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Research Article

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The role of multimedia tools in Hashemite Kingdom of Jordan education classroom teaching in the digital era

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ABSTRACT

The article aims to reveal the role of education as a key component in the growth of nations, and it is essential for the construction of a more promising future for the nation's youth, both as future professionals and as citizens, so that they may demonstrate their capacity to acquire the skills necessary for successful jobs. Technology development has led to the creation of many multimedia tools, which have enhanced the educational system. To boost one's capacity for memory or understanding, one may use multimedia by combining more than one material with technology. Students, instructors, and educators need to have a solid understanding of how to use multimedia technologies that provide considerable educational advantages. This article presents an overview of numerous various kinds of multimedia tools that are used in learning and teaching. These technologies are beneficial in increasing educational quality as well as student performance in academics. Because the current generation in the coming decades is already acquainted with gadgets and other technical equipment, the educational system needs to make the most of this potential by adding multimedia tools into classroom settings.

Keywords: multimedia, education, classroom, multimedia tools, digital era, teaching, Jordan

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INTRODUCTION

Among the many fascinating developments of the digital era, the rise of multimedia technologies and their applications has to be at the top of the list. The Internet and other forms of communication and computer technology helped them, and they helped others. Multimedia may be used to create better educational settings because of its capacity to mimic real-world situations (Nusir et al., 2011). As a bonus, it allows students, even in vast lecture halls, to feel more empowered and in charge of their education. Multimedia is the simultaneous presentation of information in more than one media type, often via a computer. Included components may include but are not limited to the following: text, graphic pictures, motion graphics, animations, hypermedia, photos, video, and audio, including noises, music, and narration (Nusir et al., 2011). Multimedia may accommodate different representations of the same information in several different ways. Numerous consequences for education are derived from this.

Text, images, audio recordings, video recordings, and a great deal more fall under the umbrella word "multimedia," which describes everything and everything that can be seen or listened to. In most cases, this is recorded before being played, shown, or accessed by information content processing equipment such as electronic and digital devices. We can use many forms of multimedia in the business, the school, the home, and other public settings, or even virtual reality. These have many functions, enabling them to carry out various activities and giving the items more mobility. The phrase multimedia is a composite of the words "multi" and "media"; therefore, it comprises both. Data may be stored in various media, including magnetic tape, optical discs, and semiconductor memory, although the original meaning of the word "medium" referred to a more general term for storing information. The second kind of data transfer involves conveying information through symbols, words, sounds, images, and the like. In other words, the media is physically compounded by a single medium, and the equivalent phrase and multimedia are the same. Everything that can be seen or heard is considered multimedia. There are visuals, sounds, texts, and more. Computers and other electronic devices are often used to record, playback, display, or access such media. By definition, multimedia is any presentation format that combines visuals, audio, video, text, and interactive elements (such as animation) into a single package to convey information or demonstrate a process. The media is replete with cutting-edge innovation in two key areas: production and distribution. In other words, it combines physical devices and abstract concepts. The many multimedia technology and use aspects may be theoretically broken down into control systems and information. To store and trade material, CD-ROMs are the standard. There would not be a market for hundreds of megabytes of music, video, and text data applications on CD-ROM if they were not so easily accessible. With modern multimedia tools, we are no longer just observers; we can take charge, participate actively, and have things done exactly as we want them.

Whatever the case may be, in a report, we have unfettered and unfiltered access to the relevant information. Reports and images from all across the globe compiled into one place might be fascinating (Alzubi, 2022).

Multimedia data may be archived, transferred, displayed, and analyzed. This means that it is an effective means of interaction. Because keeping up with the times is what modern society is about, multimedia has become more crucial. Multimedia is a useful method of communication since it facilitates conversation and makes it simple to grasp what is being said. Multimedia then expands upon this by including animation, music, and video. This may make getting folks interested in what you have to say simpler. Likewise, it has allowed more people to pay attention and watch while you deliver a product. Using multimedia to convey your message is a useful tool. Even if they do not understand what you're saying, they can see what you're doing through multimedia. Because multimedia aids comprehension, kids can grasp complex concepts with relative ease. This has been accomplished by incorporating radio, the internet, and globalization into its multimedia programming. You may now enjoy a multimodal audio-visual presentation. Include some motion, music, and animation on the inside, and I will not be able to read it to anybody else. Are we in charge of the city's media? If so, we may unleash our imaginations by creating exciting multimedia. The same holds for presentations; more is needed to rely on words. The visitors will be bored since the sauce will take them to uninteresting places. Therefore, we need to do more than increase the number of animations when we perform a briefing (Alzubi, 2021; Swanson et al., 1998).

