Forum for Education Studies 2025, 3(1), 2197.
https://doi.org/10.59400/fes2197

Article

An application of TikTok flipped classroom in art education

Ting Hu[1,2], Ushba Rasool[3,*], Haowei Chen[4], Lin Wang[2,5], Honggang Shi[2,6]

[1] Guizhou Institute of Technology, Guizhou 550003, China
[2] Faculty of Education, Languages, Psychology and Music, SEGi University, Petaling Jaya 47810, Malaysia
[3] School of International Studies, Zhengzhou University, Zhengzhou 450001, China
[4] School of Education, Urban Vocational College of Sichuan, Chengdu 610110, China
[5] Faulty of Marxism, Yunnan Technology and Business University, Kunming 651701, China
[6] School of Humanities and Social Sciences, Shihezi Engineering Technical College, Shihezi 832000, China
*** Corresponding author:** Ushba Rasool, ushba.rasool@gmail.com

CITATION

Hu T, Rasool U, Chen H, et al. An application of TikTok flipped classroom in art education. Forum for Education Studies. 2025; 3(1): 2197. https://doi.org/10.59400/fes2197

ARTICLE INFO

Received: 26 December 2024
Accepted: 31 January 2025
Available online: 21 February 2025

Abstract: This study investigates the effectiveness of the TikTok flipped classroom teaching model in enhancing students' art design abilities, compared to the traditional teacher-centered teaching model. Using a quasi-experimental design, the research was conducted over a 16-week teaching intervention with two second-year art design classes from a university in Guizhou Province, China. A purposive sampling method was used to select the participants, with 41 students in the experimental group (TikTok flipped classroom model) and 41 students in the control group (traditional teaching model). Both groups had comparable average final exam scores in art-related courses from the spring semester of 2024. The study sought to address three research questions: Whether the traditional teaching model significantly enhances art design abilities, whether the TikTok flipped classroom model has a significant impact, and whether there is a significant difference in art design abilities between the control and experimental groups. Results are expected to provide valuable insights into innovative teaching methods, particularly the use of social media platforms like TikTok, in art education.

Keywords: TikTok; flipped classroom; art education; traditional methods

1. Introduction

Art and design are an applied discipline, and emphasizing practice and creativity is undoubtedly a key consideration in classroom teaching [1]. New media refers to a new form of media that integrates digital technology, network technology, communication technology, and other advanced scientific and information technologies. New media offers advantages such as diverse formats, strong interactivity, and wide-ranging channels [2], providing new dimensions and directions for teaching and learning in higher education art and design programs, and driving these programs into a new stage of development [3].

In today's era of advanced information technology, many students have learned to use new media technologies to broaden their horizons and enhance their aesthetic sense [4]. The traditional classroom and passive teaching methods are a blow to their learning interest [5]. The unique nature and teaching patterns of art and design programs in higher education require instructors to make full use of new media technologies to stay informed about the latest industry trends and design developments, while aligning with market dynamics and business needs, thereby creating an information-rich, flexible, and efficient learning environment. Therefore, teaching in art and design programs cannot remain confined to the single, face-to-face traditional teaching model [6]. Utilizing new media technologies to explore innovative

teaching models and methods is an inevitable trend in the educational reform of higher education art and design programs.

Currently, many universities offering art and design programs are gradually accelerating the development of digital teaching [7]. “Micro-courses”, “MOOCs”, “cloud classrooms”, and “flipped classrooms” have emerged in this era. “Micro-courses” and “MOOCs” utilize online teaching platforms to present dynamic digital media courses, representing a new, open model of online education. “Cloud classrooms” upload teaching resources, such as lesson plans and course materials, to online platforms via smartphone apps, guiding students to utilize fragmented time for self-directed learning and interaction with teachers. The “flipped classroom + online teaching model” integrates online and face-to-face teaching through digital media technologies, transforming the traditional model where students “comprehend and memorize” in class and “create, evaluate, analyze, and apply” after class into a structure where students “comprehend and memorize” before class and “create, evaluate, analyze, and apply” during class, thus optimizing and diversifying the teaching approach [8].

2. Literature review

2.1. TikTok

The TikTok short video app was launched in September 2016 as a social media platform primarily designed for presenting creative music short videos [9]. Its content covers music, dance, food, culture, travel, education, and more, with a focus on diverse creativity, playful exaggeration, and fast-paced rhythms. The operating model and presentation style of this new media align with the personalized expression and fashionable pursuits of teenagers, as well as the fast-paced, fragmented reading habits of modern society. The integration of Internet+, artificial intelligence, and education has become a trend, with the roles of smart classrooms, cloud platforms, and micro-courses becoming increasingly prominent in teaching [10]. This trend continually encourages teachers to innovate in using art and design teaching media, and TikTok short videos provide diverse options to assist in classroom teaching. Chinese art and design students are lively, curious, expressive, and bold, showing strong curiosity toward new media, new trends, and new elements [11]. Teachers can cleverly incorporate TikTok short videos into the classroom, fully exploring their educational value around the key and difficult points in art and design learning, thus enhancing the important role of TikTok in assisting art and design classroom instruction.

