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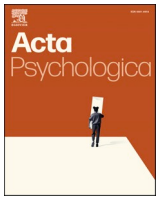

The effect of blended learning on enhancing motivation for academic achievement in students in the faculties of humanity sciences at hail university

Benayan Bani ALrasheedy [a,*], Abdalla Sayed Mohamed Gaballa [a,b], Kateb Alhamedi Alshammari [a], Hanouf Mohammed Alrashdi [a]

[a] University of Ha'il, Educational College, Department of Psychology, Hail City, Saudi Arabia
[b] Department of psychology, Faculty of Arts, Assiut university, Egypt

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ABSTRACT

This study aimed to investigate the effect of blended learning on enhancing motivation for academic achievement in students of humanity sciences (education and arts) at Hail University. The study used a quasi-experimental approach. A total of 80 students (60 men and 20 women) participated and 62 and 18 were from the education and arts faculties, respectively. Data on student performance were collected before and after the intervention through surveys and academic tests. Results indicated a significant improvement in motivation for academic performance post-application compared to pre-application, demonstrating a clear impact of blended learning. The findings provide strong evidence supporting the embracement of blended learning to enhance students' academic performance. Significant differences were observed in the academic ambition level, whereas no significant differences were noted in other dimensions and the total score based on faculty. These findings underscore the necessity for educational institutions to develop comprehensive blended learning programs and invest in them to fulfill students' diverse needs.

1. Introduction

Rapid technological progress has significantly impacted education. Consequently, university learning systems need to develop people with high intelligence, life skills, motivation, independence, and academic orientation. The rapid advancement in educational technology has caused the educational environment to change, evolve, and focus on constructive student learning, improving the quality of educational outcomes. The learning process is not only limited to verbal communication between teachers and students but also includes blended learning, online courses, and virtual classrooms (Roseth et al., 2013). This method is recognized in interactive learning in academic society owing to the intense use of internet systems in education and its ability to enhance educational outcomes.

Blended learning offers a variety of benefits that make it a highly effective and contemporary approach to education. According to Abdel-Malek (2021) and Abdel-Aleem (2023), an integrated educational approach combines diverse teaching strategies and models, bridging traditional education and e-learning. It allows teachers and students to utilize e-learning technologies within classrooms while engaging in face-to-face communication; increases interaction between students, teachers, and content; lowers teaching costs with improved learning outcomes; builds stronger social relationships; and provides individualized attention tailored to students' abilities. Additionally, blended learning integrates new technologies in the development, implementation, and teaching processes, allowing learners to optimize their time and resources while practicing important skills. Moreover, Oweis (2018) highlights the flexibility of blended learning, citing its ability to address challenges such as overcrowded classrooms and the growing demand for education. It offers housewives, employees, and others upskilling opportunities without having to leave their workplace while facilitating job interviews, discussions, and practical applications via online platforms. Blended learning also ensures quick access to updated information, reduces training costs (e.g., study materials), encourages collaboration among students, and minimizes embarrassment when mistakes are made. Makkar and Sharma (2022) state that blended learning combines the strengths of traditional and online learning and addresses the lack of interaction in purely technology-based approaches.

* Corresponding author.
E-mail address: b.alrasheedy@uoh.edu.sa (B.B. ALrasheedy).

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It provides a balanced twenty-first-century education model that increases student motivation and improves teachers' working conditions. Blended learning has been embraced by the digital generation through modern devices such as smartphones and tablets; it promotes a closer relationship between teachers and students and more effective learning experiences. Blended learning aligns with institutional goals and boosts student motivation, ultimately maximizing their potential and contributing to higher educational performance (Shana'a et al., 2023; Wright et al., 2000).

1.1. Study importance

This study's importance in investigating the reality of blended learning and motivation to achieve is as follows. It provides insights to shape theoretical frameworks to diagnose the reality of blended learning and recognize its effectiveness in the educational field, especially at Hail University. It provides insights for educational policymakers in the Kingdom of Saudi Arabia on how to design blended learning policies according to the preferences of teachers and students in improving learning quality and outcomes. Furthermore, it helps provide feedback to decision-makers in university institutions about the benefits of using blended learning in elevating students' levels of achievement motivation. This would help make future decisions that guarantee care for training and qualification for those responsible for the educational process with the best suitable technical practices.

