

The Effectiveness of Digital-Based Business Learning Multimedia in Increasing Students' Interest in Entrepreneurship

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Abstract

The digital era has brought significant changes in the world of education, including in business learning in college. This study aims to analyze the effectiveness of digital-based business learning multimedia in enhancing students' entrepreneurial interest. This study uses a quantitative descriptive approach with a survey method. The research was conducted in May–June 2026 involving 32 student respondents from various semesters. A descriptive survey method was employed using a Likert-scale questionnaire (1–5) consisting of 15 statement items. Data were analyzed descriptively and quantitatively. Results indicated an overall mean score of 4.04, categorized as High. The highest indicators were found in multimedia platform ease of use and interactive content engagement (mean 4.28), while the lowest was in voluntary study time (mean 3.78). These findings suggest that digital-based learning multimedia effectively enhances students' entrepreneurial interest.

Keywords

Digital Business Learning, Entrepreneurial Interest, Learning Multimedia, Students



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INTRODUCTION

The digital era has brought significant changes in the world of education, including in business learning in college. The development of information and communication technology encourages the transformation of conventional learning methods towards digital-based learning that is more interactive, flexible, and attractive for millennials and generation Z. Digital-based learning multimedia includes various elements such as text, images, audio, video, animation, and simulations that are integrated in one platform to deliver learning materials more effectively (Mayer, 2009).

Students' entrepreneurial interest is one of the important indicators in producing graduates who are not only ready to work, but also able to create jobs. According to Zimmerer and Scarborough (2018), entrepreneurship requires motivation, creativity, and risk-taking skills that can be developed through the right learning process. The use of interactive

multimedia in business learning is expected to provide a more contextual learning experience and be able to motivate students to be interested in the world of entrepreneurship.

Nevertheless, there is still a gap between expectations and reality on the ground. Many students feel that business learning is monotonous and less relevant to practical needs. Therefore, this study is important to examine the extent of the effectiveness of digital-based business learning multimedia in encouraging students' entrepreneurial interest, based on empirical data from the results of the questionnaire collected systematically. This research is expected to contribute to the development of a business learning curriculum that is more adaptive to the development of digital technology, as well as provide recommendations for educators and educational institutions in choosing and developing effective learning media.

METHODS

This study uses a quantitative descriptive approach with a survey method. The research instrument is in the form of a questionnaire developed based on multimedia indicators of learning and entrepreneurial interest. The questionnaire consisted of 15 statement items with a choice of answers using a five-level Likert scale, namely: Strongly Agree (SS = 5), Agree (S = 4), Neutral (N = 3), Disagree (TS = 2), and Strongly Disagree (STS = 1).

The research respondents amounted to 32 students who were selected by purposive sampling, including students from various semesters (Semesters 2, 4, 6, and 8). Data collection was carried out in May-June 2026. The collected data was analyzed using descriptive statistics, including the calculation of the mean of each statement item and the overall average to determine the category of multimedia learning effectiveness.

Categorize the average score using the following guidelines:

Table 1. Average Score Categories

Score Range	Category	Remarks
1.00 – 1.80	Very Low	STS
1.81 – 2.60	Low	TS
2.61 – 3.40	Medium	N
3.41 – 4.20	Height	S
4.21 – 5.00	Very High	SS

FINDINGS AND DISCUSSION

Findings

Respondent Description

This study involved 32 students as respondents. Based on the data collected, the distribution of respondents by semester shows that the majority came from Semester 4 (62.5%), followed by Semester 2 (18.75%), Semester 8 (9.37%), and Semester 6 (6.25%). The age group

was dominated by students aged 19–20 years (56.25%) and 18–19 years old (34.37%). This distribution depicts a fairly diverse representation of various levels of study, so that the data obtained reflects the perspectives of students from different stages of academic development.