Edutainment integrates educational content into entertaining activities, allowing students to learn through entertainment and enjoy the learning process, making it one of the teaching methods most favored by students [12]. Based on lesson planning, teachers can select and optimize TikTok short videos according to the key teaching points, using them effectively in the classroom. By organizing and presenting key knowledge points in art and design, teachers can incorporate humorous, meaningful, and visually engaging explanations [13]. Ultimately, this dynamic and diverse presentation enhances art and design lectures, stimulating students’ strong interest in learning the subject.

2.2. Advantages of the TikTok flipped classroom model

In the era of new media, the "TikTok flipped classroom" in higher education art and design responds to the new demands of national strategic development and the emerging trends in global higher education. Its advantages, such as flexibility, wide reach, interactivity, and innovation, provide greater possibilities for educational reform in universities.

The traditional step-by-step teaching method struggles to reflect the innovative mindset and practical abilities required in art and design programs [14]. The TikTok flipped classroom model, with its focus on the depth and intensity of practical learning objectives, encourages students to "step out of the campus" and gain knowledge and experience through practice, positioning them as the main drivers of their learning. The combination of online and face-to-face teaching methods highlights students' central role in the learning process. This approach helps address the challenge faced by students with weak self-directed learning skills, who might struggle with the solely online learning format, thus achieving the desired educational outcomes.

Although the traditional teaching model has incorporated various multimedia technologies, it has merely shifted from the previous "whiteboard" to the current "screen projection", still retaining the "lecture-based" approach that fails to stimulate students' awareness of self-directed learning. In contrast, the TikTok flipped classroom model integrates teaching methods such as audio, video, text, graphics, and animation, providing students with a completely new experience. This model, through its flipped approach, encourages students to use online information and multimedia tools to create learning plans, autonomously manage their study time, and explore new knowledge [15].

In traditional online teaching, teachers simply upload collected or created teaching materials onto an online platform, and the interaction of knowledge is presented in an asymmetrical, one-way manner [16]. Teachers are unable to promptly receive and address feedback from students, and the time and scope for student-teacher interaction are insufficient, making it difficult to attend to the needs of every learner. In contrast, the TikTok flipped classroom model, utilizing platforms like QQ, WeChat, or designated teaching platforms, allows for constant monitoring of students' learning progress, overcoming the limitations of time and space. It facilitates real-time interaction and communication both online and offline, enabling timely assessment and feedback on students' learning outcomes. The channels for acquiring knowledge and communicating between teachers and students are more convenient and extensive, significantly improving learning efficiency.

2.3. Application of TikTok in education

TikTok has been applied across various disciplines with positive results. In the field of language teaching, several studies have highlighted the effectiveness of TikTok-based flipped classrooms in enhancing students' language skills, particularly in speaking, writing, pronunciation, and vocabulary acquisition. Damayanti et al. [17] and Muhammad [18] demonstrated that TikTok-based teaching outperforms traditional methods in improving English speaking skills, with students in the experimental groups showing significant improvements in fluency, pronunciation, and

vocabulary. The interactive and multimodal features of TikTok, such as videos, subtitles, and background music, facilitated faster vocabulary acquisition and pronunciation accuracy. Additionally, TikTok's ability to foster student autonomy, creativity, and engagement was emphasized in various studies, including those by Hartini et al. [19] and Safila [20], which found improvements in grammar, fluency, and overall language application.

Further studies, such as Syafaah [21] and Novianti [22], also demonstrated TikTok's positive impact on writing skills and vocabulary retention. TikTok-based flipped classrooms provided a more engaging and interactive environment, leading to better performance, especially for lower-performing students. In the context of professional education, Gao et al. [23] highlighted TikTok's ability to boost motivation and speaking abilities, underscoring its role in creating authentic language practice opportunities. These studies suggest that TikTok-based flipped classrooms offer a dynamic and effective alternative to traditional teaching methods, promoting enhanced language learning outcomes and student engagement.