Additionally, we may use a dynamic point typeface, which will attract the attention of your visitors. Not only will adding video, still images, and flash media to your files help you increase their aesthetic appeal, but it will also provide additional advantages to your users. Internet usage of multimedia is also possible, and this feature undoubtedly contributes to the growing popularity of multimedia-centric websites. However, it will assist in drawing more links to your site, improving your ranking. Therefore, you'll need more than just writing chops and some serious schooling to pull off a multimedia project or website. For this, you will need business acumen and organizational skills. Digital learning resources help users get acquainted with the representations provided using various media components; this is one definition of "multimedia tools." Multimedia tools are a kind of e-learning platform that incorporates visual, auditory, graphical, and textual elements to facilitate the dissemination of course material and the completion of associated learning tasks (Alzubi, 2021).

The process of using media to improve education by stimulating student interest, inspiring curiosity, and illustrating the relevance of different learning ideas (Baharuddin et al., 2021). Teachers now have many free resources at their disposal, including an abundance of digital learning resources that may be included in lessons.

Teachers can motivate their students to achieve the best possible outcomes, and students can better apply the information they learn from reading textual materials like textbooks, thanks to the usage of multimedia technologies in the classroom. Incorporating media into the learning process with multimedia technologies allows students to absorb knowledge in a way that sparks their curiosity and interest, as well as their imagination and creativity (Mojavezi & Tamiz, 2012). The rise of information and communication technology (ICT) is bringing about profound changes in many spheres of human activity, but none more so than the field of education (ICT). ICT refers to the use of computers and associated technology to acquire, manipulate, store, display, and disseminate data, much of which exists in digital format. Multimedia technology is crucial to ICT since it deals with how data may be represented and displayed digitally via media such as text, audio, video, and others (Guan et al., 2018). It requires the integration of several technologies to provide data in the most optimal structures, containers, and sizes.

Using various media features that facilitate information processing, multimedia, or digital learning materials helps students develop effective mental representations. Digital learning resources employ various media formats to deliver information, including text, picture, video, and audio, that makes up content and, at times, learning activities. Research on the use of multimedia in education has shown that the success rates of students who learn via a combination of visuals and text are higher than those of students who learn through the use of text alone (Chen & Liu, 2008; Mayer, 2005). According to Eady and Lockyer (2013), several forms of pedagogy were implemented by incorporating technological resources. Their report detailed how they introduced new concepts, gave concrete examples, sparked discussion, provided several sources of information, and kept students actively involved throughout the learning process.

LITERATURE REVIEW

Using digital instructional tools and resources inside the school system is no longer a matter of choice or personal preference. Rather, it has become necessary, particularly after most schools have been trained in educational development programs that introduce methods and means based on information technology as an essential element in teaching (Aladwan, 2020). However, some teachers must still be convinced to adopt these new approaches. Since he cannot follow and assimilate the data of the modern technological revolution, he cannot help preparing students for new tasks and roles that are required by the times' necessities and to meet society's needs. People need to care about using technology in the classroom. However, for the sake of this investigation, we shall limit our sample size to sixth graders.

Types of Multimedia Tools

As the world's educational landscape evolves in response to the present crisis, multimedia technologies are used more often in the classroom. This is because the education industry has been required to constantly adapt to the changing technological landscape to guarantee that all people have equal access to high-quality education (Afyouni et al., 2016). The days of using separate audio and video systems in classrooms are long gone, and in their place is tremendous growth in the usage of multimedia within the industry as an expansion toward a brighter future. The good news is that modern classrooms have access to a wide range of multimedia resources, making using such resources for instruction much simpler and more efficient than in the past. For the educational system to be effective in its converting and exchanging function, it must adapt its methods of instruction to ensure that students are actively learning the material, are actively engaged in the issues being presented to them and are answering the questions necessary to solve those problems. Traditional teaching approaches and course materials are still employed in classrooms, but something has to

be done to get students more involved in their studies. Thus, it is necessary to implement IT applications such as multimedia alternatives.

