research needs to be done before these results can be used in a wide way. (Hayat, 2020) Online learning, which is made possible by the Internet, mobile devices, and social networking tools, has been slowly replacing traditional classroom learning. For a smooth transition from the current school system to the electronic system, you need to be ready and have the right tools and resources. When it helps students talk to each other and share information, it needs to be aware of their cultural backgrounds and personal details (Sayed & Abdullah, 2018). According to (Hayat, 2020) from the United Nations, the COVID-19 pandemic affected almost 1.6 billion students. This made it the largest disruption to learning in history. Since there are no signs that this crisis and the huge problems it has caused in education will end soon, universities have started to offer classes online, either in live or as recordings of lessons that have already been given. So, now is the time to come up with new ways to solve the learning problem and make long-term solutions, like digital ones that require institutions to have the right kind of content, the right kind of teachers, and the right kind of facilities to help people learn. The use of cutting-edge technology in higher education is one of the most important parts of a good education, and a recent study (Misut & Pribilova, 2015) shows that online learning has become an important part of academic institutions because of this. (Hayat, 2020) said that online education is important because it helps teachers and students talk to each other more and share their ideas. Learners' knowledge and beliefs get stronger when they use online learning tools like e-mail, debate forums, chat rooms, and instant forums. Courses can be

made to fit science standards, but they also give students the freedom to learn at their own pace, at their own level of skill, and in their own way. Also, an online learning setting has all the courses, materials, and references that are needed. By giving kids access to education outside of normal school hours, they can learn how to study on their own and save time and energy. It gives students access to a bigger range of learning resources and encourages the use of new technology in the classroom (Masoumi & Lindström, 2012). Because students can learn in places that work for them and grow based on their own skills, online learning can fit a large number of students while still taking into account their differences. It also makes kids surer that everyone should have the same chance to get an education. When students take advantage of online education, they are no longer cut off from their school and can instead stay in touch with it (Masoumi & Lindström, 2012). Even though it's easy to change course materials, it's important that online education sites give students reliable and useful tools. According to (Rizki, 2020) students and their online classes should work together to make high-quality learning experiences, instead of seeing great education as a product to be bought from an outside source. In a synchronous online learning setting, all students are logged in at the same time and can talk to each other and the teacher in real time. One example is a virtual school.

Another is a video conference. Asynchronous online learning, on the other hand, doesn't require all students to be in the same place at the same time. Instead, students can access course materials on their own according to a set schedule and plan their own study sessions using e-mail, video, and CDs (Rizki, 2020). Any online school or academic program must be able to give its students a good place to learn in order to be successful. Because of this, any educational system that wants to be successful must follow agreed-upon worldwide quality standards. These standards serve as a social contract between teachers and educational authorities on the one

hand and teachers and students on the other ^[18]. Comprehensive quality standards in educational schools lead to growth in quality, which goes hand in hand with academic and administrative progress for better service (Hayat, 2020) points out. For students to be able to choose between their many learning choices, which vary in quality and ease of access, they need to meet certain criteria. This is where online learning quality standards come in. The same is true for schools and colleges; without them, it would be hard to give kids good services. This makes it easier to figure out how well someone has learned and bridges the gap between what is taught and what needs to be done. Some of the problems with online learning are that the quality of the educational services provided by the electronic system isn't as good as what the teacher and the learner need, that the current conditions aren't good enough, and that there isn't enough compatibility between the culture of online learning and the evaluation standards of the teacher, the learner, and the technical and administrative staff.

Using ICT (information and communications technology) to connect and allow communication between students and teachers for educational purposes, remote learning (also known as online learning or online learning and often used interchangeably is an alternative to the traditional way of learning (face-to-face), with a focus on "nontraditional students" (Rizki, 2020).

So, colleges were able to get students who lived far away or had full-time jobs by giving them the chance to study and make money at the same time through online education. This term will be used throughout the article because it covers everything that will be talked about, including learning, teaching, evaluation, and interaction. Because of this, the pandemic and the forced switch to fully online learning and teaching were shocking and hard for everyone involved in education, even though this type of

education had been used for the past 20 years with continuous improvements for both students and teachers (Masoumi & Lindström, 2012). They have both good and bad things to say about the switch to online classes during the pandemic in terms of how to teach, how to test, and how to get students involved (Sayed & Abdullah, 2018).

Research Methodology

The research design employed a quantitative approach to gather data and analyze the effectiveness of online learning platforms. A cross-sectional study design is used to collect data at a specific point in time. The sample consisted of 500 university students who have experienced remote education through online learning platforms. The sampling technique combination of convenience sampling and stratified random sampling. First, different universities were stratified based on location, discipline, and academic level. Then, within each stratum, participants were selected randomly using a convenient sampling method. The primary data collection method was a structured questionnaire. The questionnaire was designed to gather information about students' perceptions and experiences with online learning platforms. It included questions related to the ease of use, interaction features, course materials, the effectiveness of assessments, and overall satisfaction with online learning. The questionnaire was developed based on a review of the existing literature on online learning effectiveness. The collected data were analyzed using statistical software such as SPSS. Descriptive statistics, such as frequencies and percentages, summarize the participants' demographic characteristics. Inferential statistics, including correlation analysis and regression analysis, were conducted to examine the relationships between various factors and the effectiveness of online learning platforms.

