مجلة العلوم الإنسانية
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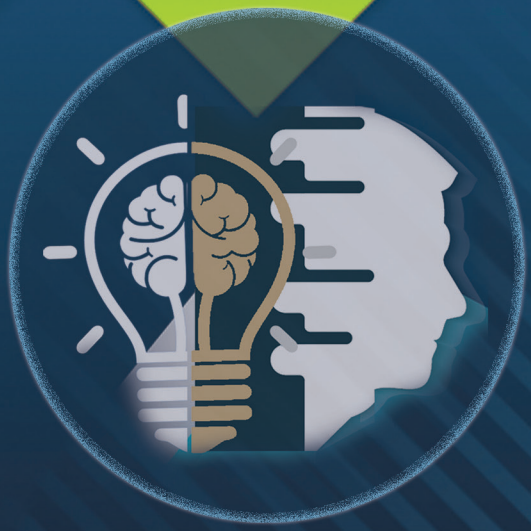
مجلة العلوم الإنسانية

دورية علمية محكمة تصدر عن جامعة حائل



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نبذة عن المجلة

تعريف بالمجلة

مجلة العلوم الإنسانية، مجلة دورية علمية محكمة، تصدر عن وكالة الجامعة للدراسات العليا والبحث العلمي بجامعة حائل كل ثلاثة أشهر بصفة دورية، حث تصدر أربة أعداد في كل سنة، وبحسب اكتمال البحوث المجازة للنشر.

وقد نجحت مجلة العلوم الإنسانية في تحقيق معايير اعتماد معامل التأثير والاستشهادات المرجعية للمجلات العلمية العربية معامل " آرسيف Arcif " المتوافقة مع المعايير العالمية، والتي يبلغ عددها (32) معياراً، وقد أطلق ذلك خلال التقرير السنوي الثامن للمجلات للعام 2023.

رؤية المجلة

التميز في النشر العلمي في العلوم الإنسانية وفقاً لمعايير مهنية عالمية.

رسالة المجلة

نشر البحوث العلمية في التخصصات الإنسانية؛ لخدمة البحث العلمي والمجتمع المحلي والدولي.

أهداف المجلة

تهدف المجلة إلى إيجاد منافذ رصينة؛ لنشر المعرفة العلمية المتخصصة في المجال الإنساني، وتمكن الباحثين –من مختلف بلدان العالم– من نشر أبحاثهم ودراساتهم وإنتاجهم الفكري لمعالجة واقع المشكلات الحياتية، وتأسيس الأطر النظرية والتطبيقية للمعارف الإنسانية في المجالات المتنوعة، وفق ضوابط وشروط ومواصفات علمية دقيقة، تحقيقا للجودة والريادة في نشر البحث العلمي.

قواعد النشر

لغة النشر

1- تقبل المجلة البحوث المكتوبة باللغتين العربية والإنجليزية.
2- يُكتب عنوان البحث وملخصه باللغة العربية للبحوث المكتوبة باللغة الإنجليزية.
3- يُكتب عنوان البحث وملخصه ومراجعه باللغة الإنجليزية للبحوث المكتوبة باللغة العربية، على أن تكون ترجمة الملخص إلى اللغة الإنجليزية صحيحة ومتخصصة.

مجالات النشر في المجلة

تهتم مجلة العلوم الإنسانية بجامعة حائل بنشر إسهامات الباحثين في مختلف القضايا الإنسانية الاجتماعية والأدبية، إضافة إلى نشر الدراسات والمقالات التي تتوفر فيها الأصول والمعايير العلمية المتعارف عليها دوليًّا، وتقبل الأبحاث المكتوبة باللغة العربية والإنجليزية في مجال اختصاصها، حيث تعنى المجلة بالتخصصات الآتية:

- علم النفس وعلم الاجتماع والخدمة الاجتماعية والفلسفة الفكرية العلمية الدقيقة.
- المناهج وطرق التدريس والعلوم التربوية المختلفة.
- الدراسات الإسلامية والشريعة والقانون.
- الآداب: التاريخ والجغرافيا والفنون واللغة العربية، واللغة الإنجليزية، والسياحة والآثار.
- الإدارة والإعلام والاتصال وعلوم الرياضة والحركة.

أوعية نشر المجلة

تصـــدر المجلة ورقيًّا حســـب القواعد والأنظمة المعمول بها في المجلات العلمية المحكمة، كما تُنشـــر البحوث المقبولة بعد تحكيمها إلكترونيًّا لتعم المعرفة العلمية بشكل أوسع في جميع المؤسسات العلمية داخل المملكة العربية السعودية وخارجها.

ضوابط النشر في مجلة العلوم الإنسانية وإجراءاته

أولاً: شروط النشر

أولاً: شروط النشر

1. أن يتّسم بالأصالة والجدّة والابتكار والإضافة المعرفية في التخصص.
2. لم يسبق للباحث نشر بحثه.
3. ألا يكون مستلّاً من رسالة علمية (ماجستير / دكتوراة) أو بحوث سبق نشرها للباحث.
4. أن يلتزم الباحث بالأمانة العلمية.
5. أن تراعى فيه منهجية البحث العلمي وقواعده.
6. عدم مخالفة البحث للضوابط والأحكام والآداب العامة في المملكة العربية السعودية.
7. مراعاة الأمانة العلمية وضوابط التوثيق في النقل والاقتباس.
8. السلامة اللغوية ووضوح الصور والرسومات والجداول إن وجدت، وللمجلة حقها في مراجعة التحرير والتدقيق النحوي.

ثانيًا: قواعد النشر

1. أن يشتمل البحث على: صفحة عنوان البحث، ومستخلص باللغتين العربية والإنجليزية، ومقدمة، وصلب البحث، وخاتمة تتضمن النتائج والتوصيات، وثبت المصادر والمراجع باللغتين العربيّة والإنجليزيّة، والملاحق اللازمة (إن وجدت).
2. فـــي حال (نشر البحث) يُزوَّد الباحث بنسخة إلكترونية من عدد المجلة الذي تم نشر بحثه فيه، ومستلاًّ لبحثه .
3. فـــي حال اعتماد نشر البحث تؤول حقوق نشره كافة للمجلة، ولها أن تعيد نشره ورقيّاً أو إلكترونيّاً، ويحقّ لها إدراجه في قواعد البيانات المحلّيّة والعالمية – بمقابل أو بدون مقابل– وذلك دون حاجة لإذن الباحث.
4. لا يحقّ للباحث إعادة نشر بحثه المقبول للنشر في المجلة إلا بعد إذن كتابي من رئيس هيئة تحرير المجلة.
5. الآراء الواردة فـــي البحوث المنشورة تعبر عن وجهة نظر الباحثين، ولا تعبر عن رأي مجلة العلوم الإنسانية.
6. النشر في المجلة يتطلب رسوما مالية قدرها (1000 ريال) يتم إيداعها في حساب المجلة، وذلك بعد إشعار الباحث بالقبول الأولي وهي غير مستردة سواء أجيز البحث للنشر أم تم رفضه من قبل المحكمين.