Text-based applications

Many modern multimedia programs make it easy to find one's way through a mountain of content, mostly written in text form. The data stored in these programs must be searchable to ensure that users can quickly and easily locate the data they want. Hypertext features are available in development tools that focus on this application. Hypertext is identical to standard text but includes information that leads to a different location inside the same program. Windows help system is a hypertext, searchable application developed by Microsoft. An effective navigational tool for such an application would provide an overview, table of contents, or map of the accessible data (Babiker & Elmagzoub, 2015). In addition to being able to display and playback video that has been incorporated into the application, these programs are instructional multimedia programs.

When creating software that relies heavily on text, it is important to have the right tools. Microsoft Multimedia Viewer is an advanced information viewer with support for multimedia files, hypertext, and powerful search tools. Another text-based product with hypertext capabilities and limited search options is Adobe Acrobat. Both products enable users to import papers from other word processors and give an overview of the material to help readers navigate the contents. All media players and editors can save text and navigate through it (Lindvall et al., 2003).

Interactive applications

Generally speaking, multimedia learning tools are best represented by graphical, interactive apps. In addition to supporting any media file and allowing for human interaction, these programs are powerful multimedia suites. It also provides an interpreted programming environment or high-level language for controlling navigation and accepting user input. This is especially helpful in a classroom since it allows for more personalized instruction based on students' replies to questions and exercises. Even while these features are available in the vast majority of programs, not all of them are designed to handle the complexities of interactive programs (Mayer, 2002; Mayer & Moreno, 2002).

Web applications

A new field of instructional multimedia apps is growing to reach people in various parts of the world. In part, this is made feasible by developing the web and associated content management systems (CMS). These networks comprise an information distribution infrastructure that commercial and academic institutions rely on to serve 10-twenty million customers. With the help of the Internet, browsers may access a wealth of data in the forms of text, images, audio, and video from sources all over the globe. CMS's ability to enable hypertext links is a significant feature that facilitates easy navigation from one page to another. The Internet is a treasure trove of knowledge, and adding to this abundance means, in essence, offering access to information in various formats. The disorganization of this online technology is a major negative. There is a wealth of information, but sifting through it to find what you are looking for may be daunting. This technology is well suited for a multimedia application aimed at a global academic community (Ally, 2009).

Mobile (smart) phones applications

A mobile phone is an electronic device that makes and receives phone calls, as defined by the Gale Research Group. As a result of radio waves or satellite broadcasts, it can join a wireless network (Gagne, 2010). In addition to traditional voice calls, modern mobile devices provide several additional services, such as texting, multimedia messaging service, email, the Internet access, short-range wireless communication (infrared, Bluetooth), multimedia apps, gaming, and photography. Playing music, seeing pictures, and watching movies are just some of the many uses for mobile devices. Smartphones are mobile devices that have these and other common computer capabilities. Mobile applications, or apps, are software designed to operate on mobile devices and do certain activities on the user's behalf. Applications may range from games to web browsers to media players, social networks, calendars, calculators, and image viewers.

MULTIMEDIA TOOLS

Zoom Classroom

If you believe Singh and Awasthi (2020), Zoom is one of the most widely used video conferencing tools. The individual is spared the trouble of creating a Zoom account only to participate in an online meeting. Zoom's technical features allow teachers to actively engage their students in online meetings with features like allowing multiple users to film, speak, work on a whiteboard, and many more. Zoom's recent meteoric rise to prominence may be attributed to its flexible feature set, which includes support for hundreds of video participants and up to forty-nine videos on screen simultaneously. Zoom's many useful features suggest it has quickly become one of the most often-used multimedia programs in academic settings.

Google Meet

If you have a Gmail account, you can use Google Meet to host a web conference at no cost. Users need a Gmail account to access this resource. Because so many Malaysian students and teachers already have email accounts, it is the most popular multimedia resource in the country. Users from various occupations, from corporations to classrooms, have found Google Meet useful for staying in touch and getting things done (Singh & Awasthi, 2020). For the most part, the app's security operators are on by default, which makes it simpler to guarantee the safety of players.

EFFECTIVENESS OF MULTIMEDIA TOOLS IN EDUCATION

In general, multimedia learning is an approach to education that uses visuals and sounds (including video and animation) to engage students better in the material being taught. Students may use their past knowledge and the vocabulary used in the book in conjunction with multimedia learning aids to understanding the content better. It has been shown that multimedia technologies may help students learn more effectively and increase their motivation to study (Abdul Samat & Aziz, 2020). Multimedia technologies in education have the potential to boost students' understanding, satisfaction, and long-term recollection of course content. Results demonstrate that elementary school students spend around 60% of their time listening to lectures, whereas high school and college students spend 90% of their time doing the same.