1.2. Study objectives

This study aimed to recognize the impact of blended learning techniques on students' motivation and performance. Furthermore, it aimed to explore the differences between students from education and arts faculties, as well as male and female students, in using blended learning techniques (YouTube, electronic presentations, online information bases, and Blackboard).

1.3. Research problem

Scientific research seeks to improve the education process by identifying effective practices to enhance blended learning environments in universities. Blended learning integrates traditional and modern teaching methods, utilizing online media to engage learners and increase their motivation.

Recent field observations by researchers showed a decrease in the motivation to achieve in some students due to the use of traditional learning in the faculties of human sciences at Hail University. This was reflected in a reduction of their performance quality, duties, and tasks assigned to them in the academic courses. It was also noted that their performance level in monthly and final exams declined, and they obtained low grades, thus stimulating the researchers to conduct this study, which used blended learning techniques in the second semester of the academic year 2023/2024 to identify the impact of blended learning in increasing the motivation to achieve in students in the faculties of human sciences (education, arts) at Hail University.

Inconsistency in previous results of the impact of blended learning practices on students' performance and achievement and the need to observe students' academic work necessitated the exploration of the impact of blended learning on reinforcing motivation to achieve.

1.3.1. Research questions

What is the impact of using blended learning on increasing achievement motivation in students of education and arts faculties at Hail University? This question was divided into the following:

1) Do differences exist in achievement motivation between pre- and post-application of blended learning techniques?
2) Are there significant differences in achievement motivation based on sex?
3) Are there significant differences in achievement motivation between faculties of education and arts?

2. Literature review

2.1. Blended learning and achievement motivation

Ahmed Ezzat Othman (2023) highlights that the term hybrid learning has multiple synonyms. It is a new educational system that combines the advantages of e-learning and traditional education, the origin of hybrid learning. It is an educational style with roots and values. Some researchers refer to it as mixing educational methods and strategies with various means and multiple names, including blended learning, mixed or blended learning, blended or mixed learning, and complex education.

Liu et al. (2024) state that blended learning was first introduced in corporate human resources training to overcome the problems of time and place in face-to-face teaching, including small class sizes, poor timing, and high cost of training. In the 1960s, computer-based learning programs were introduced, and since the 1990s, internet-based e-learning has gradually become popular owing to the rapid development of information technology. However, e-learning also had some disadvantages, such as low engagement and the inability of students to complete learning tasks independently in an unsupervised environment. Consequently, researchers and practitioners in the field of education have utilized it to be more effective and flexible in teaching and learning. “Blended learning” was initially proposed as an appropriate term, which is not the mere integration of face-to-face and online learning environments but a systematic reconstruction of multiple elements, including learning resources, teaching strategies, learning environments, learning tools, and teaching and learning models. The term hybrid learning—somewhat synonymous but less frequently used term (Chen, 2022) has been used in educational discussions to describe diverse educational structures for the past 20 years.

Tabassum et al. (2024) stated that blended learning benefits students in three ways: it provides helpful means to enhance their school performance and more opportunities to learn, making their overall experience better. Most students now have better, faster, and more consistent access to the internet. Therefore, faculties and universities need to promote the development of more online and offline learning tools to help students. Mobile devices are rapidly replacing standard classroom tools by being the primary way of communicating and collaborating. Educators must always look for new and useful ways to help students make the most of these opportunities. Therefore, teaching methods created for blended classrooms are beneficial to students' well-being, academic progress, focus, and desire to study. Blended learning can be defined as “the use of electronic means using the internet, along with traditional lectures, in the classroom or by assigning students assignments, reports, and research projects through the university's electronic system Blackboard.”