ثالثًا: توثيق البحث

أسلوب التوثيق المعتمد فـــي المجلة هو نظام جمعية علم النفس الأمريكية (APA7)

رابعا: خطوات وإجراءات التقديم

1. يقدم الباحث الرئيس طلبًا للنشر (من خلال منصة الباحثين بعد التسجيل فيها) يتعهد فيه بأن بحثه يتفق مع شروط المجلة، وذلك على النحو الآتي:

أ. البحث الذي تقدمت به لم يسبق نشرة (ورقيا أو إلكترونيا)، وأنه غير مقدم للنشر، ولن يقدم للنشر في وجهة أخرى حتى تنتهي إجراءات تحكيمه، ونشرة في المجلة، أو الاعتذار للباحث لعدم قبول البحث.

ب. البحث الذي تقدمت به ليس مستلا من بحوث أو كتب سبق نشرها أو قدمت للنشر، وليس مستلاً من الرسائل العلمية للماجستير أو الدكتوراة.

ج. الالتزام بالأمانة العلمية وأخلاقيات البحث العلمي.

د. مراعاة منهج البحث العلمي وقواعده.

هـ. الالتزام بالضوابط الفنية ومعايير كتابة البحث في مجلة العلوم الإنسانية بجامعة حائل كما هو في دليل المؤلفين لكتابة البحوث المقدمة للنشر في مجلة العلوم الإنسانية بجامعة حائل وفق نظام APA7

2. إرفاق سيرة ذاتية مختصرة في صفحة واحدة حسب النموذج المعتمد للمجلة (نموذج السيرة الذاتية).
3. إرفاق نموذج المراجعة والتدقيق الأولي بعد تعبئته من قبل الباحث.
4. يرسل الباحث أربع نسخ من بحثه إلى المجلة إلكترونيّاً بصيغة (word) نسختين و (PDF) نسختين تكون إحداهما بالصيغتين خالية مما يدل على شخصية الباحث.
5. يتم التقديم إلكترونياً من خلال منصة تقديم الطلب الموجودة على موقع المجلة (منصة الباحثين) بعد التسجيل فيها مع إرفاق كافة المرفقات الواردة في خطوات وإجراءات التقديم أعلاه.
6. تقوم هيئة تحرير المجلة بالفحص الأولي للبحث، وتقرير أهليته للتحكيم، أو الاعتذار عن قبوله أولياً أو بناء على تقارير المحكمين دون إبداء الأسباب وإخطار الباحث بذلك
7. تملك المجلة حق رفض البحث الأولي ما دام غير مكتمل أو غير ملتزم بالضوابط الفنية ومعايير كتابة البحث في مجلة حائل للعلوم الإنسانية.
8. في حال تقرر أهلية البحث للتحكيم يخطر الباحث بذلك، وعليه دفع الرسوم المالية المقررة للمجلة (1000) ريال غير مستردة من خلال الإيداع على حساب المجلة ورفع الإيصال من خلال منصة التقديم المتاحة على موقع المجلة، وذلك خلال مدة خمس أيام عمل منذ إخطار الباحث بقبول بحثه أوليًا وفي حالة عدم السداد خلال المدة المذكورة يعتبر القبول الأولي ملغي.
9. بعد دفع الرسوم المطلوبة من قبل الباحث خلال المدة المقررة للدفع ورفع سند الإيصال من خلال منصة التقديم، يرسل البحث لمحكّمين اثنين؛ على الأقل.
10. في حال اكتمال تقارير المحكّمين عن البحث؛ يتم إرسال خطاب للباحث يتضمّن إحدى الحالات التّالية:

أ. قبول البحث للنشر مباشرة.

ب. قبول البحث للنّشر؛ بعد التّعديل.

ج. تعديل البحث، ثمّ إعادة تحكيمه.

د. الاعتذار عن قبول البحث ونشره.

11. إذا تطلب الأمر من الباحث القيام ببعض التعديلات على بحثه، فإنه يجب أن يتم ذلك في غضون (أسبوعين من تاريخ الخطاب) من الطلب. فإذا تأخر الباحث عن إجراء التعديلات خلال المدة المحددة، يعتبر ذلك عدولا منه عن النشر، ما لم يقدم عذرا تقبله هيئة تحرير المجلة.
12. في حالة رفض أحد المحكمين للبحث، وقبول المحكم الآخر له وكانت درجته أقل من 70%؛ فإنّه يحق للمجلة الاعتذار عن قبول البحث ونشره دون الحاجة إلى تحويله إلى محكم مرجح، وتكون الرسوم غير مستردة.

13. يقدم الباحث الرئيس (حسب نموذج الرد على المحكمين) تقرير عن تعديل البحث وفقاً للملاحظات الواردة في تقارير المحكمين الإجمالية أو التفصيلية في متن البحث
14. للمجلة الحق في الحذف أو التعديل في الصياغة اللغوية للدراسة بما يتفق مع قواعد النشر، كما يحق للمحررين إجراء بعض التعديلات من أجل التصحيح اللغوي والفني. وإلغاء التكرار، وإيضاح ما يلزم. وكذلك لها الحق في رفض البحث دون إبداء الأسباب.
15. في حالة رفض البحث من قبل المحكمين فإن الرسوم غير مستردة.
16. إذا رفض البحث، ورغب المؤلف في الحصول على ملاحظات المحكمين، فإنه يمكن تزويده بهم، مع الحفاظ على سرية المحكمين. ولا يحق للباحث التقدم من جديد بالبحث نفسه إلى المجلة ولو أجريت عليه جميع التعديلات المطلوبة.
17. لا تردّ البحوث المقدمة إلى أصحابها سواء نشرت أم لم تنشر، ويخطر المؤلف في حالة عدم الموافقة على النشر
18. يحق للمجلة أن ترسل للباحث المقبول بحثه نسخة معتمدة للطباعة للمراجعة والتدقيق، وعليه إنجاز هذه العملية خلال 36 ساعة.
19. لهيئة تحرير المجلة الحق فـــي تحديد أولويات نشر البحوث، وترتيبها فنيّاً.