In the field of subject-specific education, studies by Ardiana and Ananda [24] and Maulana et al. [25] further demonstrate the advantages of TikTok-based flipped classrooms in enhancing student engagement and learning outcomes across different subjects. Ardiana and Ananda [24] found that TikTok improved students' learning interest and classroom interaction in sociology education, with the experimental group outperforming the control group in motivation and understanding. Similarly, Maulana et al. [25] showed that TikTok-based flipped classrooms were more effective in helping students understand and retain mathematical concepts compared to traditional teaching methods, with the experimental group achieving significantly higher N-Gain scores. TikTok's use of multimedia features, such as subtitles and background music, facilitated deeper comprehension of complex content in both studies.

In the field of professional education, Poza-Méndez et al. [26] found that TikTok-based teaching significantly improved theoretical knowledge, practical skills, and student satisfaction in nursing education, with students showing substantial gains in both knowledge and task completion. Haninuna et al. [27] reported similar findings in health education, where TikTok-based flipped classrooms outperformed traditional methods in knowledge acquisition and attitude improvement, particularly among adolescents. Additionally, Ding et al. [28] observed that TikTok short-video teaching improved academic performance in a business statistics course, especially for students with strong mathematical abilities, highlighting the platform's potential for engaging students in specialized subjects. These studies underscore TikTok's multimodal and engaging teaching approach, which effectively enhances learning across diverse disciplines.

In the field of arts education, several studies across different artistic disciplines have demonstrated the effectiveness of TikTok and similar short video platforms in enhancing student engagement and skill acquisition. Zea and Jung [29] found that platforms like TikTok and Bilibili significantly outperformed traditional methods in teaching drawing, boosting learning interest and practical abilities. In music education, Ng et al. [30] showed that combining flipped classrooms with music applications led to substantial improvements in knowledge retention, practical skills, and student satisfaction, particularly for middle school students. Similarly, Niyomsuk and Polyiem

[31] found that TikTok-based teaching was highly effective in dance education, specifically in traditional Thai dance, where TikTok's interactive features like the "Duet" function helped students refine their skills and increase engagement. Across these studies, TikTok's multimedia and interactive features consistently enhanced learning outcomes, highlighting its potential in arts education.

Overall, research from various disciplines highlights the effectiveness of TikTok-based flipped classrooms in improving learning outcomes, boosting student motivation, and enhancing classroom interactivity. By offering multimodal learning experiences and authentic scenario simulations, TikTok addresses key limitations of traditional teaching methods, such as low engagement, limited interactivity, and lack of real-time feedback. These findings offer valuable insights for educational innovation. Future research should focus on the long-term impact of TikTok-based teaching on knowledge retention and its potential for personalized instruction, to support its wider implementation in diverse educational environments. Therefore, this study proposes the following research questions:

RQ 1: Can the traditional teaching model significantly enhance students' art design abilities?

RQ 2: Can the TikTok flipped classroom teaching model significantly enhance students' art design abilities?

RQ 3: Is there a significant difference in art design abilities between the control group and the experimental group?

3. Methodology

3.1. Research design

This study adopts a quasi-experimental design. The researcher aims to explore the effectiveness of the TikTok flipped classroom model in enhancing students' art design abilities. A quasi-experiment is a research method that lies between experimental and non-experimental research. Compared to true experimental designs, quasi-experimental designs do not allow for fully random assignment of participants, but they can still control variables through specific methods to minimize the influence of external factors on the results [32]. Students in both classes underwent a 16-week teaching intervention. In this study, the control group used the traditional teacher-centered teaching method, while the experimental group employed the TikTok flipped classroom model.

3.2. Participants

In this study, the researcher employed purposive sampling to select two second-year art design classes from a university in Guizhou Province, China. The experimental group consisted of 41 students, and the control group also had 41 students. These two classes were chosen because the average final exam scores in the art-related courses for both classes in the spring semester of 2024 were very similar. As a result, the students in these two classes had comparable professional levels, making them suitable as subjects for this study. Additionally, one art design teacher, Teacher A, participated in the study. Teacher A has over 10 years of experience

teaching art design courses and has undergone a three-month professional training program for TikTok flipped classroom teaching. This teacher is equipped with the necessary skills and expertise to conduct lessons using the TikTok flipped classroom model.

3.3. Intervention

3.3.1. Course preparation

When implementing the "TikTok flipped classroom" model in art design courses, teachers ensure that the course introduction, syllabus, schedule, lesson plans, and teaching materials are prepared in advance. These materials are uploaded and shared through platforms such as Weibo, WeChat, mobile apps, or other designated teaching platforms. Recording the pre-class teaching videos is one of the most crucial steps. Whether creating MOOCs or micro-lectures, significant time and effort are devoted to selecting topics, preparing recording materials, filming the teaching process, editing the videos, designing supporting exercises, and providing related online resources.