Furthermore, studies have shown the effective role of blended learning in increasing achievement level, academic stimulation, achievement motivation, independence, and comprehension (Al-Hamidi & Al-Rushidi, 2023; Cao, 2023; Daniel & Villanueva, 2023; Fitriani et al., 2024; Isma et al., 2023; Kholifah et al., 2020; Oweis, 2018; Puspita & Tirtoni, 2023; Radulović et al., 2023; Sallal, 2023; Shoukat et al., 2024; Sukatin et al., 2023; Tashtoush et al., 2023; Tong et al., 2022; Utami, 2018; Yusuf, 2020). Additionally, studies have shown that students' positive attitudes toward blended learning range between high and medium, despite multiple barriers against using it (Alı, 2023; Ayasrah et al., 2022; Sinthia et al., 2022). Using blended education enhances students' educational achievement and understanding of some courses such as electrochemistry (Aziz et al., 2021; Yajie & Jumaat, 2023), English in higher education (Indrapangastuti et al., 2021;

Samritin et al., 2023), and mathematics (Egara & Mosimege, 2024; Jemakmun, 2022; Sadieda et al., 2022; Setiawan et al., 2022). Students approve the use of e-learning and prefer it over traditional education (Yusuf, 2020).

In contrast to previous studies confirming the effective role of blended learning in many aspects of the educational process in several countries, Cao (2023) indicated that in China and the United States, blended learning could not significantly improve students' engagement in academic activities, with no significant differences in student performance between blended and non-blended learning in the United States. Future research on blended learning should focus on other countries and regions. Balentyne and Varga (2016) found that the increase in achievement was not significantly different between traditional education and blended learning; moreover, Mese and Dursun (2019) found no difference between the two groups regarding the inquiry community model, academic achievement, and motivation.

Khader (2016) observed sex-based differences in the effect of blended learning in favor of male students but did not find any significant differences in achievement based on the relationship between teaching method and sex. By contrast, Alsalhi et al. (2021) indicated sex-based differences in achievement in favor of female students. Kazu and Demirkol (2014) showed that female students are more successful than male students in traditional and blended education environments, while Ayasrah et al. (2022) reported contradictory findings showing no significant differences between the attitudes of teachers and outstanding students toward blended learning based on sex or grade. Furthermore, Hufana and Gurat (2023) stated that the level of support toward learning the material in the blended learning mode to connect students is the same regardless of their sex, age, and social status, except for individual factors. Older students are more influenced by their self-esteem or study habits than younger students when learning mathematics in a blended learning environment. They look forward to learning mathematics in a blended learning environment because they are more motivated, supported by peers, or have higher self-esteem. According to Lin et al. (2016), male and high-ability students are more motivated in a blended learning environment.

McClelland was among the pioneers who identified motivation for achievement and defined it as follows: what prompts the individual to move in a better way to perform their tasks than they did before and with a degree of efficiency, speed, and diligence to achieve the best result (Pieper, 2003).

The term “motivation for achievement” was utilized in psychology by Adler, who emphasized the notion that the need for achievement is nothing but one of the compensatory motivations derived from early childhood experiences. Levine also used the term in his discussion of the concept of ambition. Despite these early beginnings, Murray is considered the first to introduce the concept of the need for achievement as an important and accurate component of personality (Engler, 1990).

Motivation and learning have a strong correlation. Motivation is crucial for engaging in learning activities, and without it, individuals may refrain from participating. Students use motivation to achieve their intended goals, and those that are motivated to study strive to excel beyond their learning activities (Islam et al., 2018).

Several studies have noted that blended learning gives students more opportunities to join, keep their resources updated, discuss, participate, and use a wide range of tools to submit their work online. Furthermore, the positive impact of blended learning on teaching performance and internal and external motivation, as well as the positive relationship between these two factors have been reported (Al-Balasi et al., 2015; Hanum & Sari, 2021). Additionally, Lozano-Lozano et al. (2020) and Islam et al. (2018) identified that the blended learning strategy led to perceived improvements in achievement, along with significant enhancements in motivation, mood, and enjoyment in comparison with traditional educational methods.

3. Study methodology and procedures

3.1. Study participants

3.1.1. Participants' characteristics

The study participants were 80 students from the faculties of education and arts at Hail University. They were selected using the intentional sampling method and comprised 60 male and 20 female students. Table 1 and Fig. 1 show the sample distribution according to sex and faculty.