الهيئة الاستشارية

فهرس الأبحاث

Technological Convergence in Massive Open Online Courses (MOOCs) In Saudi Arabia: A Mixed-Method Study

التقارب التكنولوجي في المقررات الإلكترونية المفتوحة واسعة الانتشار في المملكة العربية السعودية: دراسة مختلطة المنهج البحثي

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,ngiseD dna ygolonhceT lanoitacudE fo tnemtrapeD ,ygolonhceT lanoitacudE fo rosseforP etaicossA
aibarA iduaS fo modgniK ,haddeJ fo ytisrevinU ,noitacudE fo egelloC

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Abstract

This paper reports a sequential mixed-method study on the perspectives' of teachers regarding the employment of technological convergence in Massive Open Online Courses (MOOCs). In particular, the study examined the reality of teachers' use of technological convergence in MOOC courses in Saudi Arabia, and the challenges and obstacles that may hinder them to employ technological convergence in MOOCs. 138 eligible teachers (57 male and 81 female) participated in the questionnaire, among which 7 (3 male and 4 female) were also selected for individual, semi-structured interviews afterwards. The results showed that teachers were somewhat inclined towards employing technological convergence in courses delivered through MOOCs. The study concluded with several recommendations for leveraging the diversity of technology in the current era and creating a more engaging and stimulating learning environment for students. In addition, the study discussed several challenges and how stakeholders in educational institutions and decision-makers can address them. Although many of these challenges can be easily overcome on MOOC platforms because these courses are delivered remotely, there are some restrictions, regulations, and incentives for teachers that should be reconsidered to further expand the use of technological convergence in MOOCs.

Keywords: Technological Convergence, Massive Open Online Courses (MOOCs), Learners' preferences, Comprehensive Instructional Design, Cultural diversity.

المستخلص

يتناول هذا البحث دراسةً متسلسلةً متعددة المنهجيات حول آراء المعلمين تجاه توظيف التقارب التكنولوجي في المقررات الإلكترونية المفتوحة واسعة الانتشار. وتناولت الدراسة، على وجه الخصوص، واقع استخدام المعلمين للتقارب التكنولوجي في المقررات الإلكترونية المفتوحة واسعة الانتشار في المملكة العربية السعودية، والتحديات والعقبات التي قد تعيقهم عن توظيفه ذلك. شارك في الاستبيان 138 معلمًا مؤهلًا (57 معلمًا و81 معلمة)، ومن بينهم ٧ معلمين (3 معلمين و4 معلمات) اختيروا لإجراء مقابلات فردية شبه منظمة لاحقًا. أظهرت النتائج ميلاً نسبياً للمعلمين نحو استخدام التقارب التكنولوجي في المقررات الدراسية المقدمة من خلال المنصات الالكترونية المفتوحة واسعة الانتشار. وخلصت الدراسة إلى عدة توصيات للاستفادة من تنوع التكنولوجيا في العصر الحالي، وخلق بيئة تعليمية أكثر تفاعلًا وتحفيزًا للطلاب. كما ناقشت الدراسة العديد من التحديات، وكيفية تعامل الجهات المعنية في المؤسسات التعليمية وصانعي القرار معها. وعلى الرغم من إمكانية التغلب بسهولة على العديد من هذه التحديات على منصات الدورات الجماعية المفتوحة عبر الإنترنت حيث أن هذه الدورات يتم تقديمها عن بعد، إلا أن هناك بعض القيود واللوائح والحوافز للمعلمين والتي ينبغي إعادة النظر فيها لتوسيع نطاق استخدام التقارب التكنولوجي في المقررات الإلكترونية المفتوحة واسعة الانتشار.

الكلمات المفتاحية: التقارب التكنولوجي، المقررات الإلكترونية المفتوحة واسعة الانتشار، تفضيلات المتعلمين، التصميم التعليمي الشامل، التنوع الثقافي.

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Introduction:

Modern technological changes have become a fertile ground for competition between specialized companies, and how one technology dominates another. This may be a legitimate competition to earn more money and build a brand that competes with its peers in the technology field. However, we may find that many modern innovations are usually the convergence of two or more technologies, seeking to complement each other and produce a new result. For example, a mobile phone is a single device that combines numerous features, from telephone communications to GPS, cameras, music players, calendars, and many other applications related to our daily activities. Furthermore, when we want to take pictures of the Amazon rainforest or extinguish fires in the Siberian taiga, we may require the combination of several converging technologies through remote control of drones powered by artificial intelligence. All of this points to the effectiveness of the technology used, but this effectiveness may increase when one or more technologies converge to create a new product that achieves goals difficult to achieve with one single technology.

In education, a number of technologies converge to produce a product that achieves many goals that cannot be achieved by the technologies alone. With the technological revolution, technology convergence will become a critical issue in the era of artificial intelligence (Santoianni et al., 2021; Deev & Finogeev, 2023; Alam & Mohanty, 2023; Li et al., 2024). Technology contributes significantly to the effectiveness of learning, and this effect can be seen when each technology works alone. However, what should be considered is what happens when several technologies work together. When artificial intelligence (AI), which focuses on automating decision-making tasks to simulate human thought processes and senses, converges with augmented reality (AR), which focuses on visual or audio synthesis using specific information to enhance the user's view of the real world. Similarly, when virtual reality (VR), which focuses on special tools for interacting with 3D printers, the Internet of Things (IoT), robotics, or the use of blockchain, converges, the convergence will naturally enhance the effectiveness of education and increase learner motivation. This means that converging among The essential eight technologies will reach to the new value equation [AI + AR + Blockchain + IoT + VR + 3D Printing + Robotics + Drones= HumanX traordinary] (Likens, 2021).

MOOCs are distance learning courses delivered using online technology. These courses are flexible, as learners often learn at their own pace. Additionally, the courses emphasize interactivity and participation among learners. There are several classifications of MOOCs (cMOOC, Quasi MOOC, hMOOC, ... ect) (Suresh & Srinivasan, 2020; Seidametova, 2020). Despite the existence of these different MOOC classifications, participants on these platforms tend to be less engaged, and they often fail to complete the course. Therefore, it is essential to address the problem of low engagement and reduce dropout rates. These challenges can perhaps be overcome by converging a number of technologies that enhance motivation as well as increase positive learner engagement (El Kabtane et al., 2020).

Saudi Arabia has many MOOCs such as Doroob, Rawaq, Edraak, Noon Education, Madrasati, etc. These platforms provide professional educational content that adheres to many of the standards approved by relevant authorities. Some of these platforms focus entirely on academic curricula, while others are more expansive and address aspects beyond the government curriculum. This study reviewed the use of technological convergence in some of these platforms by answering the following research questions:

1. To what extent can teachers employ technological convergence in MOOCs used in Saudi Arabia?
2. What are the challenges and obstacles that may hinder teachers from employing technological convergence in MOOCs used in Saudi Arabia?
3. Are there statistically significant differences between the number of years in which teachers have worked in MOOCs and employing technological convergence in MOOCs?