3.3.2. Pre-class knowledge delivery

The "TikTok flipped classroom" model requires teachers to upload the instructional videos and study guides to a teaching platform before the class. Students are then responsible for planning their time to watch the videos and learn the content, while also using the study guides to search for and read relevant websites. Pre-class assignments are divided into individual and group tasks. After discussing and collaborating, students form study groups to complete these assignments in a cooperative manner. If students encounter difficulties in understanding the content of the videos or face challenges while completing the assignments, they can engage in "cloud classroom" style interaction with the teacher through the teaching platform to resolve any confusion in real-time. Teachers design online questionnaires based on key points from the instructional videos and post them on the platform to assess students' pre-class learning progress. Students can also use these questionnaires to self-assess their understanding of the material.

3.3.3. Knowledge internalization during class

The concept of "flipping" refers to the completion of knowledge transmission before class, followed by the internalization of that knowledge during the class. Teachers assess students' pre-class self-learning through questioning and case analysis related to the knowledge points covered in the instructional videos. In class, students engage in discussions, share insights, deepen their understanding, and present their work in the form of group PPTs. There is peer evaluation, questioning, and problem-solving between groups and within groups, allowing students to take an active role in the classroom. The teacher and students interact through face-to-face communication combined with multimedia tools, such as using mobile apps for attendance, discussing issues, and providing feedback on assignments. Based on the implementation of the lesson, the teacher corrects any misconceptions and summarizes the course, effectively helping students internalize the knowledge.

3.3.4. Post-class knowledge expansion

After receiving feedback on their assignments during class, students promptly make adjustments and upload the revised work to the online platform. The teacher grades the assignments on the platform and posts an online after-class evaluation questionnaire to assess student satisfaction and learning outcomes, allowing for timely improvements in subsequent lessons. Participating in practical projects and professional competitions is one of the best ways to test and expand course knowledge and skills. After class, the teacher posts relevant school-enterprise collaboration projects and professional competition opportunities on the online platform, organizing and guiding students to form teams and participate. Students work together to discuss and refine their solutions, further exploring and expanding their knowledge. **Table 1** provides a detailed description of the characteristics of the TikTok flipped classroom teaching model.

Table 1. TikTok flipped classroom teaching model.

Teaching Phase	Teacher's Teaching Arrangements	Student's Teaching Arrangements
Pre-Class	Publish learning tasks on the teaching platform, online communication: 1) MOOCs or micro-course resources 2) Other online learning resources 3) Pre-class learning questionnaire 4) Group assignments and individual assignments 5) Q&A and communication on the platform	Self-schedule time for learning, online communication: 1) Self-study MOOCs or micro-courses 2) Expand learning with other online resources 3) Complete the pre-class learning questionnaire 4) Complete individual assignments and collaborate on group assignments 5) Ask questions and communicate on the platform
In-Class	Organize the flipped classroom: 1) Publish attendance via mobile app 2) Provide supplementary explanations and answer questions 3) Assignment guidance, course summary	Complete attendance and assignment reporting and interaction: 1) Complete attendance via mobile app 2) Group report on assignments and interactive feedback 3) Correct understanding, ask questions, and engage in discussions
After-Class	After-class guidance: 1) Publish online course evaluation survey 2) Evaluate assignments and grade on the platform 3) Publish practical projects and provide guidance	After-class practice: 1) Complete the online course evaluation survey 2) Revise and improve assignments and upload them to the platform 3) Complete project practice tasks

3.4. Data collection and analysis

The data for this study were collected through pre-tests and post-tests. Students in both the control group and the experimental group completed a pre-test before the teaching intervention, and a post-test was conducted after the 16-week teaching intervention. The researcher used SPSS 27 for data analysis. The specific analytical methods employed included descriptive statistical analysis, paired-sample t-tests, and ANCOVA (Analysis of Covariance).

4. Findings

4.1. RQ 1: Can the traditional teaching model significantly enhance students' art design abilities?

Tables 2 and **3** show the results of the paired sample t-test. The study found that the pre-test score of students in the control group was 61, and their post-test score was

62, an increase of 1 point, with a *t*-value of −1.8 and a *p*-value of 0.22. The results indicate that there was no significant difference in the art design abilities of students in the control group between the pre-test and post-test. Therefore, the traditional teaching model does not significantly improve students' art design abilities.

Table 2. Paired samples statistics of pretest and posttest of control class.

		Mean	N	Std. Deviation	Std. Error Mean
Design Ability	Pretest	61	41	1.01	0.18
	Posttest	62	41	1.11	0.23

Table 3. Paired samples statistics of pretest and posttest of control class.