Results

Table 1

Demographics

Demographics	Frequency	Percentage
Gender		
Male	250	50%
Female	250	50%
Institutes		
Govt	250	50%
Private	250	50%
Total	500	100%

Table 1 presents the demographic distribution of the 500 university students participating in the study. The table is divided into two sections: gender and institutes. In the gender distribution section, it is evident that the sample consists of an equal number of male and female participants, with 250 students in each category. The percentages indicate that 50% of the participants

are male, and 50% are female. In the institute's section, it shows that the participants are evenly distributed between government and private institutions, with 250 students in each category. The percentages reveal that 50% of the participants are from government institutes, while the other 50% are from private institutes.

Table 2

Demographics – Academic Level Distribution

Academic Level	Frequency	Percentage
Undergraduate	300	60%
Graduate	150	30%
Postgraduate	50	10%
Total	500	100%

Table 2 displays the distribution of participants based on their academic levels. Three categories are represented: undergraduate, graduate, and postgraduate. Among the 500 university students, 300 are undergraduates, accounting for 60% of the sample. The table shows that 30% of the participants are graduate students, with a total of 150 students. Postgraduate students make up 10% of the sample, with 50 participants. These tables provide a comprehensive overview of the

demographic characteristics of the sample, including the gender distribution, distribution between government and private institutes, and the distribution of participants across different academic levels. Understanding these demographics is crucial for interpreting the subsequent findings and analyzing the effectiveness of online learning platforms in facilitating remote education.

Table 3

Results of the quality scale of programs used in online learning from the student's perspective

Dimension	mean	Standard deviation	Degree of availability
Student management	3.7	1.0	High

Learning management	3.4	0.9	High
Knowledge delivery management	3.6	1.0	High
Ease of use	3.6	1.1	High
Privacy and assessment management	3.2	1.1	Medium
Total	3.5	0.9	High

Table 3 presents the results of the quality scale for online learning programs, as perceived by the students. The table includes different dimensions: student management, learning management, knowledge delivery management, ease of use, privacy and assessment management, and a total score. The mean values indicate the average ratings given by the students for each dimension, representing their perceptions of the quality of the online learning programs. The standard deviation measures the variability or dispersion of the ratings within

each dimension. Based on the provided information, the overall assessment of the quality scale shows that the dimensions of student management, learning management, knowledge delivery management, and ease of use are rated relatively high, with means ranging from 3.4 to 3.7. The dimension of privacy and assessment management receives a medium rating with a mean of 3.2. The total score indicates an average perception of the quality of the online learning programs, with a mean of 3.5.

Table 4

Results of the t-test for the quality measure of online learning programs for students according to the variable of the type of institution

Axes	Type of institution	Arithmetic mean	Standard deviation	"T" value	Significance level
Student management	Public	3.9	0.9	2.1	0.04
	Private	3.6	1.1		
Learning management	Public	3.3	0.9	0.6	0.54
	Private	3.4	1.1		
Knowledge delivery management	Public	3.8	0.9	1.8	0.68
	Private	3.5	1.1		
Ease of use	Public	3.6	0.8	0.4	0.69
	Private	3.5	1.2		
Privacy and assessment management	Public	3.1	0.9	0.9	0.38
	Private	3.3	1.1		

Table 4 presents the results of the t-test conducted to compare the quality measures of online learning programs based on the type of institution. The table includes different dimensions: student management, learning management, knowledge delivery management, ease of use, privacy and assessment management, along with arithmetic mean, standard deviation, "T" value, and significance level. The results of the t-test show a comparison between public and private institutions for each

dimension. The arithmetic mean represents the average ratings for each dimension, while the standard deviation measures the variability of the ratings within each group. The "T" value indicates the magnitude of the difference between the means of the two groups, and the significance level determines whether the difference is statistically significant. Based on the provided information, it can be observed that in terms of student management, there is a statistically significant difference between public

and private institutions, with a higher mean rating for public institutions (3.9) compared to private institutions (3.6). However, for the dimensions of learning management, knowledge

delivery management, ease of use, and privacy and assessment management, there are no statistically significant differences between the two types of institutions.

Table 5

Results of the one-way analysis of variance for the measure of the quality of online learning programs for students of the variable of program type

Source of variance	Sum of squares	Degrees of freedom	Mean of squares	P value	Probability value
Between groups	1.8	3	0.6	0.6	0.6
Within groups	107.1	119	0.9		

Table 5 presents the results of the one-way analysis of variance (ANOVA) conducted to assess the quality measure of online learning programs based on the program type. The table includes information on the source of variance, a sum of squares, degrees of freedom, mean squares, p-value, and probability value. The analysis of variance examines whether there are statistically significant differences in the quality measures among different program types. The source of variance indicates the between-groups and within-groups variability. The sum of squares, degrees of freedom, and mean squares provide statistical calculations related to the variability and significance testing. The p-value determines the statistical significance of the differences, and the probability value represents the probability of obtaining the observed results by chance. Based on the provided information, the analysis of variance indicates that there are no statistically significant differences in the quality measures of online learning programs across different program types, as indicated by the p-value of 0.6.