Theoretical Framework

Technological Convergence

Technological convergence can be achieved by integrating a number of previously unrelated technologies into a single device. While previous eras saw each technology dealt with independently, the proliferation of smart technology has brought together a set of interconnected applications that enable multiple tasks to be performed with just one device. Consider smartphones, wristwatches, and navigation devices, all of these functions can be combined into a single device that achieves the desired goals of each device or application if operated independently. This means that technological convergence aims to integrate or blend different technologies to create a new product or offering (Gillis et al., 2024). Furthermore, technological convergence may contribute to the integration of previously separate fields due to the

integrated and comprehensive properties and advantages of digital technologies. This enhances interconnectedness and integration between different fields and contributes to the formation of multidisciplinary teams (Hund et al., 2021). Technological convergence is not a new phenomenon, as this convergence has been observed between a number of emerging technologies in previous centuries. However, this convergence has accelerated in the digital age due to the transformation of analog information into digital formats that can contribute to the reprogramming of physical products and their interconnection (Müller et al., 2025).

The importance of technological convergence

In the current era, technological development has reached its peak, prompting us to embrace the concept of innovation rather than simply employing technology in its isolated form. There are many reasons that have made it necessary to seek technological convergence and integrate several technologies into a single device, as were mentioned by (Gillis et al., 2024; Jurgens & Bheemaiah, 2025).

1. In the current era, there is tremendous computing power capable of processing complex interactions

between various technologies. Furthermore, this computing power has created competition among specialists to innovate solutions to some of the challenges that technology alone has been unable or incapable of addressing.

2. There are global challenges that no single technology can solve alone. Some issues related to climate, health, and others require solutions derived from multiple technological sources. On the other hand, there are many challenges in the field of learning and teaching. Today's student is not like yesterday's student. Education in the current era is not limited to merely acquiring knowledge content, but rather requires student participation in preparing this content and selecting diverse sources that meet all the needs of the educational process. In addition, cultural diversity and multiple intelligences among students, as well as the focus on skills and innovation in education, cannot be achieved through technology operating alone.

3. Reaching technological maturity, such that it has become easy to employ a variety of technologies to work together. The presence of artificial intelligence, advanced materials, robotics, bioengineering, and diverse computer systems does not represent a single development, but rather a group of diverse technologies that have integrated together to achieve desired goals.

4. When considering the cost aspect, we find that technological convergence contributes to cost reduction. Simply by employing technological convergence, several technologies can be accessed at a lower cost. Running several programs and applications on a single device will certainly be less expensive than requiring a separate device for each program or application.

5. Technological convergence can save time and effort and increase production efficiency. Technological convergence allows companies to reach customers and learn more about their perspectives and purchasing preferences. Furthermore, technological convergence contributes to building an integrated learning environment that includes many advantages available to students, helping them gain knowledge, access to experiences, and different perspectives, and gain a holistic view of all content elements.

Technological Convergence in Education

Although technological convergence has been clearly evident in various sectors, such as health, industry, and commerce, the education sector has not been isolated. This is due to the role technological convergence plays in supporting career paths through lifelong learning and the availability of educational programs specifically designed to enhance cognitive abilities. As the field of education is characterized by the spread of knowledge without being bound by time or place, and has focused primarily on realistic learning, as well as the emergence of a number of diverse concepts, and education is no longer limited to merely acquiring information for tests, but rather has evolved into learning based on practice, application, and simulation of real life. As a result of the technological advancements of our current era, many forms of convergence have emerged between emerging technologies, such as virtual reality, augmented reality, the Internet of Things, artificial intelligence, robotics, as well as machine learning and 3D printing. Through this technological convergence, many challenges facing the educational process have been overcome, and various learning models have emerged, contributing to the creation of a tangible educational environment in which students interact with their peers and also with machines. (Brozovsky et al., 2024; Oguntona & Ohiomah, 2025).

Since the educational environment includes a set of tools and programs, with support for numerous mobile and cloud learning technologies (Deev & Finogeev, 2023), technological convergence between these components is essential to enable many rapid innovations and developments (Cordeiro, 2021), in addition to transforming learning from its traditional form to a more interactive and collabora-

tive approach for the student (Hew & Cheung, 2013; Alam & Mohanty, 2023).

There are many learning theories that support technological convergence. Since technological convergence relies on interconnection and communication, connectionist theory contributes significantly to a greater understanding of learning in the digital age by emphasizing networks in the learning process (Pappas, 2021). Furthermore, behavioral theory can support technological convergence, as this theory focuses primarily on programmed learning, as well as on stimulus, response, and reinforcement. Through technological convergence, a learning environment can be created that promotes positive behavior by employing a variety of stimuli (Cherry, 2025). Furthermore, cognitive theory supports understanding mental processes, their storage, and retrieval. This can be achieved by designing educational content that helps organize and retrieve knowledge, which can be achieved through technological convergence in digital learning environments (DiGiuseppe, 2016). Constructivist theory also focuses on effectively building knowledge and supporting collaborative learning through the integration of a variety of technologies to create a learner-centered environment (Cloke, 2024). All of these theories, and others, can build strategies for creating interactive content using a number of technologies that converge to increase learning effectiveness and focus on collaborative learning, in which students are more effective. Furthermore, a variety of technological approaches are also created to accommodate students' needs while adapting to their individual differences.

Massive Open Online Courses (MOOCs)

MOOCs are among the most widely used educational environments that aim to meet the needs of modern society, particularly within educational institutions. They contribute to creating an ideal learning environment accessible to a large number of learners. Furthermore, the diverse sources of knowledge within these platforms are often freely available to learners. This, in turn, has helped overcome many of the obstacles that prevent students from continuing their education, especially those who cannot attend classes in educational institutions (Pampouri at el., 2021), thus, MOOCs are very popular among learners (Anghel at el, 2025). Furthermore, the widespread open online courses (MOOCs) are now teacher-led, and many international universities have made them available to students from all over the world. This is due to the use of numerous digital services that facilitate access to knowledge without the constraints of time and space, as well as the current generation's high acceptance of various types of technology, which has become an integral part of daily life. Also, circumstances and crises may facilitate the acceptance of some changes that were previously difficult to accept. Indeed, the COVID-19 pandemic has contributed to a greater understanding and acceptance of distance learning, leading many universities to continue to employ distance learning even after the pandemic ends. Some universities have been found to award approximately 20% of their credit hours to online courses (Kumar et al., 2024). Moreover, many MOOCs have continued to gain traction because they do not require a university degree or other qualification. Consequently, learners can enroll in these courses even if they lack the necessary qualifications. Many learners enrolled in these courses see them as an alternative to university programs (Hamori, 2023).

There are several classifications of MOOCs in which were mentioned by Seidametova (2020):

1. cMOOC: This type is linked to a social constructivist pedagogical approach in which used blogs, wikis, and social media to search for knowledge. This type is based on interactions between the teacher and the learner, or vice versa. Therefore, this type emphasizes interconnectedness by focusing on knowledge accumulation, creativity, and communication among participants.

2. xMOOC: In this type, massive open online courses are used as an extension of something else. This means the focus is on the behavioral approach to acquiring knowledge. This type includes lectures and short tests for mastery. Learners in this type are required to adhere to specific deadlines to complete assigned tasks. The focus is usually on repetition of knowledge.