After two months, only half of the students could remember the lesson, proving that this learning method could be more effective and that a different strategy should be employed instead of relying heavily on auditory learning and lectures. On the other hand, we need to update our educational system with innovative methods and multimedia-based instructional resources.

The results of a study conducted by Afyouni et al. (2016) demonstrate that multimedia tools for education are much more effective than the more conventional method of learning, the lecture. It has the potential to make lessons more exciting and to get students actively involved in the classroom. Additionally, visual representation and auditory components enhance the course's appeal and encourage student participation. The improved mood and increased motivation to learn to ensure that students pay closer attention in class and get more out of their homework. The instructor may create video lessons with their voiceover, pictures, and lesson plans. The instructor may make a video outlining the procedure to solve the problem. Students will get a deeper understanding of the material after seeing this video. One of the most effective ways to provide information to students rapidly is via videos; these materials assist students in remembering what they have seen and heard by stimulating their brains, which in turn helps them learn the material more readily (Baharuddin et al., 2019). Furthermore, it frees educators' imaginations for developing instructional materials. It enables them to refine their practices based on data gleaned from students' responses and the results of past lessons.

ADVANTAGES OF MULTIMEDIA TOOLS IN EDUCATION

Education is only one area, where technological progress has made it possible for people to become more self-reliant and independent. To aid in their education, people may employ technology to construct multimedia aids. The 3Cs (for creativity, communication, teamwork, and critical thinking) are greatly aided by multimedia technologies. Teachers and students alike will benefit from the increased focus on using multimedia technologies to learn about, acquire, and administer multimedia materials for educational purposes. Multimedia has several positive effects on classroom instruction (Alzubi, 2021).

In the first place, it might help pupils get access to online resources with the help of their professors. The instructor might show the class how to use the technology properly, especially for academic reasons. By participating in multimedia activities, students can choose how and what knowledge will be most useful. Students may benefit from the teacher's use of Google Scholar and other scholarly online search engines like JSTOR as learning reference tools. By guiding students' cognitive processes and emotionally exciting students, instructors are in a new online classroom, where multimedia technology integrates teaching and learning and gives students extra incentives (Xu, 2010). Therefore, it may help students articulate their past knowledge and provide them with a wealth of educational options. Students may learn more about a topic by making full use of the features offered by multimedia technologies, which in turn encourages them to extend their perspectives. There is much excitement about multimedia in education since it frees students from the tedium of reading a dense textbook and sitting passively during lectures. History, for instance, is a challenging topic that students must pass, yet it may bore them to death since it contains so many tales. The standard approach of historical teaching content may be exhausting for pupils, who may start to zone out during class.

Nonetheless, teachers may now give students assignments that require them to use multimedia resources to research and create their course materials. Having done their homework, students know how to use many multimedia resources to help them grasp the material. Therefore, students' innovative and optimistic thinking has been inspired by the availability of multimedia resources. Finally, because employing multimedia tools reduces study time, they are highly budget friendly. Moreover, multimedia technologies provide a logistical advantage because the instructor's materials may be disseminated more quickly, cheaply, and effectively. This guarantees that all students have access to the same information, and instructors may use a centralized app to distribute all lessons. One instructor may use Google Classroom for all her students' formative evaluations. Therefore, students may easily get access to the program and review the content on their own time at home. Teachers' roles are shifting from those of the center of attention to that of the facilitator, as they no longer act as the sole source of knowledge but rather guide and educate students and provide resources and support for them while they study. Rather than relying on paper to relay information, it is better to utilize an application so that students have no excuses, such as misplacing the paper and reprinting or redoing the work because of their carelessness. In addition, the educator must fully use the tool's potential to benefit from its many capabilities with their pupils. Paper and books are ineffective learning resources; thus, we should transition to multimedia technologies for exams and quizzes, particularly during this online distance learning owing to the pandemic constraint. Because of this, the school may save money on homework sheets and other educational resources (Alzubi, 2021).