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	*t*	df	Sig. (2-tailed)
Design Ability	Pretest-Posttest	−1.00	1.15	0.29	−8.37	−7.23	−1.8	40	0.22

4.2. RQ 2: Can the TikTok flipped classroom teaching model significantly enhance students' art design abilities?

Tables 4 and **5** present the results of the paired sample *t*-test. The findings show that the pre-test score of students in the experimental group was 63, while the post-test score was 78, indicating an improvement of 15 points. The *t*-value was −18, and the *p*-value was 0.00. These results suggest a significant difference between the pre-test and post-test scores of the experimental group students, demonstrating that the TikTok-based flipped classroom teaching model can significantly enhance students' art design abilities.

Table 4. Paired samples statistics of pretest and posttest of experimental class.

		Mean	N	Std. Deviation	Std. Error Mean
Design Ability	Pretest	63	41	1.39	0.28
	Posttest	78	41	1.77	0.24

Table 5. Paired samples statistics of pretest and posttest of experimental class.

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	*t*	df	Sig. (2-tailed)
Design Ability	Pretest-Posttest	−15.00	2.15	0.33	−15.37	−13.41	−18	40	0.00

4.3. RQ 3: Is there a significant difference in art design abilities between the control group and the experimental group?

The researcher used ANCOVA in SPSS 27 to analyze the data and address RQ3. **Table 6** presents the post-test scores for art design abilities in both the control group and the experimental group. The post-test score for the control group was 62, with a standard deviation of 1.79, while the post-test score for the experimental group was 78, with a standard deviation of 1.88.

Table 6. Post-test score of design ability of control and experimental class.

Group	Mean	Std. Deviation	N
Control class	62	1.79	41
Experimental class	78	1.88	41
Total	73.66	3.25	82

Table 7 presents the results of an ANCOVA used to examine the effects of pre-test scores and group membership on post-test scores. The overall model demonstrates high explanatory power, with an R^2 of 0.821 (adjusted R^2 = 0.820), indicating that group membership and pre-test scores account for 82.1% of the variance in the dependent variable, reflecting an excellent fit. The overall effect of the adjusted model is significant (F = 289.302, $p < 0.001$) and has a strong impact (Partial Eta Squared = 0.789). The intercept is significant (F = 44.559, $p < 0.001$), indicating a significant overall mean for students' post-test design ability scores.

Regarding specific effects, the covariate pre-test total score significantly influences post-test scores (F = 7.266, $p < 0.001$), though its impact is relatively small, explaining only 4.8% of the variance in the dependent variable. In contrast, the independent variable group has an extremely significant effect on the dependent variable (F = 520.551, $p < 0.001$), with a very strong impact (Partial Eta Squared = 0.812), explaining 81.2% of the variance in the dependent variable. Additionally, the mean square for the error term is 2.778, with a total sum of squares of 322.534, suggesting that the unexplained variance in the data is minimal.

The independent variable group is the primary factor influencing the dependent variable, while the covariate pre_total also plays a supportive role. Overall, the model demonstrates an excellent fit, and both the independent and covariate variables effectively explain the variation in the dependent variable. Therefore, the ANCOVA results indicate a significant difference in the post-test art design ability scores between the control and experimental groups, with the TikTok flipped classroom significantly improving students' art design abilities.

Table 7. Results of ANCOVA.

Source	Type Ⅲ Sum of Squares	df	Mean Square	*F*	Sig.	Partial Eta Squared
Corrected Model	1663.532[a]	2	947.699	289.302	0.000	0.789
Intercept	183.878	1	172.287	44.559	0.000	0.321
pre_total	21.602	1	21.602	7.266	0.000	0.048
group	1750.431	1	1750.431	520.551	0.000	0.812
Error	322.534	99	2.778			
Total	466913.450	82				
Corrected Total	1985.555	101				

Note. a. R Squared = 0.821 (Adjusted R Squared = 0.820).

5. Discussion

This study found that traditional teaching methods do not significantly improve students' design abilities, whereas the TikTok flipped classroom model significantly

enhances students' design abilities. This highlights the effectiveness of the TikTok flipped classroom. This finding is consistent with the research of Adnan et al. [33]; Draganić et al. [34]; Escamilla-Fajardo et al. [35]; Muhammad [18]; Gao et al. [23]; Novianti [22]; and Poza-Méndez et al. [26]. Therefore, Chinese art courses should strongly advocate for the adoption of the TikTok flipped classroom teaching model.

Implementing the TikTok flipped classroom model requires the use of advanced new media technologies to access cutting-edge information and knowledge [36], creating an open new media environment that provides students with the best possible learning conditions. It is essential to mobilize various media resources to stimulate students' initiative and motivation. Only when new media technologies are organically integrated with higher education art and design teaching can the advantages of the "TikTok flipped classroom" be fully realized.

