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TikTok flipped classroom method in folk art courses: an investigation of teachers and learners' perceptions

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Introduction: The flipped classroom method is considered to be one of the most effective strategies for implementing the necessary improvements in the field of education in the modern day. This pedagogical approach that has gained prominence in recent years, involves the reversal of standard education. This study explores the implementation of a TikTok-based flipped classroom method in a folk-art course, focusing on the perceptions and challenges faced by both students and teachers.

Methods: Using a qualitative approach, semi-structured interviews were conducted with students and teachers to gather in-depth insights. The data were analyzed through thematic analysis using NVivo 14 software, which allowed for efficient coding and the identification of emerging themes.

Results: The findings revealed that students had overwhelmingly positive perceptions of the TikTok flipped classroom method, highlighting four key themes: learning methods, pre-class materials, learning content, and interactivity. The study also examined the factors influencing academic performance and the challenges encountered by both students and teachers in this innovative teaching approach. Through these insights, the research contributes to a better understanding of how social media platforms like TikTok can enhance engagement and learning outcomes in creative courses.

KEYWORDS

flipped classroom, folk art, TikTok, perceptions, challenges

1 Introduction

Over the past decade, advancements in technology have significantly simplified various aspects of human life, particularly in the field of education (Pertuz et al., 2023). As technology continues to advance, the education sector gradually adopts more innovative teaching methods to cater to the needs of students and the requirements of modern education. Multiple research reports and studies highlight that digital technology is becoming increasingly popular in the development of teaching processes (Williamson, 2021; Garg et al., 2021).

In recent years, the emergence of new technologies has significantly impacted traditional teaching methods, prompting educators to accelerate educational reforms. Currently, folk art education seldom relies on technology, with teaching methods typically dependent on oral instruction and limited demonstrations. While this approach has its unique value, it lacks vividness and repeatability. With rapid technological advancements, other disciplines have widely adopted innovative teaching methods such as flipped classrooms, virtual reality (VR), augmented reality (AR), and social media, significantly

enhancing teaching effectiveness and student engagement. In contrast, the application of these technologies in folk art education remains insufficient, resulting in teaching methods and outcomes that fail to meet modern educational demands. The integration of technology into folk art education has become an inevitable trend. To improve teaching quality and enhance students' learning experiences, folk art courses must actively incorporate new technologies. For instance, utilizing social media platforms like TikTok, along with online resources and interactive teaching tools, can enrich the content of folk-art courses, making them more engaging and attractive. This modernized approach not only captures students' attention but also maintains higher levels of engagement during the learning process as compared to traditional methods (See [Figure 1](#)).

2 Methodology

The study employed qualitative approach through interviews with teachers and students. The aim was to gain a more comprehensive understanding of the factors affecting academic performance and the challenges faced with the TikTok flipped classroom approach. The interviews range from unstructured to semi-structured and fully structured interviews ([Moffatt, 2020](#)). This study employs a semi-structured interview method, commonly used in social and educational research due to its adaptability, allowing the incorporation of emerging ideas based on respondents' reactions ([Kulić and Croft, 2005](#)).

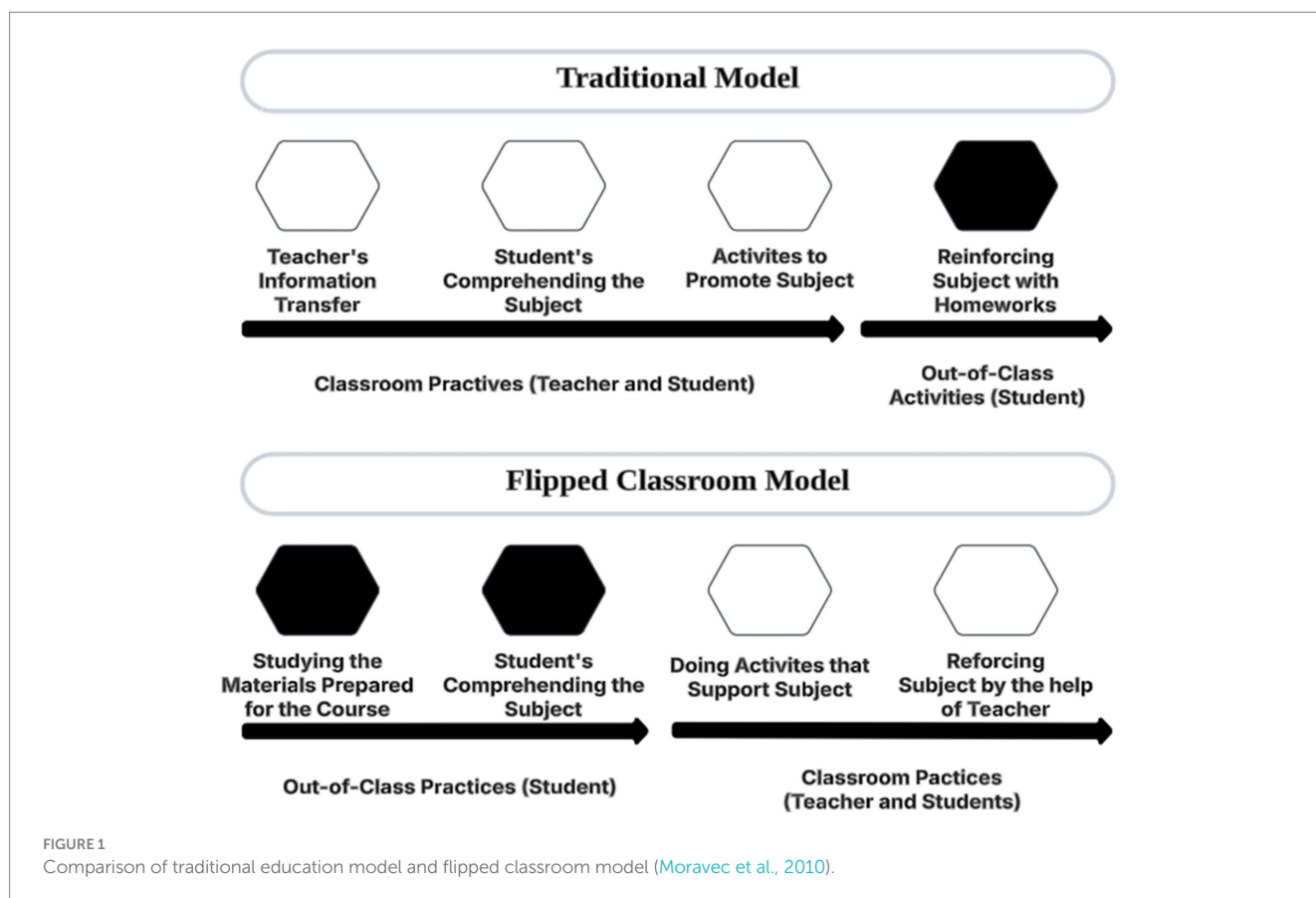
The researcher developed an interview guide to structure and direct the interview process. It includes a written list of questions and topics to be covered during the interview, with a flexible order of items ([Ryan and Bernard, 2000](#)). The interview guide was used for all semi-structured interviews conducted in the study. They correspond to the purposes of the interviews and support their objectives. The interviews were recorded and subsequently processed and interpreted during the data analysis phase. The interview guide includes the following sections:

In the initial stage, the researcher first introduced the basic information about the interview, familiarizing the respondents with the interview's objectives. The beginning of the interview included warm-up questions, followed by the main part of the interview, which covered topics such as cognition, factors affecting students' design abilities, and the challenges encountered. Finally, the interview concluded with closing questions.

1.1 Research questions

The study findings respond to four research questions.

1. What are students' perceptions of implementing TikTok flipped classroom method in folk art course?
2. What are teacher's perceptions of implementing TikTok flipped classroom method in folk art course?
3. What challenges do art students encounter in the implementing TikTok-based flipped classroom method in folk art course?
4. What challenges do teachers encounter in the implementing TikTok-based flipped classroom method in folk art course?



Given that the participants in this study are students and teachers from a college in China, whose native language is Chinese, it is crucial to provide the research instruments in Chinese. This approach is carefully designed to ensure the reliability and validity of the study. Using the participants' native language not only enhances the accessibility and comprehensibility of the materials but also minimizes language-related biases and errors, thereby improving the overall quality of the research.

2.1 Reliability of the research instrument

The qualitative component of this study ensures the reliability of interviews through inter-coder reliability. Inter-coder reliability measures the consistency between different coders as well as the consistency of a single coder over time. Annotating language data typically involves mutually exclusive categories without a specific order, and can be calculated using the kappa coefficient developed by [Cohen \(1960\)](#). The kappa coefficient measures the level of agreement between two coders while accounting for chance agreement, and is recommended by [Viera and Garrett \(2005\)](#) as superior to the simple percentage agreement method. The kappa value quantifies the degree of consistency, with [McHugh et al. \(2012\)](#) guidelines indicating that values between 0 to 0.2 represent slight agreement, 0.2 to 0.4 fair agreement, 0.4 to 0.6 moderate agreement, 0.6 to 0.8 substantial agreement, and 0.8 to 1.0 almost perfect agreement. Despite some limitations, as noted by [Dale and Oppenheim \(1981\)](#), the kappa coefficient is widely accepted and easy to calculate, making it advantageous.

In this study, in addition to the researcher, an experienced educator from another University was invited to collaborate as a coder. This expert played a crucial role in the qualitative analysis of interview records. To ensure the robustness of the research findings, the kappa coefficient test was systematically employed to evaluate the reliability of the coding by the researcher and the collaborative coding between the researcher and the designated coder. In this study, the kappa statistic was 0.706, falling within the range of 0.6 to 0.8. According to the standards provided by [Landis and Koch \(1977\)](#), this indicates a substantial level of agreement, thus validating the reliability of the coding process used in the research.

2.1.1 Student interview

The student interviews in this study constitute an important component, consisting of 13 questions. These interviews aim to investigate the factors that influence students' design abilities in folk art courses, their perceptions of the TikTok flipped classroom teaching method, and the challenges they encountered while practicing this method in the folk-art course. By conducting student interviews, the study aims to collect firsthand information from students, providing a deeper understanding of their views and experiences with the TikTok flipped classroom teaching method.

2.1.2 Teacher interview

To gain a deeper understanding of the teacher's perspectives, experiences, and challenges in using this teaching method and to investigate changes in teaching behavior after the intervention, individual teacher interviews were designed. The teacher interviews were conducted post-intervention, specifically involving the teacher who guided the experimental class (EC). The teacher interview

process is divided into five parts, consisting of 13 questions. The initial stage includes an introductory session to familiarize the respondent with the interview's objectives. This is followed by warm-up questions, then cognitive questions, with in-depth inquiries regarding "factors" and "challenges," and concluding with closing questions.

2.2 Pilot study

The purpose of the interviews was to determine whether the students could adequately understand the interview questions. However, the interview process did not proceed as smoothly as expected. The students experienced long pauses in their responses, which might have been due to their insufficient expression abilities, difficulty in summarizing, an excessive number of interview questions, and the lack of clear instructions provided by the researcher beforehand.

During the transcription and coding process, the researcher realized that additional information was needed to assess the students' verbal expressions. Therefore, the researcher decided to provide more detailed instructions and background information before the interviews, reduce the number of interview questions, and focus on core topics. This would help alleviate the students' burden and improve the efficiency of the interviews. The final version of the interview was reduced to 13 questions, with 5 questions on "cognition," 5 on "influencing factors," and 1 on "challenges." The remaining two questions were "warm-up questions" and "concluding questions."