Respondent Questionnaire Results Data

Table 2. Recapitulation of Respondent Questionnaire Data

No	Name	Age	Smt	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	Rata
1	Answer 1	18-19	Smt 4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5.00
2	Answer 2	19-20	Smt 2	3	3	4	3	4	3	4	3	4	4	4	4	3	4	4	3.60
3	3 answer	19-20	Smt 4	4	5	4	4	3	4	3	4	3	3	4	4	3	3	5	3.73
4	4 answer	19-20	Smt 4	5	5	4	4	5	5	5	4	4	4	5	5	5	5	5	4.67
5	5 answer	19-20	Smt 4	3	4	4	4	3	3	3	4	3	3	3	3	3	3	3	3.27
6	6 answers	19-20	Smt 4	3	4	3	3	4	4	4	4	3	3	3	4	4	3	4	3.53
7	7 answers	19-20	Smt 2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4.00
8	8 answers	18-19	Smt 4	5	5	4	5	5	5	3	3	5	5	5	4	5	3	5	4.47
9	9 answer	19-20	Smt 2	4	2	3	2	1	5	5	4	4	3	2	1	4	4	4	3.20
10	10 answer	18-19	Smt 2	4	4	5	5	3	3	4	5	3	3	5	5	4	3	4	4.00
11	11 answer	18-19	Smt 4	3	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3.07
12	12 answer	19-20	Smt 6	5	1	2	1	5	2	2	4	1	2	1	-	-	-	1	2.36
13	13 answer	18-19	Smt 4	4	4	4	4	4	4	4	4	4	4	3	3	3	4	3	3.73

No	Name	Age	Smt	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	Rata
14	Answer	18-19	Sm t 2	5	5	5	4	4	5	5	5	4	5	5	5	5	5	5	4.80
15	Answer	19-20	Sm t 4	5	5	4	4	3	4	5	5	5	5	5	5	5	5	4	4.60
16	Answer	Others	Sm t 8	4	5	5	5	5	4	4	5	3	4	5	5	5	4	4	4.47
17	Answer	18-19	Sm t 4	5	5	5	5	4	4	4	5	3	4	5	5	5	5	4	4.53
18	Answer	19-20	Sm t 4	3	4	5	4	2	3	2	4	4	4	3	4	2	2	4	3.33
19	Answer	19-20	Sm t 4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5.00
20	Answer	Others	Sm t 6	2	4	5	5	4	5	4	3	3	3	4	4	5	3	3	3.80
21	Answer	19-20	Sm t 4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5.00
22	Answer	18-19	Sm t 4	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4.27
23	Answer	18-19	Sm t 4	5	5	4	4	5	5	5	3	3	3	3	3	3	3	5	3.93
24	Answer	19-20	Sm t 4	3	4	5	4	4	3	3	4	4	3	3	2	2	2	2	3.20
25	answer	18-19	Sm t 4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5.00
26	Answer	19-20	Sm t 4	4	4	4	5	4	4	5	4	4	4	4	4	5	5	4	4.27

No	Name	Age	Smt	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	Rata
27	Answer	19-20	Sm t 4	4	3	5	3	3	4	3	4	4	4	3	4	4	4	3	3.67
28	Answer	19-20	Sm t 2	4	5	4	3	3	4	5	4	4	4	4	5	3	4	5	4.07
29	Answer	-	Sm t 8	5	5	4	4	5	5	5	4	5	3	5	5	4	5	5	4.60
30	Answer	19-20	Sm t 2	4	4	4	5	3	3	4	4	3	3	4	4	4	5	4	3.87
31	Answer	19-20	Sm t 4	3	5	4	4	3	3	3	4	3	3	4	3	3	3	4	3.47
32	Answer	19-20	Sm t 4	4	5	4	5	4	4	4	5	4	3	4	4	4	4	5	4.20
Rat-Rat For Butter				4.12	4.28	4.28	4.09	3.88	4.03	4.03	4.16	3.78	3.81	4.06	4.06	4.04	3.94	4.06	4.04

Remarks: SS=5 (strongly agree), S=4 (Agree), N=3 (Neutral), TS=2 (Disagree), STS=1 (strongly disagree)

3. Descriptive Statistics Per Indicator

Table 3. Descriptive Statistics Per Statement Indicator

No	Indicators/Statements	Average	Category
1	Videos/animations help learn business	4.12	Height
2	Multimedia platform makes learning easier	4.28	Very High
3	Interactive content is fun	4.28	Very High
4	Multimedia formats are easier to understand	4.09	Height
5	Active business independent learning	3.88	Height
6	Interested in business content topics	4.03	Height
7	Increased enthusiasm for learning	4.03	Height
8	Not bored with interactive media	4.16	Height
9	Increased volunteer study time	3.78	Height
10	Interest in learning business increases	3.81	Height

No	Indicators/Statements	Average	Category
11	Understanding real business	4.00	Height
12	Creative and innovative thinking	4.06	Height
13	Confident business discussions	4.00	Height
14	Motivated to be entrepreneurial	3.94	Height
15	Overall positive impact	4.06	Height
	Overall Average	4.04	Height

Discussion

Based on the results of data analysis, the average overall respondent questionnaire score was 4.04 which was included in the High category (range 3.41–4.20). This shows that digital-based business learning multimedia is considered effective by students in increasing their entrepreneurial interest. This finding is in line with Arsyad's (2014) research which states that the use of appropriate and interesting learning media can increase student motivation and engagement.