Finally, multimedia technologies may provide more time and location freedom for both the student and the instructor. Using multimedia technologies in education can improve the quality of both learning and instruction. Student creativity is boosted when they are allowed to gain experience with the aid of multimedia (Baharuddin et al., 2021). Student confidence in their abilities to create their learning materials, analyze and explore information, and share what they have learned with their peers will be boosted. Students may be more interested in and motivated by this kind of instruction if they are given the agency to create their learning content rather than passively receiving the representations of others. After all, kids may learn fundamentals like writing and problem-solving using multimedia technologies while also engaging in introspective thought.

METHODOLOGY

This study is the qualitative method in revealing the phenomenon of the development of multimedia tools in classroom teaching in the digital age in Jordan. A literature approach was used to collect data and information on multimedia tools, both print and online. In addition, several statements from experts are included to support the discussion portion. What the experts' statements mean comes from the relevant scientific journals. It appears that the methodology for your study involves a literature-based approach to collect data and information on multimedia tools in classroom teaching in the digital age in Jordan. This approach involves reviewing relevant scientific journals and incorporating statements from experts to support the discussion

portion of your study. The experts' statements are likely sourced from the literature and provide additional insights and perspectives on the topic under investigation.

RESULTS AND DISCUSSION

It has been shown that multimedia technologies improve the quality of educational resources for educational use. The evolution of educational uses for multimedia applications can be traced back to the late 1980s. This trend can be seen particularly in the field of higher education. The education industry has increasingly grown more reliant on the many multimedia tools that have become available due to the fast rise of technology, notably in multimedia applications. Integrating essential components such as text, photos, audio, animations, and user control onto one platform using multimedia tools results in a simpler, more engaging, and more efficient overall. This is because multimedia tools help students obtain a deeper understanding. After all, multimedia applications engage all of the senses, including verbal listening and visual displays of knowledge, enabling the fact that multimedia tools help students obtain a deeper understanding because multimedia applications connect all of the senses including oral hearing and visual displays knowledge, which enables the human brain to integrate the information more easily and fully. As a result of this, students can learn more. In addition, children have access to a broad range of data thanks to the usage of electronic devices, mostly communication devices that are fully equipped. This makes it much simpler for students to search for any information they desire. It is now much easier for instructors to lead discussions in the classroom since they can encourage students to share their knowledge, which enhances students' confidence when in front of a big group. Aside from these advantages, there are some disadvantages. Students may become frustrated when they cannot comprehend a subject because instructors or lecturers are not always available to assist them. This may motivate them to work on their problems independently without guidance. Most importantly, there is no question that the use of multimedia technologies in educational settings has a positive impact, as they greatly assist teachers and students.

Increased Student Engagement

The use of multimedia tools in classroom teaching has been shown to increase student engagement by providing visually appealing and interactive content that captures students' attention and motivates them to participate actively in the learning process. This can lead to improved student outcomes and a positive learning experience.

Enhanced Learning Outcomes

Multimedia tools can support different learning styles, providing students with diverse ways to access and process information. This can lead to enhanced learning outcomes as students are able to understand and retain information better through multimedia presentations, videos, simulations, and other interactive content.

Improved Critical Thinking Skills

Multimedia tools can facilitate critical thinking skills by presenting students with real-world scenarios, problems, or simulations that require analysis, evaluation, and decision-making. This can promote higher-order thinking skills and help students develop critical thinking abilities that are essential for their academic and professional success.

Enhanced Collaborative Learning

Multimedia tools can promote collaborative learning by providing opportunities for group work, discussions, and peer feedback. This can foster teamwork, communication, and problem-solving skills, which are crucial in the digital era, where collaboration is often required in various aspects of life and work.

Access to Digital Resources

The use of multimedia tools can provide students with access to a wide range of digital resources, including open educational resources (OERs), educational websites, videos, and simulations. This can broaden the availability of learning materials and expose students to diverse sources of information, expanding their knowledge base and supporting their learning.

Access and Equity

Not all schools or classrooms may have adequate access to multimedia tools or reliable internet connectivity, which could hinder the effective integration of multimedia tools in classroom teaching. Ensuring equitable access to technology and resources for all students and educators is essential to avoid creating a digital divide.

Pedagogical Considerations

The effective use of multimedia tools requires educators to have the necessary pedagogical knowledge and skills to design and implement multimedia-enhanced lessons effectively. Proper training and professional development for educators may be needed to ensure that multimedia tools are used in alignment with best practices in teaching and learning.