The teaching of art and design programs in higher education must align with the development of the times, transform traditional teaching concepts, and continuously innovate teaching methods in order to cultivate applied art professionals who meet societal demands. In the era of new media, the knowledge system of art design is evolving rapidly, necessitating the full utilization of modern multimedia technologies to acquire cutting-edge knowledge and present course content in diverse ways [37]. The "TikTok flipped classroom" is an innovative teaching model that can facilitate the organic integration of digital media technology with art and design education. Higher education art and design programs should further strengthen campus network infrastructure, establish high-quality interactive teaching platforms [38], and use digital and network technologies to transform the traditional "top-down" knowledge delivery method. This will fully leverage the advantages of new teaching models in art and design education.

Providing pre-class instructional videos is a prerequisite for the "TikTok flipped classroom" model. It requires that art and design teachers in higher education become familiar with and proficient in various video editing software to create high-quality pre-class instructional videos, which can then be uploaded to a platform for sharing between teachers and students. Large-scale open online courses, like MOOCs, necessitate professional production teams for design and creation. In contrast, micro-courses involve recording 5 to 10-min instructional videos focused on a specific concept or teaching segment. These videos are concise, manageable, and easier to operate, making them highly promotable. Teachers can create such videos using live-action filming with a camera or by recording PowerPoint presentations with screen recording software, adding voiceover explanations in post-production. A reference for this approach is Khan Academy, which uses screen recording software combined with drawing tools to demonstrate operations. Art and design teachers can fully leverage their artistic skills in the creation of instructional videos, making course materials more aesthetically appealing and engaging. For example, they could create microfilms to demonstrate artistic creation processes and techniques, or use Flash animations to present teaching content.

Strengthening the integration of new media with the "TikTok flipped classroom" and exploring the various functions of new media is an effective way for art and design students to achieve autonomous learning. Various media such as the internet, Weibo, WeChat, and others provide abundant information and resources. Art and design

education can fully leverage these online resources to deliver cutting-edge professional knowledge to students [39]. Currently, many internet companies have launched educational resource platforms, such as China's MOOCs, NetEase Cloud Classroom, Sina Elite Open Courses, World University Town, YUKe Classroom, and iCourse. Higher education art and design programs can make full use of these educational resource platforms, providing learners with excellent learning conditions and spaces [40]. By refining, visualizing, animating, and contextualizing key concepts, media can create learning environments rich in light, color, shape, and sound, allowing students to browse and learn in real-time within a diversified, information-driven, and digital learning space. Teachers can incorporate short video resources from various channels into TikTok for students to watch and learn from.

To produce high-quality TikTok videos in art and design classrooms, teachers need to ensure both the quality and clarity of the videos [41]. This involves selecting high-quality filming equipment and performing appropriate post-production editing to enhance video clarity and texture. To make short videos popular, innovative ideas, excellent quality, and meticulous production are key. Teachers should choose TikTok videos that are representative, engaging, and easy to understand, incorporating local Guizhou characteristics as supplementary teaching materials, while constructing a clear and well-structured teaching framework.

Teachers should also pay attention to analyzing international students' knowledge backgrounds, learning patterns, and interests, optimizing teaching methods, and efficiently integrating educational resources. When selecting short videos, it is important to emphasize the cultural connotations and values of art and design, helping students better understand the core values of artistic culture [9]. Teachers should regularly update video content and adjust and improve it based on student feedback to enhance the timeliness and relevance of the teaching material.

6. Limitations

Although this study provides valuable insights into the impact of the TikTok flipped classroom teaching method on academic design abilities, there are several limitations that warrant further exploration in future research. First, while this study examines the factors influencing teachers in implementing the TikTok flipped classroom model, it does not sufficiently address the extensive preparation required by teachers before implementation. For educators who are already overwhelmed by their daily teaching responsibilities, this "preparation" includes not only the creation of video materials—a substantial task in itself—but also the need for teachers to acquire relevant technical skills, and invest considerable time, energy, and resources. Furthermore, teachers must continually update their professional knowledge to keep pace with the rapid and volatile changes in online culture, which adds significant pressure to their workload.

Therefore, future research could explore the volume of pre-implementation preparation required by teachers and its impact on the effectiveness of the teaching model, especially in the context of online or blended learning environments. Further studies should focus on how to balance teachers' workload and investigate feasible support systems that could alleviate the additional burdens associated with

implementing new technologies or methods. Research in this area will help ensure that the implementation of such teaching methods does not overburden teachers, thus enhancing both teaching outcomes and teacher engagement.