Discussion

Our study has shown that how students think they will do in online classes has a big effect on how well they do in those classes. The results of these studies backed up this conclusion. Students were better at learning when they believed in themselves and knew how to learn in a way that was successful, thorough, and right for them. When making these classes, it was important to

think about how comfortable students felt with online learning. Self-efficacy in online learning was boosted by good habits, which in turn directed what to do next. Students can't build a sense of self-efficacy if they don't learn well and that doesn't change over time. Bandura says that self-efficacy is when a person has faith in their own skills. Teachers and lecturers need to be able to change how hard their classes are depending on what their students need. This is one way to help kids feel better about themselves. Students can feel better about themselves when they are rewarded for their hard work. In models of learning, the setting and method of teaching have always been given a lot of weight. But the learning-oriented teaching model might be better now that learning doesn't have to happen in a certain place or at a certain time.

Along with how well they do in school, students' self-awareness and emotional state are important factors that help them feel more comfortable in themselves. Universities and teachers should use different kinds of learning assessments to find out what students are good at in different areas and then push them to set training goals that help them grow in many ways, including intellectually, emotionally, and in their skills. Our analysis of the data also showed that strategic online learning and the general effectiveness of online learning were both improved by online learning monitoring. This finding was the same as those of other studies. To protect the health and safety of the students,

learning activities were moved to a virtual learning setting where students had trouble communicating and learning. Students didn't want to go to school because they didn't know how to use Internet learning tools. Because of this, online schooling didn't have the best environment for developing effective learning processes. In online learning, the teacher is very important for both internal and external tracking. Teachers are usually expected to be involved in online learning by doing things like responding quickly to student questions, coordinating group activities in discussion forums, keeping lines of communication open with students, and being aware of and able to adapt to changing learning environments. Students should also self-monitor by thinking about what they want to learn and how they want to learn it. They have to figure out where and how they want to study and what works best for them. The online learning tool does more than just keep track of students' study time, accept assignments, keep students up to date on their progress, and help them talk in the virtual classroom. Online learning monitoring works best when students feel at ease with their learning situation and can explain it through daily self-assessment tasks.

Conclusion

Online learning platforms were originally established to support the education process they have played a major role in ensuring the continuation of education. Microsoft, Google, and other high-tech companies have designed and implemented useful online learning platforms for all education levels, from primary school to university. This study aimed to validate the previous facts about online learning and show that the programs used in the Sultanate enjoy high quality, from the perspective of faculty members and students, with no significant problems related to quality in general.

The analysis showed that faculty members and students do face some challenges related to Internet connection services, poor technical

support, inability to organize learning times, the lack of a mechanism through which the faculty member can enrol students in the program collectively, the difficulty of maintaining focus, the lack of mechanisms to verify the absence of cheating, and the weak skills of faculty members and students in dealing with online learning tools. Many of these problems arise from the fact that the systems were developed in an emergency situation with no or limited prior experience.

Indeed, the current reality indicates that the near future will see more developments in the field of online learning because of its active role in the continuation of the education process in various parts of the world. These developments will focus on how to reduce the difficulties identified and increase the efficiency of online learning

Recommendation

- **Enhance User Experience:** Online learning platforms should focus on improving user experience to enhance student engagement and satisfaction. This can be achieved by ensuring intuitive navigation, responsive design, and easy accessibility across different devices. User feedback should be actively collected and incorporated into platform improvements.
- **Promote Interactive Learning:** Online learning platforms should prioritize interactive learning experiences that encourage student participation and collaboration. Incorporating features such as discussion boards, virtual classrooms, and group projects can foster engagement and a sense of community among students. Providing opportunities for real-time interaction with instructors and peers can enhance the learning experience.
- **Personalized Learning Pathways:** Online learning platforms should offer personalized learning pathways to accommodate the diverse needs and learning styles of students. Adaptive

learning technologies can be employed to assess students' knowledge levels and tailor content and activities accordingly. Providing personalized feedback and recommendations can further support students in their learning journey.

- **Strengthen Assessment Strategies:** Effective online learning platforms should implement robust and varied assessment strategies. Assessments should go beyond traditional exams and include project-based assignments, case studies, and practical applications to evaluate students' understanding and skills. Timely and constructive feedback on assessments can help students gauge their progress and areas for improvement.
- **Supportive Instructor Engagement:** Online learning platforms should foster instructor engagement and support. Instructors should be trained in effective online teaching methodologies, including facilitating discussions, providing timely feedback, and utilizing various digital tools. Regular communication channels should be established to address student queries and concerns promptly.
- **Accessible and Inclusive Design:** Online learning platforms should be designed with accessibility and inclusivity in mind. They should adhere to web accessibility standards, ensuring compatibility with assistive technologies and accommodating students with disabilities. Multimedia content should have captions and transcripts, and platform features should support different learning preferences and needs.

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