3.2. Study tool

3.2.1. Academic achievement motivation scale

This scale was designed by Al-Mashrafi (2012), used by Huda (2013), and developed and used by Al-Jubouri et al. (2023). In this study, the authors used a scale consisting of 25 items in four dimensions: 1) academic ambition, with six phrases that indicate the level of persistence and initiative of the student toward achieving success or feeling able to reach it; 2) goal orientation, with six phrases indicating the extent to which the individual is more likely to incline toward a goal; 3) orientation to achievement, with seven phrases that indicate the individual's strong desire to achieve success in academic courses; and 4) cognitive motivation, with six phrases indicating the desire for knowledge, understanding, mastery, and problem solving, which arises from the process of interaction between the student and a specific task. The responses are rated as follows:

-Always (3), three degrees.
-Sometimes (2), two degrees.
-Rarely (1), one degree.

3.3. Validity and reliability of the study tool

3.3.1. Reliability

The stability of the scale was verified by calculating Cronbach's alpha reliability coefficient for the scale dimensions. Table 2 shows that the coefficients were high, suggesting a high degree of reliability.

3.3.2. Validity

3.3.2.1. Internal consistency validity. Internal consistency was validated using Pearson's correlation coefficient to measure the relationship between each statement and the total score of its dimension, as well as between each dimension and the total score of the scale. Table 3 shows that all correlation coefficients between statements and dimensions were positive and significant at $p < .01$.

Table 4 shows that the correlation coefficients of dimensions with the total scale score were positive and significant at $p < .01$, indicating that all statements were valid and met the goal for which they were developed.

3.4. Practical procedures

The training program for developing motivation for academic achievement was implemented over two months. Table 5 describes the

Table 1
Sample distribution according to sex and faculty.

Variables	Level	Number	Percentage
Sex	Male	60	75.0
	Female	20	25.0
	Total	80	100.0
Faculty	Education	62	22.5
	Arts	18	77.5
	Total	80	100.0

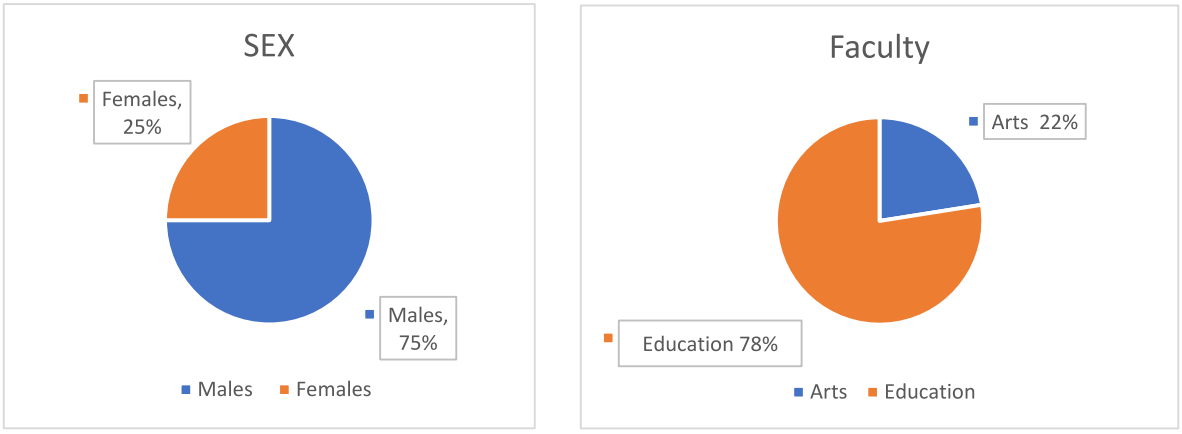

Fig. 1. Sample distribution according to sex and faculty.

Table 2
Reliability coefficients' values for the academic achievement motivation scale dimensions.