Additionally, the researcher included follow-up inquiries and clarification steps during the transcription and coding process to ensure a deeper understanding and accurate recording of the students' responses. Through these improvements, the researcher hopes to more effectively collect and analyze student feedback, leading to a more precise evaluation of the teaching methods and learning outcomes.

2.3 Data analysis

The qualitative data analysis for this study employed thematic analysis to explore the perceptions of teachers and students regarding the TikTok-based flipped classroom teaching method, factors influencing academic success, and challenges associated with this method. The study utilized NVivo 14 software to code and analyze qualitative data. NVivo 14 was selected for its proficiency in handling various types of non-digital data, such as field notes, videos, recordings, Word documents, and Excel files, allowing for efficient organization and sorting of these data. Additionally, NVivo 14 helps identify relationships within the data, define emerging themes, and create an organized storage system for data files to facilitate efficient search and retrieval of materials.

The coding process involved dividing the data into smaller components, extracting overarching patterns from coded segments, examining and refining detected patterns, and ultimately selecting themes to comprehensively understand students' feelings and experiences ([Clarke and Braun, 2017](#)). The coding methods included open coding, axial coding, and selective coding. During the open coding phase, researcher systematically coded each line of text, assigning descriptive words. The axial coding phase identified relationships between codes and categories, exploring central categories and their relationships through data analysis ([Rasool et al.,](#)

2024). The selective coding phase involved identifying and refining emerging categories, ensuring a clear distinction between open and selective codes, and supplementing information with field notes to enhance the reliability and validity of interview data. In the final phase, researcher reported, analyzed, and interpreted the significance of the data, comparing it with information from existing literature. This comprehensive process ultimately led to conclusions and the formulation of recommendations.

3 Findings by research questions

The first research question of this study aimed to understand students' perceptions of the TikTok flipped classroom. The findings revealed that all students expressed positive perceptions of the TikTok flipped classroom teaching method. The results of the thematic analysis indicated that students' perceptions were categorized into four main themes: learning methods, pre-class materials, learning content, and interactivity.

3.1 Theme one: Learning style

The first theme regarding students' perceptions of the TikTok flipped classroom was the learning methods. Upon analysis, this theme was divided into three sub-themes: (1) repeated viewing, (2) individual needs, and (3) flexible learning methods. All students expressed a preference for the learning methods provided by the TikTok flipped classroom during the interviews. They believed that the TikTok flipped classroom supports repeated viewing, allows for learning according to individual needs, and is not restricted by time and place.

3.1.1 Repeated viewing

Firstly, many students mentioned that repeated viewing of preferred videos deepened their understanding of key concepts. For example, S1 stated that repeated viewing helped him mimic the techniques shown in the videos, enabling him to learn more folk-art techniques and creativity.

"I can watch videos of different craftsmen creating, learn various techniques and creativity, pause and re-watch at any time, mimic the techniques in the videos, and then combine them with my own ideas for creation." (S1)

In a digital learning environment, the ability to repeatedly view learning videos is crucial for students. S1 mentioned in the interview that this feature helps him mimic the techniques shown in the videos, learning more methods and creativity. Meanwhile, S2 pointed out that repeated viewing aids in deeply understanding design theories and techniques, especially when learning complex skills like paper-cutting. He can pause at points of confusion, replay multiple times, and gradually master each step of the complex patterns.

3.1.2 Individual needs

Five students mentioned in the interviews that they appreciated the TikTok flipped classroom approach because it caters to different learning needs. For example, S3 stated that the TikTok flipped

classroom meets the needs of students with different learning abilities by providing personalized teaching content, ultimately supporting personalized learning.

"The TikTok flipped classroom supports personalized learning by providing individualized teaching content based on students' different needs and learning abilities. For students who progress quickly, more challenging extension videos can be provided; for those who need more help, review videos of basic knowledge can be recommended." (S3)

Student S3 pointed out that the TikTok flipped classroom supports personalized learning by offering teaching content tailored to different needs and learning abilities. For students who progress quickly, more challenging extension videos are available, while students needing more assistance can access review videos of basic knowledge. This arrangement ensures that every student can find suitable learning materials, effectively mastering the knowledge. Similarly, S5 mentioned that the TikTok flipped classroom allows students to choose the order and frequency of video viewing according to their personal needs, and achieve interaction and communication through comments and sharing their work.

3.1.3 Flexible learning methods

All the students in the interviews expressed that the learning method using TikTok is very convenient, allowing them to study anytime and anywhere with their mobile phones. For example, S5 mentioned that the flexibility of TikTok enables him to learn at any time and pace, making better use of fragmented time.

S6 stated that the TikTok flipped classroom breaks the time and space constraints of traditional classrooms.

"I think the TikTok flipped classroom is an efficient and flexible educational model that breaks the time and space constraints of traditional classrooms. Students can study at any time and place. For example, students can watch educational videos at home, in a café, or even on their commute, greatly facilitating their learning experience." (S6)

Student S6 also expressed that he likes TikTok because it is a student-centered learning model. The flipped classroom model shifts the in-class lecture component to pre-class, allowing students to choose their learning pace according to their own schedule and location. This flexible learning method greatly enhances motivation.

3.2 Theme two: Pre-class materials

The second theme regarding students' perceptions of the TikTok flipped classroom is pre-class materials. Upon analysis, this theme was divided into two sub-themes: (1) Abundant Learning Resources, and (2) Intuitive Step-by-Step Demonstrations.

3.2.1 Abundant learning resources

S2 mentioned that through watching TikTok, he could access a wealth of high-quality learning resources, which inspired his creativity.

“Through the TikTok platform, I can access a large number of high-quality folk art learning resources, including the works, creation processes, and technique explanations of various experts and artists. ... These resources enriched my learning content, broadened my horizons, and improved my professional level.” (S2)

3.2.2 Intuitive step-by-step demonstrations

S5 indicated that the TikTok flipped classroom offers more intuitive step-by-step demonstrations compared to traditional classrooms, enabling students to better understand and master traditional art's color-matching techniques.