3. Quasi MOOC: These MOOCs are developed by non-certified instructors. They are short in content and do not require a classroom structure. These courses are accessible to students from a variety of disciplines and age groups, and may be based on The two previous models (cMOOC and xMOOC) . Khan Academy or MIT OpenCourseWare is an example of this type of course.

4. hMOOC: It is the hybrid MOOC or MOOC 3.0, and this type is hybrid or flipped classes (blended learning), and can combine face-to-face and online learning.

5. SPOC (small private online course): This type of courses is an online course for a limited and select group of students, unlike courses where enrollment is unlimited. This type of courses allows for a more interactive learning experience and allows for more direct communication between instructors and students.

6. COOC (corporate open online course): This type of courses is typically found in companies that deliver training courses for their employees and customers. This type is usually targeted at a specific audience. Although this type of course is available to a specific audience, it is limited in scope to the company and aims to create a collaborative environment within a specific company.

7. BOOC (big open online course): This type of course is available to a larger number of participants, usually a maximum of 500, and offers benefits similar to those of a massive open online course (MOOC) (Pilli & Admiraal, 2016).

8. aMOOC (adaptive massively open online course): This type uses adaptive learning technology to personalize the experience for each student. This means that the content is modified to meet individual needs; there is no single learning path, but rather a change based on needs.

9. bMOOC (blended massive open online course): This type combines face-to-face teaching and distance learning. It is characterized by its ability to promote student-centered learning, accommodate a variety of participant types, and foster human connections within the MOOC environment (Pham, 2025).

10. sMOOC (semi-massive open online course): This type of courses has a defined student capacity, and courses are designed to enhance student participation and engagement. It also supports student-led initiatives and focuses on self-directed learning. Furthermore, these courses focus on achieving student goals and satisfaction (Conole, 2016).

Technological diversity and Massive Open Online Courses (MOOCs)

Technological diversity is a key element of MOOCs because it contributes to providing engaging learning environments that can be quickly accessed across multiple disciplines and from different sources without any restrictions preventing access. This technological diversity can be demonstrated through the use of artificial intelligence, mobile applications, and the inclusion of various multimedia tools such as videos and quizzes, not to mention the presence of technologies that support programmed learning and enhance student participation in education. This significant technological diversity has significantly contributed to the rise of MOOCs, and increased the popularity of this type of educational option and made it a suitable choice for many learners (Funieru & Lazaroiu, 2016; Littenberg & Slama, 2022).

Furthermore, technological diversity can support MOOCs by employing artificial intelligence, data analysis, and feedback, which enhances personalized and adaptive learning. The addition of diverse content, engaging design, and the use of numerous animations, graphics, and video clips contribute to making learning more dynamic and engaging, while catering to all learners' preferences. Moreover, technology in MOOCs has enabled the creation of global learning communities that foster a rich and multicultural learning environment (Siegle et al, 2021 ; Sharova et al., 2023 ; Guo, 2025).

Technological diversity has emerged in a number of MOOCs such as Coursera and edX, offering a number of purposefully designed technical features and capabilities that provide a variety of options for learners. However, what should be sought is the integration of different technologies such as virtual reality, augmented reality, and artificial intelligence. This integration enables a rich learning environment that accommodates all learners, despite the many differences between them (Chen et al., 2020; Lampropoulos, 2025). This is further confirmed by the study conducted by El Kabtane et al., (2018), which proposed two MOOC courses. One of these courses utilized virtual gamification using augmented reality to ensure the manipulation of three-dimensional objects. The study confirmed that students in the group that used the virtual gamification integration demonstrated a high level of understanding and participant satisfaction with the course. This is consistent with a study conducted by Nidhom et al. (2022), which discussed the integration of augmented reality into MOCCs and confirmed the effectiveness and efficiency of augmented reality in MOCCs by 87.3% in usability testing. This, in turn, promotes the use of technological convergence to create a diverse learning environment.

Methodology

In this study was applied Mixed-method research by utilizing both quantitative and qualitative research methods. In the beginning, quantitative research (a questionnaire) was the appropriate method that was used to answer the research questions in order to give a broad view of the findings, and then went into detailed views of participants by qualitative research method (an interview) in order to get at a deeper understanding of the findings of study.

Study Group

The study included teachers working in MOOCs in Saudi Arabia, regardless of their years of experience, gender or specialization. It focused on teachers delivering courses on government and non-government MOOC platforms such as Madra-

sati, Rawaq, Edraak, Coursera, and others. A total of 138 qualified teachers working in MOOCs in Saudi Arabia participated in the study, comprising 57 male and 81 female teachers, using a quantitative approach (questionnaire). The study aimed to gain a deep understanding of the extent to which teachers in Saudi Arabia are able to utilize technological convergence in their MOOCs, and the challenges and obstacles that hinder their effective implementation.Therefore, there were 7 teachers (3 male and 4 female) participated in the qualitative approach (interviews).

Questionnaire Design

The questionnaire was designed and adapted to the online survey by use of a survey website. After that, It was shared with participants. The questionnaire was broken down into three sections. The first section showed demographics (one item), about participants' years of teaching experience in MOOCs. There were three categories of experience: 5 years and less, 6 to 10 years, and more than 10 years.

The second section included ten items measuring to what extent can teachers employ technological convergence in MOOCs used in Saudi Arabia. Responses were indicated on a five-point Likert scale, with corresponding to Never (1) and corresponding to Always (5). The third section, included ten items about the challenges and obstacles that may hinder teachers from employing technological convergence in MOOCs used in Saudi Arabia. Responses were indicated on a five-point Likert scale, with corresponding to strongly disagree (1) and corresponding to strongly agree (5).

Interview Protocol

The interview was developed with five questions which intended to give an in-depth picture about teachers' ability to employ technological convergence in MOOCs used in Saudi Arabia (three questions). Also, there were two questions about the challenges and obstacles that hinder teachers from employing technological convergence in MOOCs used in Saudi Arabia. Table 1 illustrates a detailed explanation for the interview questions.

Table 1
Research Area and the Interview Questions

Research Area	Interview Questions
Teachers' ability to employ technological convergence in MOOCs	1. What is your perspective on the use of technological convergence in MOOCs? 2. Based on your previous experience, how have you employed technological convergence in MOOCs? 3. What is the maximum number of technologies that have been converged on the MOOC you work on?
The challenges and obstacles that hinder teachers from employing technological convergence in MOOCs	1. In your opinion, what are the challenges and obstacles that may hinder the use of technological convergence in MOOCs? 2. In the MOOC you work on, do you think you will employ technological convergence in MOOCs in the future?