Dimension	Cronbach's alpha coefficient
Academic ambition	0.788
Goal orientation	0.728
Achievement orientation	0.806
Cognitive motivation	0.700
Overall scale	0.906

Table 3
Correlation coefficients of the statements of each dimension with its total score.

Dimension	Statement	Correlation coefficient	Statement	Correlation coefficient
Academic ambition	1	**0.720	4	**0.676
	2	**0.737	5	**0.616
	3	**0.735	6	**0.739
Goal orientation	7	**0.729	10	**0.712
	8	**0.659	11	**0.619
	9	**0.641	12	**0.634
Achievement orientation	13	**0.739	17	**0.683
	14	**0.707	18	**0.648
	15	**0.677	19	**0.717
	16	**0.621		
Cognitive motivation	20	**00.558	23	**0.578
	21	**0.756	24	**0.718
	22	**0.533	25	**0.669

** $p < .01$.

Table 4
Correlation coefficients of each dimension with the total scale score.

Dimension	Correlation coefficient
Academic ambition	**0.807
Goal orientation	**0.859
Achievement orientation	**0.898
Cognitive motivation	**0.767

** $p < .01$.

training sessions.

Table 6 shows the training methods and tools utilized to implement them in the training program.

4. Results and discussion

4.1. Results

To investigate the differences in achievement motivation between the pre-and post-applications based on the practice of the blended learning techniques (i.e., the first question), a paired *t*-test was conducted on the pre- and post-application scores of the Academic Achievement Motivation Scale. Cohen's d was calculated to determine the magnitude of the effect (Table 7 and Fig. 2).

Table 7 and Fig. 2 show differences between the pre-test and post-test in all dimensions of the Academic Achievement Motivation Scale and the total score. Cohen's d ranged between (0.41–0.57), suggesting an average impact level. This indicates that blended learning had an average impact on increasing motivation for academic achievement in students.

Sex-based differences in motivation for achievement between the pre-and post-application in using blended learning techniques (i.e., question 2) were investigated using the Mann-Whitney test (Table 8).

Table 8 demonstrates that the significance levels were above $p < .05$ across all dimensions, suggesting no significant differences based on sex. Differences in achievement motivation between the pre-test and post-test based on the faculty (i.e., question 3) were investigated using the Mann-Whitney test (Table 9).

Table 9 shows that the significance level was less than $p < .05$ for the academic ambition dimension. The average ranks suggest that the differences were in favor of the students of education, indicating that their academic ambition level was higher than that of students of arts. For other dimensions, the levels were similar between the students of both faculties.

4.2. Discussion

Investigation of the first research question regarding the impact of using blended learning techniques (educational YouTube, electronic presentations, online information bases, and Blackboard) on academic achievement motivation indicated significant differences in students from both education and arts faculties.

The mean scores revealed that these differences favored the post-test in the overall scale and all dimensions. The best practices for blended learning were identified, with a focus on YouTube, electronic presentations, online information bases, and Blackboard. This suggests that these techniques stimulate students to work collaboratively and productively and enhance the appeal of the educational activities in the blended learning environment.

These results align with the findings of Al-Sumaeri (2024) that blended learning enhances academic achievement motivation and

Table 5
Training program sessions.

Session number	Date and day	Time	Session title	Objective
1	02/06/2024 Tuesday	75 minutes	Intake session	Pre-measurement and introduction: introduction to the training program, its objectives, success factors, and benefits; learning about the concept of academic achievement and how to develop motivation for academic achievement.
2	02/13/2024 Tuesday	90 minutes	Rotation model	Learning about the techniques of this model and how to apply them, the implementation mechanism, and the distribution of the schedule allocated for each lecture, whether traditional or virtual, the titles to be discussed during the program, and the tools necessary to implement it.
3	03/05/2024 Tuesday	90 minutes	Self-blend model	Learning how to implement the program, how to access information and accurate research methods, mechanisms for communicating with the subject teacher, and how to submit educational requirements and assignments.
4	03/26/2024 Tuesday	90 minutes	Online driver model	Learning about the nature of the electronic orienting model, its benefits, and its implementation. Its role is to foster flexibility and independence during the learning process, saving time and reducing potential material costs. Operating mechanism and how to submit assignments, reports, and educational requirements.
5	16/04/2024 Tuesday	90 minutes	Flexible model	Training on how to use technology and electronic educational resources and submit required academic assignments and reports electronically.
6	30/04/2024 Tuesday	75 min	Termination session	Program completion, evaluation, and post-measurement.