“I have access to a wide variety of folk-art resources, including teaching videos from different folk-art instructors, expert lectures, and real-life demonstrations. In contrast, traditional classrooms rely more on face-to-face interactions and limited teaching resources, where students can only access content provided by the instructor.” (S5)

The thematic analysis shows that in the field of education, the TikTok flipped classroom, with its unique advantages, especially in terms of abundant learning resources and intuitive step-by-step demonstrations, has significantly improved students' learning efficiency and quality. Through TikTok, students can access folk art resources from experts in various fields, including displays of works and technique explanations, which not only broaden their horizons but also make complex concepts easier to understand. The video tutorials on the TikTok platform, combining audio and visual explanations, make techniques such as color-matching in traditional art clearer and more intuitive. This teaching method caters to the learning preferences of modern students, effectively enhancing the utilization of educational resources and personalizing the learning experience. In summary, the TikTok flipped classroom, by offering diverse teaching content and intuitive operational demonstrations, enriches learning methods and promotes autonomous learning, showcasing the innovative potential of modern educational technology.

3.3 Theme three: Learning content

The third theme regarding students' perceptions of the TikTok flipped classroom is the learning content. Upon analysis, this theme was divided into three sub-themes: (1) High Creativity, (2) Engaging and Fun, and (3) Concise and Clear.

3.3.1 High creativity

S1 mentioned that the TikTok flipped classroom is creative, allowing him to open his mind and engage in free expression and creation.

“I have a strong interest in the creative videos because they always bring me new inspiration and ideas. In traditional classrooms, when learning traditional handicrafts, we often must follow the teacher's steps, lacking space for free creation. However, in the TikTok flipped classroom, I can watch different craftsmen's creation videos in advance, learn various techniques and creative ideas, and then combine them with my own thoughts to freely express and create.” (S1)

3.3.2 Engaging and fun

The results of the student interviews showed that students enjoyed the TikTok flipped classroom because the content is engaging and fun. For example, S2 mentioned that by finding engaging teacher videos for self-directed learning, he became more passionate about the folk-art course.

“Regarding the folk-art course, I can search for videos from teachers who explain in an engaging and interesting manner, and skip the ones that are boring. The selected videos are generally vivid and easy to absorb, allowing me to practice at my own pace and interest. This self-directed learning approach has made me love the course even more.” (S2)

In this interview, six students expressed their fondness for the engaging and fun learning method of the TikTok flipped classroom. S2, through self-directed learning by finding engaging teacher videos, increased his interest in the course, highlighting the effectiveness of this model in stimulating interest and providing flexible learning methods.

3.3.3 Concise and clear

In the student interviews, students also expressed their preference for the TikTok flipped classroom content due to the concise and clear nature of TikTok videos. The short and precise videos enhance learning efficiency and make the process more enjoyable.

“The greatest advantage of the TikTok flipped classroom is the concise and clear nature of the video content, which is short and to the point. Compared to the lengthy explanations in traditional classrooms, TikTok videos provide refined content and focused explanations, allowing students to grasp core knowledge points in a short time. This method not only improves learning efficiency but also makes the learning process more interesting and relaxed.” (S5).

S5's interview highlights that the primary advantage of the TikTok flipped classroom lies in its concise and clear video content. Unlike traditional classrooms, TikTok can quickly highlight the teaching points, helping students to grasp key knowledge quickly and avoiding lengthy explanations. As a new teaching model, the TikTok flipped classroom has gained widespread popularity due to its efficient learning methods. With the advancement of technology and the enrichment of teaching resources, this model is expected to play an increasingly important role in the future of education.

3.4 Theme four: Interactivity

The fourth theme regarding students' perceptions of the TikTok flipped classroom is interactivity. Upon analysis, this theme was divided into two sub-themes: (1) Comments and Interaction, and (2) Assignment Feedback Mechanism.

3.4.1 Comments and interaction

S5 stated that the TikTok flipped classroom enhances the learning experience through various interactive features and a blended online-offline model.

“The TikTok flipped classroom is highly interactive. Through video comments, likes, shares, private messages, and live Q&A sessions, I can interact with teachers and classmates anytime, enhancing the learning experience. Currently, our class adopts a blended online-offline model, incorporating the advantages of face-to-face discussions in traditional classrooms.” (S5)

This study found that the TikTok flipped classroom significantly improves learning effectiveness by enhancing interactivity and providing practical opportunities. S1 emphasized that online discussions, comments, and showcasing works continuously improve his skills. He can gain instant feedback and suggestions by watching instructional videos and participating in online discussions. S5 noted that the blended online-offline model of the TikTok flipped classroom enhances the learning experience.

3.4.2 Assignment feedback mechanism

Students in the interviews expressed that they liked the TikTok flipped classroom because they could receive timely feedback on their assignments. S6 mentioned that the TikTok flipped classroom, with its robust social features, facilitated the sharing and feedback of assignments among students.

“The TikTok flipped classroom leverages the platform’s social features to enhance interaction between teachers and students as well as among students themselves. For instance, before and after class, students can leave comments under videos to exchange learning experiences with teachers and classmates and share assignments, creating a positive learning environment. Students can upload their assignments and receive feedback and suggestions from other learners, promoting mutual progress. The face-to-face teaching during class time allows for ample classroom interaction and in-depth discussions between teachers and students.” (S6)

The purpose of the second research question is to understand teachers’ perceptions of TikTok flipped classrooms. The study found that teachers expressed positive perceptions of the TikTok flipped classroom teaching method. Thematic analysis results indicated that teachers’ perceptions of TikTok flipped classrooms were mainly categorized into several themes: engaging and interesting, fragmented learning, interactivity, and personalized learning.