Quality of Content

The quality of multimedia content, including accuracy, relevance, and appropriateness, should be carefully evaluated to ensure that it aligns with curriculum standards and learning objectives. Not all multimedia resources may be of high quality or suitable for educational purposes, and educators need to critically evaluate and curate multimedia content to ensure its reliability and relevance.

Potential Distractions

While multimedia tools can enhance engagement, they can also be a source of distraction if not used judiciously. Students may get distracted by the multimedia elements or may not be able to process the information effectively if the content is overly complex or overwhelming.

Privacy and Security

The use of multimedia tools may involve collecting and storing student data, which raises concerns about privacy and security. Educators need to be mindful of data privacy laws and take appropriate measures to protect students' personal information when using multimedia tools.

CONCLUSIONS

Enhancing Engagement

Multimedia tools can help create an engaging learning environment by incorporating visually appealing and interactive content. This can capture students' attention and motivate them to

actively participate in the learning process. For example, educational videos, animations, and simulations can make complex concepts more accessible and understandable for students, fostering their curiosity and interest in the subject matter.

Supporting Different Learning Styles

Students have different learning styles, and multimedia tools can cater to these diverse needs. For instance, visual learners may benefit from multimedia tools that provide visual representations of information, while auditory learners may prefer videos or podcasts with spoken explanations. Multimedia tools can also offer opportunities for kinesthetic learners to interact with content through touch or physical movements, promoting a multisensory learning experience.

Encouraging Critical Thinking

Multimedia tools can facilitate critical thinking skills by presenting students with real-world scenarios, case studies, or problems that require analysis, evaluation, and decision-making. For example, students can analyze data through interactive charts or graphs, critically evaluate online resources, or engage in virtual simulations that prompt them to think critically and solve problems.

Promoting Collaborative Learning

Multimedia tools can foster collaboration among students by providing opportunities for group work, discussions, and peer feedback. For instance, online discussion boards, collaborative document editing, or virtual classrooms can facilitate student interactions, allowing them to share ideas, collaborate on projects, and learn from each other's perspectives.

Enhancing Assessment

Multimedia tools can also be used for formative and summative assessments. Educators can use online quizzes, interactive assessments, or multimedia presentations to assess students' understanding of concepts, track their progress, and provide timely feedback. Multimedia assessments can be more engaging and authentic, aligning with the needs of 21st-century learners.

Access to Digital Resources

Multimedia tools enable educators to leverage a vast array of digital resources available on the internet, including OERs, educational websites, videos, and simulations. This can expand the availability of learning materials, especially in remote or underserved areas, and provide students with access to diverse sources of information to support their learning.

Professional Development for Educators

Multimedia tools also support the professional development of educators by providing access to online training courses, webinars, and tutorials. This enables educators to stay updated with the latest teaching methods, learn how to effectively use multimedia tools in their classrooms, and enhance their pedagogical skills in the digital era. In conclusion, multimedia tools have transformed classroom teaching in the Hashemite Kingdom of Jordan by enhancing engagement, catering to different learning styles, fostering critical thinking, promoting collaboration, supporting assessment, providing access to digital resources, and facilitating professional development for educators. As technology continues to evolve, multimedia tools will likely continue to play a pivotal role in shaping education in Jordan and preparing students for the challenges of the digital era.

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REFERENCES

Abdul Samat, M. S., & Aziz, A. A. (2020). The effectiveness of multimedia learning in enhancing reading comprehension among indigenous pupils. *Arab World English Journal, 11*(2), 290-302. https://doi.org/10.24093/awej/vol11no2.20

Afyouni, B., Tabatabai, M., & Ghasempour, A. (2016). A comparative study of lecture-based and multimedia-based training methods on the second-year student's competency in general electronics course in the technical and vocational school. *Mediterranean Journal of Social Sciences, 7*(4 S1), 227-227. https://doi.org/10.5901/mjss.2016.v7n4S1p227

Aladwan, S. S. E. (2020). The use of educational technologies and modern electronic educational media in teaching science subject to grades (fourth, fifth, and sixth) and their impact on the educational process from the viewpoint of teachers at government schools affiliated with the Jordanian Ministry of Education. *Ilkogretim Online* [*Primary Education Online*], *19*(2), 1254-1267.