Validity and Reliability

When designing the questionnaire and interview questions, all criteria and guidelines were taken into account to ensure consistency and coherence, and ensure accurate results. For example, clear and simple words were used, avoiding any misinterpretation, and the focus was on presenting the idea or question directly without distracting the respondent. After the questionnaire and interview questions were completed, they were presented to a number of specialists in the field of educational technology and scientific research to verify content validity and apparent consistency. After obtaining feedback from the experts, the questionnaire items and interview questions were developed. A pilot study was then conducted to measure internal consistency, and Cronbach's alpha was used to measure the questionnaire's internal consistency. The results in Table 2 demonstrate that the questionnaire has good reliability.

Table 2
Reliability of Questionnaire

Variables	N of Items	Cronbach's Alpha (α)
Teachers' ability to employ technological convergence in MOOCs	10	0.85
The challenges and obstacles that hinder teachers from employing technological convergence in MOOCs	10	0.83

Results

Participants' years of teaching experience in MOOCs

Participants were asked to identify years of teaching experience in MOOCs. Table 3 shows the results.

Table 3
Years of Teaching Experience in MOOCs

No. of teaching experience (Year)	No. of Participants
5 years and less	42
6 to 10 years	69
more than 10 years	27
Total 138 participants	

Results of Research Question 1: To what extent can teachers employ technological convergence in MOOCs used in Saudi Arabia?

Results of questionnaire

Table 4
Results of Teachers' ability to employ technological convergence in MOOCs

	Items	Percentages and Numbers of Participants' Responses				
		Always	Often	Sometimes	Rarely	Never
1.	I use at least two types of technologies while teaching on MOOCs.	46.38% N=64	15.94% N=22	19.57% N=27	11.59% N=16	6.52% N=9
		62.32% N=86			18.11% N=25	
2.	While teaching in the MOOCs, I use more than one technology, one of which is based on virtual reality.	27.54% N=38	22.46% N=31	21.02% N=29	13.04% N=18	15.94% N=22
		50% N=69			28.98% N=40	
3.	I use two types or more of technologies while teaching on MOOCs, and one of them at least employs one of an artificial intelligence applications.	10.15% N= 14	13.77% N=19	33.33% N=46	29.71% N=41	13.04% N=18
		23.92% N= 33			42.75% N= 59	
4.	While teaching in the MOOCs, I prefer to stick to one type of technology.	16.67% N=23	12.32% N=17	23.19% N=32	21.01% N=29	26.81% N=37
		29.99% N=40			47.82% N=66	
5.	While teaching in the MOOCs, I combine at least two types of technologies, one of which focuses on group webinars, podcast rounds, personal blogs, etc.	18.84% N=26	24.64% N=34	27.54% N=38	18.84% N=26	10.14% N=14
		43.48% N=60			28.98% N=40	
6.	While teaching in the MOOCs, I use more than one technology, one of which is based on augmented reality.	25.36% N=35	22.46% N=31	21.02% N=29	14.49% N=20	16.67% N=23
		47.82% N=66			31.26% N=43	
7.	I use two types or more of technologies while teaching on MOOCs, and one of them at least focuses Presentations, Videostreamed Conferences , Video Modeling ,Professional , Charts and Graph Tools etc.	25.36% N=35	23.91% N=33	23.19% N=32	19.57% N=27	7.97% N=11
		49.27% N=68			27.54% N=38	
8.	I use two types or more of technologies while teaching on MOOCs, and one of them at least employs Mock Trial , Fictional Situations , Real-Time Cases or Online Science Labs and Simulations etc.	20.29% N=28	21.01 N=29	26.81% N=37	16.67% N=23	15.22% N=21
		41.3% N=57			31.89% N=44	
9.	While teaching in the MOOCs, I combine at least two types of technologies, one of which focuses on the activities of Online Scavenger Hunt , WebQuest , Discovery Readings etc.	18.84% N=26	26.81% N=37	21,01% N=29	21.74% N=30	11.60% N=16
		45.65% N=63			33,34% N=46	
10.	I use two types or more of technologies while teaching on MOOCs, and one of them at least employs activities of collaborative work , problem-solving style etc.	15.94% N=22	22.46% N=31	26.81% N=37	19.57 N=27	15.22% N=21
		38.4% N=53			34.79% N=48	

* ($\alpha = 0.05$)

Results of Interviews

The interviews were carried out with 7 participants. All interviewees, without exception, emphasized the role of technological convergence in MOOCs. They justified this by stating that the presence of multiple technologies allows for multiple learning options, which in turn accommodates individual differences among students. Furthermore, some interviewees stated that there is a positive impact on student achievement and increased learning effectiveness when technological convergence is employed in MOOCs. They stated that they observed this with their own students.

Interviews revealed that they have some experiences in employing technological convergence in MOOCs. Some interviewees stated that they typically use at least two types of technologies simultaneously. They stated that they focus their use of technological convergence on the basis of student preferences. They typically focus on technologies

that imitative real-world and technologies where students can practice and apply their knowledge.

Interviewees reported that they typically used at least two types of technologies convergence, and sometimes more. Importantly, interviewees mentioned some of the technologies they had previously used in MOOCs (See Table 5).

Table 5

Technologies that have been converged on the MOOCs on Interviewees' Responses

Technologies used in MOOCs by Interviewees	Interviewees						
	1	2	3	4	5	6	7
1. Some applications of artificial intelligence			X*			X	
2. Virtual reality		X	X		X		X
3. Augmented reality	X		X	X		X	
4. Group Webinars	X		X		X	X	
5. 3D Printing			X			X	
6. Video Clips	X	X	X	X	X	X	X
7. Online Science Labs	X		X	X	X		

X* The interviewee mentioned that it was an enjoyable experience but it may need a long time to design.

Results of Research Question 2: What are the challenges and obstacles that may hinder teachers from employing technological convergence in MOOCs used in Saudi Arabia?

Results of questionnaire

Table 6

Results of the challenges and obstacles that may hinder teachers from employing technological convergence in MOOCs