3.5 Theme one: Lively and interesting

The first theme regarding teachers’ perceptions of TikTok flipped classrooms is engaging and interesting. Upon analysis, this theme was divided into two sub-themes: (1) interesting learning methods, and (2) interesting learning content. Teachers indicated in the interviews that both the learning methods and content of TikTok flipped classrooms were engaging and interesting.

3.5.1 Interesting learning methods

Firstly, T1 stated that the learning methods of TikTok flipped classrooms are engaging and interesting.

“TikTok, with its scenario-based, visual, and highly entertaining short educational videos, can stimulate students’ enthusiasm and

interest. Through short videos, which integrate text, images, sound, and visuals, learners can engage in a comprehensive learning experience that combines visual and auditory elements. The teaching method of TikTok videos is relaxed and enjoyable, breaking the monotony of conventional educational videos and making the learning process more pleasant and enjoyable, thereby achieving better learning outcomes.” (T1)

3.5.2 Interesting learning content

T1 stated that the learning content of TikTok flipped classrooms is also engaging and interesting.

“TikTok captures students’ attention through its creative short video content. These educational videos often include humorous explanations, real-life case analyses, and vivid experiment demonstrations, allowing students to acquire knowledge in a relaxed and enjoyable atmosphere. The educational content is designed to be precise and flexible, broadening the scope of classroom teaching, expanding students’ horizons, and stimulating their thinking.” (T1)

The study indicates that teachers believe the engaging and interesting teaching methods and content of TikTok flipped classrooms can effectively stimulate students’ enthusiasm for learning. T1 noted that the scenario-based and visualized short video teaching model breaks down knowledge points and integrates images, text, sound, and video to fully engage students’ visual and auditory senses. This intuitive, vivid, and entertaining teaching approach not only creates a relaxed and enjoyable classroom atmosphere but also captures students’ attention, helping them better understand and master the knowledge. Furthermore, T1 emphasized that the content of TikTok flipped classrooms is not only creative and targeted but also increases the breadth and flexibility of teaching, broadening students’ horizons and stimulating their thinking. In summary, the vivid teaching methods and content of TikTok flipped classrooms successfully enhance teaching effectiveness, making the learning process both enjoyable and efficient.

3.6 Theme two: Fragmented learning

The second theme regarding teachers’ perceptions of TikTok flipped classrooms is fragmented learning. This theme is divided into two sub-themes: (1) Reducing mental fatigue, and (2) Facilitating understanding and review.

3.6.1 Reducing mental fatigue

Firstly, T1 stated that the fragmented learning method is less likely to cause mental fatigue.

“In an era of rapid information dissemination and consumption, students tend to prefer concise and to-the-point learning resources like those found on TikTok. The TikTok platform abandons lengthy introductions and summaries, presenting content in a straightforward and concise manner. ... With its advantages of being “micro, precise, and short,” users can watch videos anytime and anywhere without experiencing mental fatigue due to the short duration. Generally, the difficulty of learning increases with the

length of the video, ultimately making it challenging to achieve the desired teaching outcomes.” (T1)

The interview results indicate that teachers believe the TikTok flipped classroom model has significant advantages in preventing mental fatigue, making it particularly suitable for the learning needs of modern students. TikTok’s educational videos are concise, usually under 3 min, and some are even less than 1 min long. This effectively avoids the distraction and mental fatigue caused by lengthy videos. Compared to other online courses, the “micro, precise, and short” characteristics of TikTok videos are more likely to capture students’ attention and improve learning efficiency, better adapting to the learning environment of the fast-paced information age.

3.6.2 Facilitating understanding and review

T1 stated that the fragmented learning method helps students understand knowledge points and review them effectively.

“TikTok’s fragmented video teaching, with its short and precise format, can divide a complete subject or series of courses into multiple short videos, each corresponding to a single knowledge point. These individual points then form a comprehensive knowledge network or a readable and understandable mind map. This allows students to focus on and review difficult or confusing knowledge points as needed. This approach addresses the common problem of students remembering information in class but forgetting it afterward.” (T1)

The interview results indicate that the TikTok flipped classroom learning model aligns well with the learning habits and needs of modern students. In terms of fragmentation, TikTok’s typically short videos cater to the fragmented learning time of modern youth. In a flipped classroom, teachers can break down course content into several concise segments, allowing students to learn at any time and place through their mobile devices. This flexible learning method significantly enhances convenience, makes use of fragmented time, and effectively extends the total learning duration. Fragmented learning methods help reduce mental fatigue and facilitate understanding and review, particularly benefiting students with limited spare time.

3.7 Theme three: Interactivity

The third theme regarding teachers’ perceptions of TikTok flipped classrooms is strong interactivity. For example, T1 stated that the teaching model of TikTok flipped classrooms, with its stronger interactivity and wide user base, not only promotes teacher-student interaction but also enhances student-student interaction through real-time discussions, feedback, and learning communities.

“TikTok flipped classrooms are not limited to interactions between teachers and students but also include interactions among students. Students can promote knowledge understanding through questions and answers. There are many study groups and communities on the TikTok platform where students can join, learn, and discuss with peers who share the same learning goals, share study notes, videos, and experiences, and help each other solve problems. This learning

community not only enhances learning motivation but also provides a supportive and encouraging environment.” (T1)

3.8 Theme four: Personalized learning

The fourth theme regarding teachers’ perceptions of TikTok flipped classrooms is personalized learning. This theme is divided into two sub-themes: (1) Autonomy in content selection, and (2) Autonomy in learning pace. In the interviews, teachers indicated that the personalized learning aspect of TikTok flipped classrooms mainly manifests in the autonomy of content selection and flexible learning pace.

3.8.1 Autonomy in content selection

T1 stated that the TikTok flipped classroom model allows students to choose learning content autonomously, in addition to the content recommended by teachers and the platform.