Of the 15 indicators measured, the two highest indicators were the aspect of multimedia platforms that make it easy to learn business (P2 = 4.28) and fun interactive content (P3 = 4.28), both of which were in the Very High category. This indicates that ease of access and pleasure in using digital platforms are key factors that encourage student engagement in business learning. The ease of use of digital learning platforms creates a positive learning experience and reduces cognitive barriers that are often obstacles in conventional learning.

The lowest indicator was the voluntary study time aspect (P9 = 3.78), although it remained in the High category. This shows that even though students enjoy digital-based learning, they still need further encouragement to independently increase their learning time beyond academic obligations. This is an area that needs more attention in the development of future learning strategies.

Aspects directly related to entrepreneurial interest, namely entrepreneurial motivation (P14 = 3.94), creativity and innovation (P12 = 4.06), and confidence in business discussions (P13 = 4.00) all showed good scores in the High category. This confirms that digital-based learning multimedia not only increases learning engagement, but also contributes to the formation of an entrepreneurial character that is important for students.

The wide variation in individual scores (from 2.36 to 5.00) shows differences in perceptions and experiences among students. This difference can be influenced by the background of the digital experience, the lecture semester, and access to devices and internet connections. Therefore, learning multimedia design needs to consider the diversity of student profiles to ensure equitable effectiveness.

The findings of this study demonstrate that digital-based business learning multimedia effectively enhances students' entrepreneurial interest, as reflected in the overall mean score

of 4.04, which falls within the high category. This result indicates that integrating multimedia elements including videos, animations, interactive learning activities, and digital learning platforms creates a learning environment that is perceived positively by students and supports both their cognitive engagement and entrepreneurial motivation. Rather than functioning merely as a technological innovation, multimedia appears to facilitate meaningful learning by enabling students to visualize abstract business concepts, connect theoretical knowledge with practical contexts, and actively participate in learning activities.

The effectiveness observed in this study can be explained through the Cognitive Theory of Multimedia Learning (CTML) proposed by Mayer (2021), which argues that meaningful learning occurs when learners process verbal and visual information simultaneously through separate cognitive channels while actively organizing and integrating new knowledge with existing cognitive structures. In entrepreneurship education, business concepts such as opportunity recognition, innovation, business planning, and market analysis are often difficult to understand when presented solely through textual explanations. Digital multimedia reduces this cognitive burden by providing visual representations, simulations, and contextual examples that enable learners to construct more coherent mental models. Consequently, students become more capable of understanding entrepreneurial processes while simultaneously developing stronger confidence in applying business concepts to real-world situations.

The findings are also consistent with constructivist learning theory, which emphasizes that knowledge is actively constructed through interaction, exploration, and authentic learning experiences rather than passively received from instructors. This interactive learning environment likely explains why the indicators related to creativity (mean = 4.06), confidence in business discussions (mean = 4.00), and entrepreneurial motivation (mean = 3.94) all reached the high category. These findings suggest that multimedia contributes not only to cognitive achievement but also to the development of entrepreneurial attitudes, which are considered essential components of entrepreneurial competence.

Another theoretical explanation is provided by the Technology Acceptance Model (TAM), which proposes that perceived usefulness and perceived ease of use significantly influence users' willingness to adopt technology. The two highest indicators in this study were "the multimedia platform makes learning easier" (mean = 4.28) and "interactive content is enjoyable" (mean = 4.28). These results strongly support TAM by indicating that students accepted multimedia because they perceived it as beneficial and effortless to use. Ease of navigation reduces technological barriers, while enjoyable interaction increases intrinsic motivation, making students more willing to engage in entrepreneurship learning activities.