Table 6
Methods, techniques, and tools used in the training program.

No.	Method or technique	Definition	Objectives	Tools Used
1	Rotation model	This model involves alternating between e-learning and traditional classroom instruction according to a specific schedule. The course is divided between traditional lectures and virtual lectures conducted remotely.	Integrating virtual with traditional lectures will help students diversify their learning sources, facilitate access to educational material, and keep up with the educational process.	-Computer or smartphone -Internet -Virtual classroom in Blackboard -Teams program
2	Self-blend model	In this model, direct classroom learning and e-learning are provided; learners can choose electronic lessons and complete course requirements remotely.	To help students access information through non-traditional sources by completing some requirements such as assignments and searching for information through scientific databases, educational YouTube channels, and presenting via Blackboard.	- Computer or Smartphone -Internet -Email -Blackboard Program
3	Online driver model	This model delivers the educational process electronically, with online communication and discussions with the instructor. It is ideal for students needing flexibility and independence in their studies.	To provide students with flexibility and independence in their learning process, without being restricted by scheduled lecture times, by assigning recorded lectures to watch on Blackboard or educational YouTube, writing reports or summaries on the educational material, and completing the required assignments.	-Email -Online discussion room via Blackboard -WhatsApp -Smartphone -Teams program
4	Flexible model	This model relies on delivering the course electronically, with the instructor available in the classroom for support. Students are self-directed in the digital environment, managing their study requirements, activities, and tasks remotely.	To help students be self-directed in their learning through the use of technology and electronic educational resources and to submit assignments electronically.	-Email -Blackboard program

improves students' academic and cognitive performance. Similarly, Uyun (2022), Samritin et al. (2023), Radulović et al. (2023), Xu et al. (2023), and Tashtoush et al. (2023) revealed significant differences in student learning outcomes in mathematics and physics before and after the implementation of blended learning. This suggests that blended learning can improve academic performance and significantly increase motivation in students who lack achievement. Similarly, Akgündüz and Akınoğlu (2017), Günes and Alagözlü (2020), and Sunardi et al. (2021) demonstrated that blended learning enhances academic success and motivation more effectively compared to face-to-face learning. The results are also consistent with those of Tong et al. (2022), who state that blended learning increases student engagement with teachers and improves academic performance, self-study skills, and learning attitudes. Furthermore, Shoukat et al. (2024) noted significant positive effects of blended learning on academic motivation and learning outcomes and suggested improvements in the blended learning environment and teaching practices. Similarly, Daniel et al. (2024) claimed that these techniques positively and significantly impacted motivation and academic achievement, with well-motivated students developing personal and academic qualities such as interest, confidence, belonging, cooperation, and trust in educational experiences, leading to better academic performance.

This study's results differ from those of Wahyuni et al. (2023), who

Table 7
Averages of the pre- and post-application academic achievement motivation scores (H = 79).

Dimension	Pre-test		Post-test		T-score	Significance	Cohen's coefficient value (d)	Effect level
	Mean	SD	Mean	SD				
Academic ambition	2.50	0.421	2.81	0.221	−5.816	0.000	0.48	Moderate
Goal orientation	2.41	0.420	2.76	0.241	−6.243	0.000	0.50	Moderate
Achievement orientation	2.29	0.440	2.66	0.309	−5.814	0.000	0.57	Moderate
Cognitive motivation	2.35	0.391	2.62	0.356	−5.227	0.000	0.46	Moderate
Total academic achievement motivation	2.39	0.343	2.71	0 0.218	−7.104	0.000	0.41	Moderate