“TikTok short videos can provide customized content based on students’ needs, meeting personalized learning requirements. Students can choose content according to their abilities. For instance, students with a good grasp of knowledge can use TikTok resources for more in-depth learning, while those who are struggling can use video resources for additional review and consolidation, thus meeting the needs of students at different levels. Students can also choose learning content based on their interests.” (T1)

3.8.2 Autonomy in learning pace

T1 stated that personalized learning also manifests in the autonomy of learning pace.

“In the TikTok flipped classroom model, students engage in deep learning through pre-class preparation and in-class discussion, emphasizing the transformation of the teacher’s role. Teachers shift from traditional knowledge transmitters to organizers and guides of teaching activities, responsible for task allocation and summarization, promoting students’ autonomous learning. Additionally, teachers focus more on emotional care, cultural guidance, and professional planning.” (T1)

4 Challenges encountered in TikTok-based flipped classroom

The third and fourth research questions aim to explore the challenges encountered in implementing the TikTok-based flipped classroom teaching method in a folk-art course from the students’ and teacher’s perspective. The results of the thematic analysis indicate that the main challenges faced by students in the TikTok-based flipped classroom are insufficient depth of video content, lack of systematic knowledge, difficulty in filtering information, and students’ lack of self-discipline whereas, the main challenges faced by teachers in the TikTok-based flipped classroom are fivefold: difficulty in collecting and creating video content, students’ lack of self-discipline, cumbersome teaching assessments, challenges in classroom management, and insufficient construction of teaching resource libraries.

4.1 Insufficient depth of video content

The first challenge faced by students in the TikTok-based flipped classroom is the insufficient depth of video content. Students mentioned in interviews that TikTok videos are often too short, overly simplistic, or repetitive, lacking depth and challenge. For example, S1 noted that the quality of videos on TikTok related to folk art varies, with some videos being of low quality, which affects the learning experience. When learning advanced design techniques, many recommended videos are merely basic tutorials and do not provide sufficient in-depth explanations.

“I find that the content is fragmented, and the videos are too short, making it difficult to grasp a complete knowledge system. For instance, when learning folk story creation, the videos only explain a small segment or a particular technique, lacking a comprehensive overall explanation. Many videos are too simplistic or repetitive, requiring more time and effort to find high-quality videos that meet learning needs, which negatively impacts learning efficiency.” (S1).

In the practice of the TikTok-based flipped classroom, the fragmentation of content and lack of depth are significant challenges that directly affect the effectiveness and efficiency of learning. Students reported that due to the time limitations of the videos, much of the content is only superficially covered, leaving little room for in-depth discussion or comprehensive exploration. This issue is particularly evident in areas that require coherent thinking and complex techniques. For instance, when learning folk art and advanced design techniques, relying solely on short videos to impart knowledge often fails to cover the necessary details and steps, thereby not meeting the demands for skill enhancement.

4.2 Lack of systematic knowledge

The second challenge faced by students in the TikTok-based flipped classroom is the lack of systematic knowledge. Students mentioned in interviews that the format and content of TikTok short videos lack systematicity and coherence, making it difficult to delve deeply into complex knowledge. For example, S5 noted that the short video format of TikTok limits the in-depth explanation and systematic presentation of complex knowledge, making it challenging for students to fully understand and master key concepts, which impacts the depth of learning and the construction of a cohesive knowledge system.

“The short video format on TikTok makes it difficult to explain complex knowledge in depth. Each video is limited in time and cannot thoroughly explain complex concepts and theories, making it challenging for students to deeply understand and master complex knowledge points.” (S5).

S6 also believed that TikTok videos lack systematicity and coherence in knowledge.

“When learning folk story creation, the videos on TikTok often only explain a small segment or a particular technique, lacking a systematic overall explanation. This often makes me feel that the

knowledge is disjointed, and it’s difficult to construct a complete logical structure during learning.” (S6).

Moreover, due to the time limitations of each video, many complex knowledge points can only be touched upon briefly, which not only hinders students’ deep understanding of the material but may also lead to misconceptions, making it difficult to achieve the intended educational outcomes. Therefore, although the TikTok short video platform has potential educational applications, educators need to carefully consider its format limitations when designing courses. Possible solutions include combining short videos with other teaching resources and activities to compensate for the lack of systematicity and depth in individual video content. By adopting this diversified teaching strategy, educators can better help students build a comprehensive knowledge system and enhance the effectiveness of learning.

4.3 Difficulty in filtering information

The third challenge faced by students in the TikTok-based flipped classroom is information overload and difficulty in filtering content. Students mentioned in interviews that they encountered issues with information overload in the TikTok-based flipped classroom, requiring them to spend significant time filtering through learning resources. Although there is a wide variety of videos available, there is also a large amount of repetitive or low-quality content. This not only increases the difficulty of filtering information but also leads to a decrease in learning efficiency.

“When learning traditional embroidery, there are numerous instructional videos on TikTok, ranging from basic stitching techniques to complex patterns. However, some content is repetitive or of low quality, making it difficult to quickly find the most useful resources among the vast number of videos.” (S2).

4.4 Lack of self-discipline among students

The fourth challenge faced by students in the TikTok-based flipped classroom is the lack of self-discipline. Students mentioned in interviews that the TikTok-based flipped classroom requires a high level of self-discipline, and they face difficulties in time management. For example, S1 noted that the TikTok-based flipped classroom demands that students independently schedule their study time, and those who lack self-discipline are easily distracted by entertaining videos, leading to reduced learning efficiency.

“Learning time that was originally spent in the classroom has been shifted to outside the classroom. Pre-class preparation and post-class review are no longer supervised by the teacher, so students need to independently manage their study time. Those who lack self-discipline are prone to procrastination or distraction. For example, during pre-class preparation, I often find myself unconsciously browsing entertainment videos, becoming absorbed in them, and end up spending a lot of time on unrelated content. This reduces my learning efficiency and negatively affects my learning outcomes.” (S1).