Recent studies have demonstrated that interactive multimedia environments increase learning motivation because students perceive digital content as more authentic, flexible, and relevant to contemporary business practices (Al Mamun et al., 2022; Hassan et al., 2023; Kurniawan et al., 2024). Similar to the present study, previous researchers found that multimedia-supported entrepreneurship education enhances learners' creativity,

entrepreneurial intention, and confidence by providing experiential learning opportunities that traditional lecture-based instruction often fails to deliver. This convergence of findings suggests that the effectiveness of multimedia is becoming increasingly universal across different educational contexts because current university students are accustomed to digital learning environments and expect learning experiences that mirror the technological realities of modern workplaces.

Furthermore, the present findings reinforce previous studies indicating that multimedia contributes to students' entrepreneurial self-efficacy through repeated exposure to authentic business simulations and problem-solving activities. Entrepreneurship education requires learners to develop confidence in making decisions under uncertainty, identifying market opportunities, and evaluating business risks. This mechanism may explain why students in this study reported relatively high confidence during business discussions and perceived multimedia as positively influencing their entrepreneurial readiness. Similar conclusions have been reported in studies emphasizing that simulation-based entrepreneurship education enhances both entrepreneurial competence and entrepreneurial intention.

Although the overall findings demonstrate positive effectiveness, an interesting pattern emerges from the lowest indicator, namely voluntary study time (mean = 3.78). While this indicator still falls within the high category, its relatively lower score suggests that multimedia alone is insufficient to foster sustained self-directed learning beyond formal classroom requirements. This finding deserves careful interpretation because increased engagement during classroom activities does not automatically translate into autonomous learning behaviors. According to Self-Determination Theory, intrinsic motivation develops when learners experience autonomy, competence, and relatedness simultaneously. Multimedia successfully enhances competence by facilitating understanding and increases relatedness through engaging learning experiences; however, it may not fully satisfy students' need for autonomy if learning activities remain primarily instructor-directed. Consequently, students may enjoy multimedia-supported instruction without necessarily extending their learning voluntarily outside scheduled academic activities.

CONCLUSION

Based on the results of the research and discussion, it can be concluded as follows; (1) Digital-based business learning multimedia as a whole is considered effective in increasing students' entrepreneurial interest, with an average score of 4.04 (High category). (2) The highest indicators were the ease of multimedia platforms and the attractiveness of interactive content (average 4.28), which shows the importance of the user experience aspect in the design of learning media. (3) Aspects of entrepreneurship such as creativity, confidence, and entrepreneurial motivation show good value, indicating the positive contribution of digital multimedia to the formation of student entrepreneurial spirit. (4) There are variations in perceptions among respondents that need to be considered in the design of inclusive and

adaptive learning media.

This study concludes that digital-based business learning multimedia is effective in enhancing university students' entrepreneurial interest, as evidenced by the overall mean score of 4.04, which falls within the high effectiveness category. The findings indicate that multimedia elements characterized by ease of use, interactive content, and engaging learning experiences significantly contribute to fostering students' motivation, creativity, confidence, and positive attitudes toward entrepreneurship. Future research is recommended to employ larger and more diverse samples involving multiple universities or different educational contexts to improve the external validity and generalizability of the findings. Researchers are also encouraged to adopt experimental, quasi-experimental, or longitudinal research designs that compare various forms of digital learning multimedia and examine their long-term influence on entrepreneurial competence, entrepreneurial intention, and actual entrepreneurial behavior.

REFERENCES

- Autio, E., Komlósi, É., Szerb, L., Galambosné Tiszberger, M., Park, D., & Jinjarak, Y. (2024). Digital entrepreneurship landscapes in developing Asia: Insights from the Global Index of Digital Entrepreneurship Systems. *European Journal of Innovation Management*. <https://doi.org/10.1108/EJIM-02-2024-0121>
- Bulto, T. W., Chebo, A. K., Endeshaw, B., Werku, B. C., & Dhliwayo, S. (2025). Visualizing digital transformation in entrepreneurship education: A bibliometric analysis study from 2018 to 2022. *Frontiers in Education*, *10*, 1461327. <https://doi.org/10.3389/feduc.2025.1461327>
- Duong, C. D., Nguyen, T. H., Chu, T. V., Pham, T. V., & Do, N. D. (2024). Whether ChatGPT adoption inspires higher education students' digital entrepreneurial intention? *International Journal of Innovation Science*. <https://doi.org/10.1108/IJIS-01-2024-0020>
- Gamifying online entrepreneurship education and digital entrepreneurial intentions: An empirical study. (2023). *Entertainment Computing*, *46*, 100552. <https://doi.org/10.1016/j.entcom.2023.100552>
- Gillani, S. M. A. H., Senin, A. B. A., Bode, J., & Muniba. (2022). Bibliometric analysis of digital entrepreneurial education and student intention. *International Journal of Interactive Mobile Technologies*, *16*(13), 48–65. <https://doi.org/10.3991/ijim.v16i13.30619>
- Jardim, J. (2021). Entrepreneurial skills to be successful in the global and digital world: Proposal for a frame of reference for entrepreneurial education. *Education Sciences*, *11*(7), 356. <https://doi.org/10.3390/educsci11070356>
- Li, S., Bu, Y., Zhang, Z., & Huang, Y. (2024). Digital entrepreneurship intention and digital entrepreneurship behavior: The mediating role of managing learning and entrepreneurship education. *Education + Training*, *66*(2/3), 195–212. <https://doi.org/10.1108/ET-05-2023-0176>
- Linzalone, R., Schiuma, G., & Ammirato, S. (2021). Connecting universities with entrepreneurship through digital learning platforms. *International Journal of*