Additionally, the teaching experiment in this study lasted only 16 weeks, and the participants were limited to 82 students from two classes. Future research could extend the duration of the teaching experiment and increase the sample size to better assess the impact of the TikTok flipped classroom teaching method on academic design abilities.

7. Conclusion

In the era of new media, emerging technologies such as information technology and the internet have had a widespread and profound impact on various fields within art and design education [42]. The development of new media provides us with vast learning resources, diverse learning methods, and efficient management approaches, which have an immeasurable influence on the development of professional programs in higher education. Art and design programs in universities must make full use of rapidly advancing new media technologies, continuously innovating in areas such as professional development concepts, management methods, digital resources, and teaching strategies. By deeply integrating new media with the construction of art and design programs, universities can cultivate innovative art and design talent capable of adapting to the demands of the new media era.

Author contributions: Conceptualization, TH and UR; methodology, HC; software, HC; validation, HS, HC and LW; formal analysis, HC; investigation, TH; resources, TH; data curation, TH; writing—original draft preparation, TH; writing—review and editing, UR; visualization, HC; supervision, HS; project administration, UR; funding acquisition, LW. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

References

1. Starko AJ. Creativity in the classroom: Schools of curious delight. Routledge; 2021.2. Alzubi AM. Impact of new digital media on conventional media and visual communication in Jordan. Journal of Engineering, Technology, and Applied Science. 2022; 4(3): 105–113.
2. Gong Y. Application of virtual reality teaching method and artificial intelligence technology in digital media art creation. Ecological Informatics. 2021; 63: 101304.
3. Rahmatullah AS, Mulyasa E, Syahrani S, et al. Digital era 4.0: The contribution to education and student psychology. Linguistics and Culture Review. 2022; 6(S3): 89–107.
4. Wassinger CA, Owens B, Boynewicz K, Williams DA. Flipped classroom versus traditional teaching methods within musculoskeletal physical therapy: A case report. Physiotherapy Theory and Practice. 2022; 38(13): 3169–3179.
5. Sabol FR. Art education during the COVID-19 pandemic: The journey across a changing landscape. Arts Education Policy Review. 2022; 123(3): 127–134.
6. Pregowska A, Masztalerz K, Garlińska M, Osial M. A worldwide journey through distance education—from the post office to virtual, augmented and mixed realities, and education during the COVID-19 pandemic. Education Sciences. 2021; 11(3): 118.