4.5 Difficulty in collecting and creating content

T1 believes that since students are easily distracted by other entertainment content on platforms like TikTok, their attention is often diverted, affecting both their learning outcomes and the effective use of their study time. To improve the quality of students' pre-class preparation and engagement, teachers need to find more engaging and educational video content, which increases their workload. In the TikTok-based flipped classroom model, teachers face the dual challenge of content collection and creation, requiring them not only to have the ability to curate educational content but also to master content creation skills.

“Teachers need to create short video content that is both educational and engaging, ensuring that the videos are not only interesting but also possess sufficient visual appeal and educational value to effectively capture and maintain students' attention. One approach is for teachers to create TikTok videos themselves. With the advancement of digital technology, teachers must become proficient in video editing, image processing, and platform operation when using social media platforms like TikTok.” (T1).

4.6 Students' lack of self-discipline

T1 noted that ensuring students' active participation and completion of pre-class preparation is the second challenge in the TikTok-based flipped classroom model.

“This model requires students to watch teacher-recorded videos before class and complete corresponding preparation tasks. However, students' pre-class engagement is inconsistent. Some students struggle to watch the videos and complete the preparation tasks on time due to poor time management skills; others, due to a lack of self-discipline, are unable to focus, resulting in poor learning outcomes. Additionally, some students have difficulty understanding the video content, and without the teacher's live explanation, they find it hard to fully grasp the key concepts. These issues not only affect the quality of students' pre-class preparation but also directly impact the effectiveness of classroom learning and the interactive atmosphere.” (T1).

4.7 Simplified teaching evaluation

Teacher T1 identified simplified teaching evaluation as the third challenge faced by educators in the TikTok-based flipped classroom model. While the flipped classroom model advocates for student-driven learning and classroom interaction, evaluating students' learning outcomes in practice remains challenging. T1 highlighted the need for improved evaluation processes in the TikTok-based flipped classroom model.

“Since most of the students' learning takes place before class, it is difficult for teachers to fully grasp each student's learning progress and understanding. This makes effective classroom assessment more complex, as teachers cannot rely on traditional classroom

observations, immediate questioning, and previously singular assessment methods to gauge students' mastery. Although assignments and quizzes can be used for evaluation, these methods often fail to assess the time spent and effectiveness of students' online learning, and they cannot promptly correct students' misunderstandings.” (T1).

4.8 Challenges in classroom management

T1 identified the lack of effective classroom management as the fourth challenge faced by teachers in the TikTok-based flipped classroom.

“TikTok short videos are used for pre-class preparation and post-class review, while class time is mainly dedicated to assignments and practical projects. Firstly, some students struggle to adapt to the demands of self-directed learning, lacking the self-discipline and time management skills needed to complete preparation tasks on time, which affects their classroom performance and delays class progress. Secondly, efficient teamwork and problem-solving during class can be challenging for students who are not proficient in collaboration. The teacher's role shifts to that of a facilitator and supporter, requiring them to monitor each student's progress and participation and provide personalized guidance. This increases the difficulty of classroom management in a limited time setting.” (T1).

For teachers, it is crucial to finely adjust their guidance methods to enhance students' self-discipline and ensure that students can successfully complete pre-class self-study content. Additionally, the emphasis on efficient collaboration in the TikTok-based flipped classroom adds to the complexity of teaching. Teachers must create and maintain an environment that helps students with weaker communication skills integrate into team activities, so that students can fully develop their communication and coordination skills, effectively dividing and collaborating in group activities. This not only challenges the teacher's management skills but also tests their ability to balance maintaining course quality with promoting individual student growth.

4.9 Insufficient development of teaching resource libraries

T1 identified the insufficient development of teaching resource libraries as the fifth challenge faced by teachers in the TikTok-based flipped classroom. This teaching model relies on a rich, diverse, and high-quality set of teaching resources, enabling students to effectively prepare before class and review afterward. However, the current availability of high-quality teaching resources related to folk art on the TikTok platform is relatively limited and does not meet the needs of teachers and students.

“The current teaching resource libraries for folk art often lack systematicity and comprehensiveness, leading to various challenges for teachers and students during usage. For instance, the video content is fragmented and fails to showcase details, the content lacks depth and systematic structure, information overload is prevalent,

and while resources are abundant, their quality varies greatly. Some videos have a single format, follow trends without innovation, and suffer from excessive entertainment, which hampers accurate knowledge transmission. As a result, teachers often have to spend significant time and effort searching for suitable resources, and in some cases, even resort to creating their own, which undoubtedly increases their workload.” (T1).

5 Discussion

5.1 Students' perceptions

Students believe that the TikTok-based flipped classroom enhances the learning experience in four key areas: learning methods, pre-class materials, learning content, and interactivity. This finding is consistent with the research of Cahyono and Perdhani (2023) and Jiménez and Ponce (2023), who emphasized the effectiveness and benefits of using TikTok in educational settings. This study found that, in terms of learning methods, one of the significant advantages of the TikTok-based flipped classroom model is that students can deepen their understanding of key concepts by repeatedly watching course videos. The ability to rewatch videos helps students better manage their learning pace, allowing them to move on only after mastering a particular concept or to revisit previous content when needed (Rahmawati and Anwar, 2022). In terms of pre-class learning materials, the TikTok platform offers a rich and diverse array of resources. These resources not only cover a wide range of knowledge areas but are also presented in an intuitive format, making them easier for students to absorb and understand (Solomon, 2021). Regarding learning content, students expressed great interest in the highly creative content of the TikTok-based flipped classroom. This creativity is evident not only in the novelty of the content but also in the way students can gain diverse techniques and inspiration by watching videos from various artisans. Such creative content expands students' thinking boundaries and encourages them to freely experiment, which not only enhances their skills but also fosters the development of their innovative abilities (Escamilla-Fajardo et al., 2021). Furthermore, students greatly enjoyed the engaging and entertaining content of the TikTok-based flipped classroom. By using captivating videos and animations, this teaching model makes the learning process more intuitive and enjoyable. Students appreciate the concise and straightforward nature of the content in the TikTok-based flipped classroom. This simplicity helps students quickly grasp the core of the material, avoiding the potential for lengthy and monotonous explanations that can occur in traditional teaching. In terms of interactivity, the TikTok-based flipped classroom significantly enhances interaction between teachers and students, as well as among students themselves (Anggoro et al., 2022). Through video comments and interactions, students can exchange learning insights with their teachers and peers, fostering a positive learning environment (Niyomsuk and Polyiem, 2022). Additionally, the timeliness of assignment feedback allows students to quickly adjust their learning strategies and improve their efficiency, while the integration of face-to-face teaching further deepens this interaction. TikTok-based flipped classroom, through its unique interactive design, significantly enhances the dynamism and efficiency of learning, aligning well with the learning habits and needs of contemporary students.