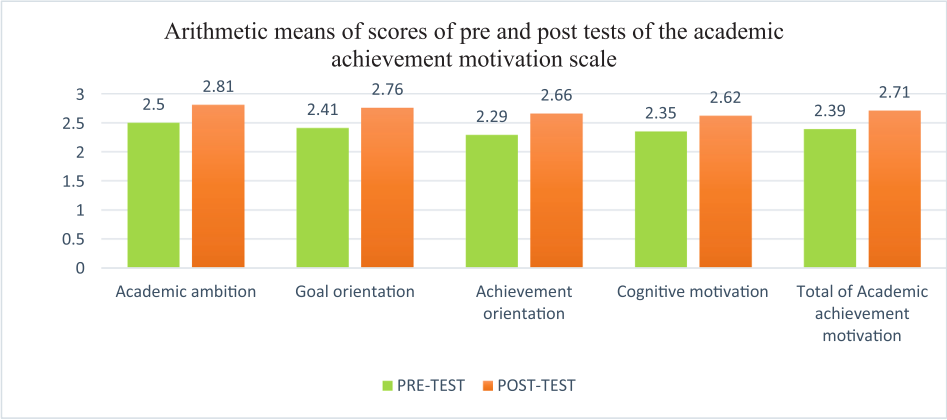

Fig. 2. Arithmetic averages of the pre-and post-application academic achievement motivation score.

Table 8
Mann-Whitney test results for the sex-based differences in academic achievement motivation scores.

Dimension	Male		Female		Mann-Whitney's Value	*Z*- score	Significance
	The mean score of ranks	Total of ranks	The mean score of ranks	Total of ranks			
Academic ambition	41.21	2472.5	38.38	767.50	557.500	−0.503	0.615
Goal orientation	42.13	2527.5	35.63	712.50	502.500	−1.121	0.262
Achievement orientation	42.11	2526.5	35.68	713.50	503.500	−1.089	0.276
Cognitive motivation	41.44	2486.5	37.68	753.50	543.500	−0.641	0. 521
Total academic achievement motivation	42.18	2530.5	35.48	709.50	499.500	−1.119	0. 263

Table 9
Mann-Whitney test results for differences in academic achievement motivation based on faculty.

Dimension	Faculty of Arts		Faculty of Education		Mann-Whitney value	Z-score	Significance level
	Average of ranks	Total of ranks	Average of ranks	Total of ranks			
Academic ambition	28.03	504.50	44.12	2735.50	333.500	−2.756	0.006
Goal orientation	38.78	698.00	41.00	2542.00	527.000	−0.370	0.712
Achievement orientation	41.39	745.00	40.24	2495.00	542.000	−0.187	0.851
Cognitive motivation	36.83	663.00	41.56	2577.00	492.000	−0.777	0.437
Total academic achievement motivation	36.61	659.00	41.63	2581.00	488.000	−0.808	0.419

found that most students prefer direct classroom learning because it helps them understand lessons better and receive immediate guidance from instructors. Students may also feel that online learning is less effective due to difficulties in comprehension and limited access to technology, such as inadequate IT skills and unreliable internet connections, leading to incomplete information and suboptimal learning outcomes.

The results can be explained by the current generation's strong affinity for technology. Tran (2024) describes it as digital natives with proficiency in various technical skills, easy access to technology, and a tendency toward self-directed learning. However, their preference for traditional classroom settings is evident in their attitudes toward online interaction with instructors and peers.

Blended learning allows students to engage in self-directed learning using technology and solving activities with teachers' assistance, which helps them correct mistakes without the embarrassment that might occur in traditional settings. Additionally, blended learning helps obtain feedback on answers and opportunities for re-attempts for incorrect answers. It also gives teachers the chance to monitor students' work more effectively in large classes, increasing student motivation and academic performance. Thus, blended learning is effective in enhancing achievement motivation and learning.

The second research question aimed to determine sex-based differences in responses. However, the results indicated no significant

differences between male and female students' responses across all dimensions of the overall Academic Achievement Motivation Scale.