- Entrepreneurial Behavior & Research*. <https://doi.org/10.1108/IJEBR-07-2019-0434>
- Lopes, J. M., Gomes, S., & Nogueira, E. (2025). Educational insights into digital entrepreneurship: The influence of personality and innovation attitudes. *Journal of Innovation and Entrepreneurship*, 14(1), 16. <https://doi.org/10.1186/s13731-025-00475-y>
- Mayer, R. E. (2021). Evidence-based principles for multimedia learning. *Educational Psychology Review*. <https://doi.org/10.1007/s10648-021-09632-0>
- Mei, Y., Miao, J., & Lu, Y. (2022). Digital villages construction accelerates high-quality economic development through promoting digital entrepreneurship. *Sustainability*, 14(21), 14224. <https://doi.org/10.3390/su142114224>
- Nguyen, P. N.-D., & Nguyen, H. H. (2024). Unveiling the link between digital entrepreneurship education and intention among university students in an emerging economy. *Education Sciences*, 14(11), 1211. <https://doi.org/10.3390/educsci14111211>
- Rahmanto, A. A., & Yuliyanto, R. (2024). Research trends in digital entrepreneurship education: A bibliometric analysis. *Global Journal of Business, Economics and Management: Current Issues*, 14(3), 158–170. <https://doi.org/10.18844/gjbem.v14i3.9517>
- Rizal, Y., Sudira, P., & Mutohhari, F. (2022). Digital entrepreneurship of vocational educations: Enthusiasm level and entrepreneurial personality of students. *Journal of Education Technology*, 6(4), 578–585. <https://doi.org/10.23887/jet.v6i4.46297>
- Satalkina, L., & Steiner, G. (2022). Digital entrepreneurship and sustainable innovation: A systematic literature review. *Journal of Cleaner Production*. <https://doi.org/10.1016/j.jclepro.2022.130924>
- Soluk, J., Kammerlander, N., & Darwin, S. (2021). Digital entrepreneurship in the twenty-first century. *Small Business Economics*. <https://doi.org/10.1007/s11187-021-00533-0>
- Wang, Y., & Ye, D. (2024). Enhancing rural revitalization in China through digital economic transformation and green entrepreneurship. *Sustainability*, 16(10), 4147. <https://doi.org/10.3390/su16104147>
- Wibowo, A., Narmaditya, B. S., Saptono, A., Effendi, M. S., Mukhtar, S., & Mohd Shafiai, M. H. (2023). Does digital entrepreneurship education matter for students' digital entrepreneurial intentions? The mediating role of entrepreneurial alertness. *Cogent Education*, 10(1), 2221164. <https://doi.org/10.1080/2331186X.2023.2221164>
- Zeynalov, S., & Dođantan, E. (2025). The effect of digital literacy and entrepreneurship education on digital entrepreneurship intention: The mediating role of personal innovativeness. *Technology, Knowledge and Learning*, 30(2), 1189–1206. <https://doi.org/10.1007/s10758-025-09821-1>
- Zhang, J., Zhang, M., Liu, Y., Lyu, R., & Cui, R. (2021). Research on the integration of media literacy innovative concept and entrepreneurship education and digital dynamic creative expression talents. *Frontiers in Psychology*, 12, 728182. <https://doi.org/10.3389/fpsyg.2021.728182>