Ally, M. (Ed.). (2009). *Mobile learning: Transforming the delivery of education and training*. Athabasca University Press. https://doi.org/10.15215/aupress/9781897425435.01

Alzubi, A. (2021). *Employing multimedia in satellite channels operating in Jordan in light of unified theory of technology acceptance (UTAUT)* [Doctoral dissertation, University of Petra].

Alzubi, A. (2022). Impact of new digital media on conventional media and visual communication in Jordan. *Journal of Engineering, Technology, and Applied Science, 4*(3), 105-113. https://doi.org/10.36079/lamintang.jetas-0403.383

Babiker, M., & Elmagzoub, A. (2015). For effective use of multimedia in education, teachers must develop their own educational multimedia applications. *Turkish Online Journal of Educational Technology-TOJET, 14*(4), 62-68.

Baharuddin, M. F., Masrek, M. N., & Shuhidan, S. M. (2019). Innovative work behaviour of schoolteachers: A conceptual framework. *International E-Journal of Advances in Education, 5*(14), 213-221. https://doi.org/10.18768/ijaedu.593851

Baharuddin, M. F., Masrek, M. N., Shuhidan, S. M., Razali, M. H., & Rahman, M. S. (2021). Evaluating the content validity of digital literacy instrument for schoolteachers in Malaysia through expert judgement. *International Journal of Emerging Technology and Advanced Engineering, 11*(07), 71-78. https://doi.org/10.46338/ijetae0721_09

Chen, H. Y., & Liu, K. Y. (2008). Web-based synchronized multimedia lecture system designed for teaching/learning Chinese as a second language. *Computers & Education, 50*(3), 693-702. https://doi.org/10.1016/j.compedu.2006.07.010

Eady, M. J., & Lockyer, L. (2013). Tools for learning: Technology and teaching. *Learning to Teach in the Primary School, Queensland University of Technology, Australia.* https://ro.uow.edu.au/cgi/viewcontent.cgi?article=1413&context=asdpapers

Gagne. L. (2010). *Telecommunications directory 21st edition.* https://www.amazon.com/Telecommunications-Directory-Louise-Gagne/dp/1414448392

Guan, N., Song, J., & Li, D. (2018). On the advantages of computer multimedia-aided English teaching. *Procedia Computer Science, 131*, 727-732. https://doi.org/10.1016/j.procs.2018.04.317

Lindvall, M., Rus, I., & Sinha, S. S. (2003). Software systems support for knowledge management. *Journal of Knowledge Management, 7*(5), 137-150. https://doi.org/10.1108/13673270310505449

Mayer, R. E. (2002). Multimedia learning. In B. Ross (Ed.), *Psychology of learning and motivation* (pp. 85-139). Academic Press. https://doi.org/10.1016/S0079-7421(02)80005-6

Mayer, R. E. (2005). Cognitive theory of multimedia learning. *The Cambridge Handbook of Multimedia Learning, 41*, 31-48. https://doi.org/10.1017/CBO9780511816819.004

Mayer, R. E., & Moreno, R. (2002). Animation as an aid to multimedia learning. *Educational Psychology Review, 14*, 87-99. https://doi.org/10.1023/A:1013184611077

Mojavezi, A., & Tamiz, M. P. (2012). The impact of teacher self-efficacy on the students' motivation and achievement. *Theory & Practice in Language Studies, 2*(3), 483-491. https://doi.org/10.4304/tpls.2.3.483-491

Nusir, S., Alsmadi, I., Al-Kabi, M., & Shardqah, F. (2011). Designing an interactive multimedia learning system for the children of primary schools in Jordan. In *Proceedings of the 2011 IEEE Global Engineering Education Conference* (pp. 45-51). IEEE. https://doi.org/10.1109/EDUCON.2011.5773111

Singh, R., & Awasthi, S. (2020). Updated comparative analysis on video conferencing platforms-Zoom, Google Meet, Microsoft Teams, Webex teams and Gotomeetings. *EasyChair Preprint, 4026*, 1-9.

Swanson, M. D., Kobayashi, M., & Tewfik, A. H. (1998). Multimedia data-embedding and watermarking technologies. *Proceedings of the IEEE, 86*(6), 1064-1087. https://doi.org/10.1109/5.687830

Xu, J. (2010). On the problems and strategies of multimedia technology in English teaching. *Journal of Language Teaching and Research, 1*(3), 215-218. https://doi.org/10.4304/jltr.1.3.215-218