The results of the current study are in accordance with those of Ayasrah et al. (2022) and Simanjuntak et al. (2020), who revealed no significant sex- or grade-based differences in attitudes toward blended learning. Similarly, Hufana and Gurat (2023) found that support factors for learning in a blended learning environment were consistent regardless of sex. By contrast, Deng et al. (2022) noted significant differences in perceived service quality between male and female students of computer science, although there were no notable differences in perceived usefulness, ease of use, or self-efficacy. Chen (2022) found no significant differences in learning outcomes between sexes but a notable difference in motivation, with men having higher levels of it.

The current study's findings contradict those of Bakeer (2018), which identified sex-based differences in the impact of blended learning, favoring men. Alsalhi et al. (2021) found sex-based differences in academic achievement, with women performing better. Similarly, Kazu and Demirkol (2014) reported that female students were more successful than male students in both traditional and blended learning environments. Lin et al. (2016) indicated that male students and high-ability students were more motivated in blended learning settings.

The absence of sex-based differences in achievement motivation can be attributed to the reduced disparity in education, technology use, and available resources. The country has provided equal educational and employment opportunities for both sexes across various fields, encouraging academic motivation and achievement. Tran (2024) describes current students as digital natives with a strong passion for technology, demonstrating proficiency in various technical skills and self-directed learning tendencies, regardless of sex.

The final research question examined differences based on the faculty. Academic ambition differed significantly, while other dimensions did not. The mean ranks showed that these differences favored students of education, who had higher academic ambition compared to that of the students of arts. Meanwhile, the levels of other dimensions and overall achievement motivation were similar between students of both faculties.

The current study's results align with those of Al-Ghoweri and Al-Zboun (2021), who found no significant differences in the impact of blended learning on developing cognitive habits and academic achievement based on faculty. By contrast, Alharthi et al. (2023) found significant differences between science and humanities students, with humanities students favoring the blended learning approach.

This discrepancy may be explained by the fact that the nature of studies in education and arts, same as humanities, does not differ greatly in terms of course content and delivery methods, which may be well-suited to blended learning. By contrast, practical faculties might require more traditional learning due to the need for laboratory work and face-to-face instruction.

4.2.1. Study limitations

The study has the following limitations. Its sample comprised students with low achievement motivation from the Colleges of Education and Arts within the humanities faculties; thus, they were not representative of the other humanities faculties at Hail University. Thus, future studies should include samples from other colleges at the university (i.e., College of Business Administration, College of Tourism, and College of Sharia) to fully measure the impact of blended learning on increasing student achievement motivation.

5. Conclusion

This study examined how academic achievement motivation can be enhanced through blended learning techniques (YouTube, electronic presentations, online information bases, and Blackboard). Improved student performance between pre- and post-measurements indicates that blended learning techniques have a positive effect, fostering collaborative work. Interactive educational activities capture students' attention and motivate them to achieve the desired performance. Opportunities for information retrieval from multiple databases satisfy the desire to engage with modern technology, while cognitive motivation is enhanced through summarizing and applying the learning in post-lecture reports and assignments. This is reflected in students' progression toward meeting course requirements, with interactive goal-oriented activities in blended learning having a more substantial impact than traditional methods alone. Students observe that the understanding and comprehension gained from interacting with course requirements through electronic technologies reflect the current reality, which relies heavily on virtual modes. This makes students more effective with educational activities, enhancing their focus on achieving the objectives of the course.

Researchers should focus on blended learning methods and mechanisms, conducting scientific research on improving the learning environment through the application of electronic teaching techniques in university and school classrooms.

CRediT authorship contribution statement

Benayan Bani ALrasheedy: Methodology, Investigation, Formal analysis, Conceptualization. **Abdalla Sayed Mohamed Gaballa:** Writing – original draft, Visualization, Validation, Project administration. **Kateb Alhamedi Alshammari:** Writing – review & editing, Data curation. **Hanouf Mohammed Alrashdi:** Software, Resources.

Ethical considerations

The study was conducted after obtaining informed consent from the participants and ethical approval from the Scientific Research Ethics Committee of (H-2024-401).

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Declaration of competing interest

There are no disclosed or undisclosed conflicts of interest that the authors could have when doing or reporting the study.

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Data availability

All study data have been included in the research article.

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