7. Binoy S. Transforming education: Enhancing student performance and satisfaction through the flipped classroom method. American Journal of Education and Technology. 2024; 3(1): 35–45.
8. Kaye DBV, Zeng J, Wikstrom P. TikTok: Creativity and culture in short video. John Wiley & Sons; 2022.
9. Xu J. Teaching and Learning in the Digital Era: Issues and Studies. World Scientific; 2024.
10. Wang P. The Future History of Contemporary Chinese Art. University of Minnesota Press; 2021.
11. Okada A, Sheehy K. Factors and recommendations to support students' enjoyment of online learning with fun: A mixed method study during COVID-19. Frontiers in education. 2020; 5: 584351.
12. Tian H. Optimization of hybrid multimedia art and design teaching mode in the era of big data. Scientific Programming. 2021; 1: 8266436.
13. Zhu W. Study of creative thinking in digital media art design education. Creative Education. 2020; 11(2): 77–85.
14. Kolber S. Ancient methods & modern memes: Using Socratic circles and TikTok within classes to democratise your teaching. Curriculum Perspectives. 2024; 1–12.
15. Cress T, Kalthoff H. Hybrid Imbalance: Collaborative Fabrication of Digital Teaching and Learning Material. Qualitative Sociology. 2023; 46(3): 403–428.
16. Damayanti W, Gusmuliana P, Edy S. The effect of using tiktok as an instructional media toward students' speaking skill (a quasi-experimental research at first grade of sman 6 k epahiang). [Bachelor's thesis]. Institut Agama Islam Negeri Curup; 2024.
17. Muhammad F. The Effect of Implementing TikTok Application with Project-Based Learning on Student's Speaking Skills (A Quasi-experimental of English Department students at UIN Fatmawati Sukarno Bengkulu in Academic Year 2021/2022). [PhD thesis]. Fatmawati Soekarno Bengkulu State Islamic University; 2022.
18. Hartini R, Novari AF, Munawaroh T. The Effect of Using TikTok Application towards Students' Speaking Skill at the Tenth Grade Students of SMKN 5 Pandeglang in Academic Year 2022/2023. Journal of English Education Studies. 2023; 6(2): 16–27.
19. Safila R. The Influence of Tiktok Videos in Increasing Students' Pronunciation Ability. Journal of English for Academic and Specific Purposes. 2023; 6(1): 10–19.
20. Syafaah L. Tiktok as Media: An Experimental Research of Students' Writing Skill at English Banat 2 Course [PhD thesis]. STKIP PGRI Bangkalan; 2023.
21. Novianti DA. The Effectiveness of Tiktok as a Media for Learning Vocabulary at MTsN 5 Kediri [PhD thesis]. IAIN Kediri; 2024.
22. Gao S, Tsai Y, Huang J, et al. TikTok for developing learning motivation and oral proficiency in MICE learners. Journal of Hospitality, Leisure, Sport & Tourism Education. 2023; 32: 100415.
23. Ardiana E, Ananda A. The Effect of Using the Tiktok Application as a Learning Media on the Activeness and Learning Outcomes of Class XI Social Sciences Students in Sociology Subjects at SMA N 1 Ampek Angkek. Langgam: International Journal of Social Science Education, Art and Culture. 2022; 1(2): 22–29.
24. Maulana MAR, Setialesmana D, Yulianto E. Effectiveness of TikTok-assisted Learning Supplement to Improve Students' Concept Understanding Ability and Learning Interest. Kreano, Jurnal Matematika Kreatif-Inovatif. 2024; 15(2): 375–394.
25. Poza-Méndez M, Fernández-Gutiérrez M, Marín-Paz AJ, et al. TikTok as a teaching and learning method for nursing students: A quasi-experimental study. Nurse Education Today. 2024; 141: 106328.
26. Haninuna GY, Nayoan CR, Bunga EZH. Effect of Tik-Tok and leaflet media in increasing adolescents' knowledge and attitude about reproductive health. Journal of Public Health for Tropical and Coastal Region. 2023; 6(1): 30–36.
27. Ding N, Xu X, Lewis E. Short instructional videos for the TikTok generation. Journal of education for business. 2023; 98(4): 175–185.
28. Zea Q, Jung H. Learning and sharing creative skills with short videos: A case study of user behavior in tiktok and bilibili. Int. Assoc. Soc. Des. Res. Conf. 2019.
29. Ng DT, Ng EH, Chu SK. Engaging students in creative music making with musical instrument application in an online flipped classroom. Education and information Technologies. 2022; 27(1): 45–64.
30. Niyomsuk S, Polyiem T. The Application of TikTok in Instructing Grade 7 Students' Thai Traditional Dancing Art. Journal of Educational Issues. 2022; 8(1): 480–490.
31. Maciejewski ML. Quasi-experimental design. Biostatistics & Epidemiology. 2020; 4(1): 38–47.

32. Adnan NI, Ramli S, Ismail IN. Investigating the usefulness of TikTok as an educational tool. International Journal of Practices in Teaching and Learning. 2021; 1(2): 1–5.
33. Draganić K, Marić M, Lukač D. An apliccation of TikTok in higher education. In: Proceedings of the E-business technologies conference; 15–17 June 2021; Belgrade, Serbia.
34. Escamilla-Fajardo P, Alguacil M, López-Carril S. Incorporating TikTok in higher education: Pedagogical perspectives from a corporal expression sport sciences course. Journal of Hospitality, Leisure, Sport & Tourism Education. 2021; 28: 100302.
35. Frith KH. Using Technology to Facilitate Learning in the Classroom. Elsevier; 2023. pp. 449.
36. Chee KN, Sanmugam M. Embracing Cutting-edge Technology in Modern Educational Settings. IGI Global; 2023.
37. Wawak S, Teixeira Domingues JP, Sampaio P. Quality 4.0 in higher education: Reinventing academic-industry-government collaboration during disruptive times. The TQM Journal. 2024; 36(6): 1569–1590.
38. Yang G, Wang W. Engaging social media in China: Platforms, publics, and production. MSU Press; 2021.
39. Castro R. Blended learning in higher education: Trends and capabilities. Education and information Technologies. 2019; 24(4): 2523–2546.
40. Chontos AA, Kenney JR. Examining the Impact of Instructor-Created Video Tutorials and Best Online Exemplar Teaching Practices for Successful Outcomes with Visual Arts Students. Journal of Instructional Research. 2024; 13: 81–96.
41. Haleem A, Javaid M, Qadri MA, Suman R. Understanding the role of digital technologies in education: A review. Sustainable Operations and Computers. 2022; 3: 275–285.
42. Bansal SK, kumar Sharma R, Jain RK, et al. Significance and Advancement of The Educational Technology: Holistic Development of Learners in The Digital Age. Educational Administration: Theory and Practice. 2024; 30(5): 6088–6095.aa