	Items	Percentages and Numbers of Participants' Responses				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1.	The lack of digital applications that support the Arabic language has affected employing technological convergence in MOOCs.	8.70% N=12	11.59% N=16	13.04% N=18	35.51% N=49	31.16 N=43
		20.29% N=28			66.67% N=92	
2.	My weak technological skills affected my ability to employ technological convergence in MOOCs.	14.50% N=20	19.57% N=27	16.66% N=23	26.81% N=37	22.46% N=31
		34.07% N=47			49.27% N=68	
3.	The MOOCs lack of adequate technical infrastructure has significantly limited employing technological convergence in MOOCs.	20.29% N=28	27.54% N=38	21.01% N=29	18.12% N=25	13.04% N=18
		47.83% N=66			31.16% N=43	
4.	The difficulty of the course content affected my inability to employ technological convergence in MOOCs	13.04% N=18	15.22% N=21	31.89% N=44	23.19% N=32	16.66% N=23
		28.26% N=39			39.85% N=55	
5.	Students do not prefer to combine more than one technology during teaching MOOCs and tend to be satisfied with one technology.	9.42% N=13	15.22% N=21	18.12% N=25	31.16% N=43	26.08% N=36
		24.64% N=34			57.24% N=79	
6.	Integrating more than one technology may use information technology systems and operating technology to programming languages and a comprehensive change in the platform systems, which is difficult for the company to do.	21.02% N=29	31.16% N=43	16.66% N=23	18.12% N=25	13.04% N=18
		52.18% N=72			31.16% N=43	
7.	The high cost of some technologies may prevent me to employ technological convergence in MOOCs	9.42% N=13	15.94% N=22	27.54% N=38	26.09% N=36	21.01% N=29
		25.36% N=35			47.1% N=65	
8.	I don't have enough time to employ technological convergence in MOOCs.	26.09% N=36	29.71 N=41	16.66% N=23	15.23% N=21	12.32 N=17
		55.8% N=77			27.55% N=38	
9.	The restrictions and instructions imposed by the authorities prevent me from employing technological convergence in MOOCs.	19.57% N=27	23.19% N=32	27.54% N=38	16.66% N=23	13.04% N=18
		42.76% N=59			29.7% N=41	
10.	Lack of incentives or rewards for employing new ideas in teaching limits me from using technological convergence in MOOCs.	27.54% N=38	31.16% N=43	15.22% N=21	12.32% N=17	13.76% N=19
		58.7% N=81			26.08% N=36	

Results of Interviews

All interviewees involved in this study emphasized the important role of employing technological convergence in MOOCs. Without any exceptions, they emphasized that they will be keen to make greater efforts to employ technological convergence in MOOCs in various forms, with a focus on technologies that enhance discussions, interaction with their peers and external communities. Interviewees mentioned that there are some challenges that might hinder the use of technological convergence in MOOCs (See Table 7).

Table 7

Factors Which Prevent or Limit Teachers Employing Technological Convergence in MOOCs Depending on Interviewees' Responses.

Factors	Interviewees						
	1	2	3	4	5	6	7
1. Lack of equipment and machinery		X			X	X	
2. High Costs	X			X			
3. Difficulty for students to accept some technologies		X		X			X
4. Privacy and Security in the company's systems	X		X	X		X	
5. Lack of digital skills		X	X		X		X
6. Lack of incentives for teachers to employ new technologies	X	X	X	X	X	X	X
7. The need to master educational design skills	X		X		X		
8. Lack of sufficient time for teachers		X	X			X	
9. Many other tasks are required of teachers.	X		X	X		X	X

Results of Research Question 3: Are there statistically significant differences between the number of years in which teachers have worked in MOOCs and employing technological convergence in MOOCs?

Kruskal-Wallis H Test was used to test the significant differences between the experiences of teachers and employing technological convergence in MOOCs. The teachers' experiences were classified into three categories (Group 1: 5 years and less, Group2: 6 to 10 years, Group 3: more than 10 years) (see Table 8).

Table 8

Kruskal-Wallis H Test to Determine the Significant Differences between the experiences of teachers and employing technological convergence in MOOCs

	Items	Chi-Square	Sig.	Experience's Years	N	Mean Rank
1.	I use at least two types of technologies while teaching on MOOCs.	4.603	**0.572**	1	36	77.696
				2	54	91.221
				3	48	64.521
2.	While teaching in the MOOCs, I use more than one technology, one of which is based on virtual reality.	2.431	**0.791**	1	36	78.494
				2	54	91.344
				3	48	67.404
3.	I use two types or more of technologies while teaching on MOOCs, and one of them at least employs one of an artificial intelligence applications.	3.983	**0.664**	1	36	70.637
				2	54	85.725
				3	48	65.283
4.	While teaching in the MOOCs, I prefer to stick to one type of technology	8.160	**0.378**	1	36	79.362
				2	54	87.278
				3	48	66.811
5.	While teaching in the MOOCs, I combine at least two types of technologies, one of which focuses on group webinars, podcast rounds, personal blogs, etc.	3.117	**0.684**	1	36	84.158
				2	54	80.650
				3	48	68.223
6.	While teaching in the MOOCs, I use more than one technology, one of which is based on augmented reality.	5.763	**0.431**	1	36	74.124
				2	54	76.987
				3	48	68.562
7.	I use two types or more of technologies while teaching on MOOCs, and one of them at least focuses Presentations, Videostreamed Conferences , Video Modeling , Professional , Charts , Graph Tools, etc.	4.874	**0.532**	1	36	65.287
				2	54	75.963
				3	48	67.164

8.	I use two types or more of technologies while teaching on MOOCs, and one of them at least employs Mock Trial , Fictional Situations , Real-Time Cases or Online Science Labs and Simulations etc.	5.943	**0.421**	1 2 3	36 54 48	70.288 67.718 66.247
9.	While teaching in the MOOCs, I combine at least two types of technologies, one of which focuses on the activities of Online Scavenger Hunt , WebQuest ,Discovery Readings etc.	2.613	**0.742**	1 2 3	36 54 48	65.940 62.721 71.417
10.	I use two types or more of technologies while teaching on MOOCs, and one of them at least employs activities of collaborative work , problem-solving style, etc.	3.002	**0.693**	1 2 3	36 54 48	68.280 68.629 66.462

The results in table 8 show there were no significant differences among the three independent groups (i.e. the experiences of teachers) and employing technological convergence in MOOCs.

Discussion

By reviewing the results of this study, in which 138 teachers of both genders participated, who had different experiences in presenting some MOOC courses. As shown in Table 4, which reviews the study participants' responses regarding the extent to which teachers can employ technological convergence in MOOCs. The results show that 62.32% of participants typically used more than two types of technologies while teaching on MOOC platforms. Virtual reality was present in 50% of participants, who used VR applications in teaching. This demonstrates the effective role of virtual reality in creating an effective, enjoyable, and engaging learning environment, in addition to encouraging the creation of a number of innovative approaches (Winter et al., 2021; Holopainen et al., 2023; Hong et al., 2025). Despite the importance of applying artificial intelligence in education, it was only widely implemented by 23.92% of participants. This is likely due to the fact that AI applications require more time and skill to design an application that embraces the concept of AI. This is consistent with what one interviewee stated, who confirmed that although he had used some AI applications in teaching, there were some difficulties in employing them. Also, there are other drawbacks of AI related to cybersecurity and ethical issues, which require a balanced and comprehensive approach to mitigate the risks of AI implementation (Kumar, 2025; Ricart, 2025). Furthermore, Wheeler (2025) pointed to a number of challenges in AI applications, such as the complexities in multinational organizations complying with certain AI governance laws, the difficulty in interpreting decision-making processes, and the shortage of talent in AI and machine learning. All those may be some of the reasons why AI is not widely used in MOOCs.

43.48% of participants confirmed that they use technological convergence and typically use interactive technologies such as group webinars and personal blogs. On the other hand, augmented reality was one of the technological applications used by MOOC teachers. The results showed that 47.82% of participants commonly used AR in teaching on MOOC platforms. This may be due to the effective use of AR in education. Numerous previous studies have demonstrated the feasibility of augmented reality as a human-computer interaction technology. Augmented reality has evolved in the current era due to improved computing power, transforming it from mere theoretical research to a more comprehensive, application-focused stage. That's why augmented reality has been ranked as one of the top ten most promising technologies of the future by trusted organizations such as such as the American Times Weekly (Chen et al., 2019; Kim et. al, 2020; Fan & Arena, et. al, 2022). In addition, technologies focused on presentations or video conferences has emerged among the technologies commonly used by MOOC instructors during teaching. The results also showed that 41.3% of participants used more than one type of technique, one of which focused on real-world application and the use of simulation principles in science labs. Furthermore, the results show that teachers are able to leverage technological convergence in MOOCs by employing a variety of strategies. The results showed that 45.65% of participants used techniques that promote web research as well as additionally enhancing students' reading, while 38.4% used techniques that promote collaborative work and problem-solving.

By reviewing the interview results in Table 5, there is complete agreement with the results shown in Table 4. Interviewees had the ability and desire to employ technological convergence in the MOOCs. Interviewees mentioned seven technologies that they commonly use during teaching in MOOCs. These technologies are Some applications of artifi-

cial intelligence, Virtual reality, Augmented reality, Group Webinars, 3D Printing, Video Clips, and Online Science Labs.

Overall, the results show that MOOC teachers, regardless of their experiences, have the ability and desire to employ technological convergence in their teaching. Overall, the results revealed that teachers used a wide range of technologies in their teaching. Instructors emphasized that they did not use a single technology, but rather a combination of technologies. The results in table 8 showed there were no significant differences among the three independent groups (i.e. the experiences of teachers) and employing technological convergence in MOOCs. This is confirmed by the fact that 47.82% of participants confirmed that they did not prefer to rely on a single technology when teaching in the MOOC. This means that technological convergence will play a vital role in developing students' 21st-century skills. There will be a number of converging technologies that enhance collaboration and seamless communication between students and teachers, which in turn will create essential skills in the modern workforce who have the ability to think critically and deal with the vast amount of information available (Kalyani, 2024; Akinlar, 2025).

The study discussed the challenges and obstacles that prevented teachers from employing technological convergence in MOOCs. The results in Table 6 show that several obstacles and challenges impacted the implementation of technological convergence in MOOCs. The largest of these challenges, at 47.83%of participants was the lack of technical infrastructure to enable technological convergence in education. This is consistent with the study conducted by Albishi et al., (2017), which confirmed that there are many challenges that prevent the growth of the Internet of Things, such as providing energy using smart and reliable electronic sensors in vertical technological infrastructures. Also, 52.18% of participants confirmed that integrating multiple technologies may require the use of IT and operating systems, programming languages, and a comprehensive change in platform systems, which is difficult for companies to implement. This statement may prove what Madni & Sievers (2014) indicated, that there are many internal concerns that every electronic system must address before interacting with another system. These concerns typically involve adherence to standards , the selection of data processing procedures and algorithms, in addition to non-functional quality attributes such as reliability and privacy. Teachers' lack of time and certain restrictions or regulations also emerged as obstacles that limited the implementation of technological convergence in MOOCs. Furthermore, 58.8% of participants stated that the lack of rewards and incentives contributed to the lack of technological convergence in MOOCs. This perhaps confirms the role of motivation and rewards, not necessarily financial, in improving employee productivity in organizations. Noorazem et al. mentioned "When employees are motivated to work at higher levels of productivity, the organization as a whole will run more efficiently and is more effective at reaching its goals" (2021, p. 40).

The interview results confirmed the existence of these challenges. Some interviewees mentioned that one of the obstacles preventing them from employing technological convergence in MOOCs is the large number of tasks that teachers must complete within a specific timeframe. Consequently, it is difficult to think about excellence in light of this overwhelming number of tasks. Some interviewees also mentioned that some applications require knowledge of many instructional design principles, and many MOOC teachers may lack this experience. In an open digital world, our innovations must be inclusive, and technology, in general, has contributed to enhancing communication and providing opportunity for everyone (Gilbert, 2019).

Limitations

The current study addressed a variety of technologies that can be employed in MOOC courses, such as virtual reality, augmented reality, artificial intelligence, 3D printing, and others. It may be impossible to address all of these technologies in a single study. Although the study employed interviews as part of its research methodology in order to allow participants to explore a variety of other technologies, future studies would be better off focusing on educational strategies implemented by use these technologies such as collaborative learning, programmed learning and practice during learning. It is also better to focus on a specific number of MOOC platforms instead of applying the study to all MOOC platforms so that we can reach results that can address any shortcomings in the platforms to which the study was applied.

Conclusion

Technological convergence significantly contributes to the use of two or more technologies together, creating a more effective learning environment. Previous studies have also noted student dropout rates from MOOC courses. Therefore, efforts must be made to create an engaging and stimulating learning environment for students. There are many challenges that may face education through

MOOCs, and although these platforms are accessible to everyone, these challenges may require a thorough understanding of how to utilize these platforms to achieve the desired goals. This study discussed the extent to which teachers on MOOC platforms are able to leverage technological convergence and identified the most significant challenges that prevent this. Although teachers appear to be positive about utilizing technological convergence while teaching on MOOC platforms, there are several challenges that should be taken into account to maximize the benefits of using technological convergence.

Future studies should examine the inclusive design of MOOC courses. MOOC course designers should work to apply inclusive design standards that take into account cultural differences among students. MOOC courses should be accessible to all, meaning that all students should be able to find their interests and preferences when enrolling in courses offered by MOOC platforms.

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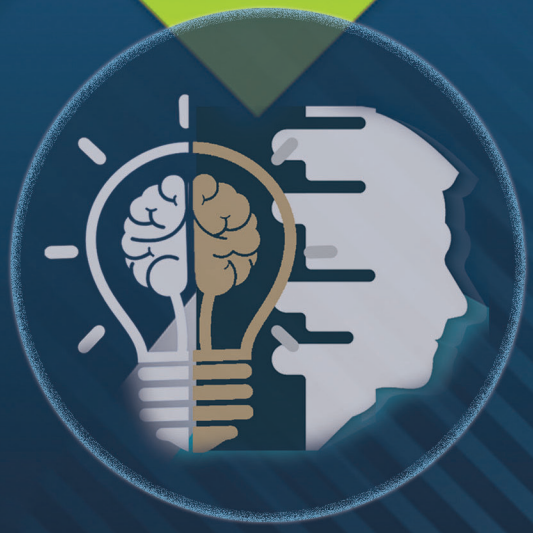

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