5.2 Teachers' perceptions

This study found that teachers perceive the TikTok-based flipped classroom as demonstrating significant advantages in the current educational landscape, particularly in four key areas: engagement, fragmentation, interactivity, and personalized learning. These features not only enhance learning outcomes but also increase student engagement and improve the overall learning experience. These findings are consistent with the research of Tutt (2021), Unal et al. (2021), Martínez-Jiménez and Ruiz-Jiménez (2020). Teachers believe that integrating TikTok into the classroom supports personalized learning, allowing students to learn at their own pace and revisit materials as needed. This flexibility is particularly beneficial in subjects that require continuous practice and review (Mtshali, 2023).

5.3 Challenges faced by students

During interviews, students pointed out that one of the main challenges is the lack of depth in TikTok short video content and the absence of a systematic knowledge framework. Due to the brief nature of TikTok videos, the content is often simplified. The format and content of TikTok short videos lack the necessary depth and systematic approach, which limits their ability to convey complex knowledge effectively. This finding is consistent with the research of Agting et al. (2022) and Barus (2024). This study found that while the TikTok platform supports rapid and creative content creation, the short video format limits the depth and systematic nature of educational content. In interviews, students expressed that they encountered issues of information overload in the TikTok-based flipped classroom, requiring significant time to filter through learning resources. This finding is consistent with the research of Dwipa et al. (2024), Laili (2023), and Halimi and Mazlan (2022). The lack of self-discipline is another challenge faced by students. In interviews, students reported that the TikTok-based flipped classroom requires a high level of self-discipline, and they struggle with time management. Students who lack self-discipline are easily distracted by the entertaining videos on the TikTok platform, which leads to decreased learning efficiency. This finding is consistent with the research of Laili (2023) and Zulkifli et al. (2022). Students are easily distracted by non-educational content on TikTok, such as travel, food, and sports, which can affect their ability to complete assignments and their overall learning outcomes.

5.4 Challenges faced by teachers

In interviews, teachers indicated that they faced numerous difficulties when practicing this teaching method. The challenges faced by teachers can be categorized into five areas: difficulty in content collection and creation, poor student self-discipline, the need for improvement in assessment processes, difficulties in classroom management, and insufficient development of teaching resource libraries. These challenges collectively contribute to the complexity of implementing the TikTok-based flipped classroom teaching method in university folk art courses, necessitating in-depth analysis and understanding by educators to optimize teaching design and practice. This aligns with the findings of Middleton (2022) and Maretha and Anggoro (2022).

6 Conclusion

The implementation of the TikTok-based flipped classroom method in a folk-art course has shown both promise and challenges for students and teachers alike. The study highlights that students generally have positive perceptions of the method, finding it beneficial for enhancing their learning experience in terms of flexible learning methods, pre-class materials, engaging content, and increased interactivity. The ability to repeatedly view videos allows students to manage their learning pace, while the rich, creative content and intuitive format offered by TikTok make learning more dynamic and enjoyable. The interactive elements, such as video comments and peer exchanges, foster a collaborative learning environment and improve communication between students and teachers.

Teachers also recognize the advantages of this method, particularly in promoting student engagement, personalized learning, and fragmentation of complex content into more digestible, focused segments. These factors contribute to more efficient learning and deeper understanding, particularly in creative and practice-based subjects like folk art. The fragmented learning method significantly enhances students' comprehension, especially in understanding and reviewing key concepts. By breaking down complex course content into multiple short videos, each focusing on a specific knowledge point, students can concentrate better and gain a deeper understanding of challenging topics (Omar and Dequan, 2020). By joining study groups and communities on TikTok, students can interact and discuss with peers who share similar learning goals, exchange study materials and experiences, and help each other solve problems. In such a learning environment, students receive support and encouragement from their peers, which in turn fosters a more active engagement in their studies. However, both students and teachers face several challenges with this approach. Students struggle with the lack of depth in TikTok videos, information overload, and the need for self-discipline, which can hinder their ability to fully engage with the content. On such an open platform, ensuring the quality and appropriateness of teaching content becomes a challenge. Due to time constraints, many educational videos cannot comprehensively and thoroughly explain complex concepts and skills, making it difficult for students to form a systematic and coherent knowledge framework. The difficulty in filtering information on TikTok short videos is the second challenge faced by students. Teachers, on the other hand, face difficulties in content creation, managing student discipline, improving assessment methods, and building comprehensive teaching resources. TikTok-based flipped classroom has clear benefits, optimizing its implementation requires addressing these challenges. Ensuring more in-depth and systematic educational content, supporting students in developing self-discipline, and improving assessment methods are key areas for future improvement. By refining these aspects, educators can make the most of this innovative teaching model to enhance student learning outcomes in creative disciplines.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

This study strictly adhered to ethical standards and procedures to ensure informed consent, data privacy protection, minimization of interference, fair treatment, and transparent feedback for participants. First, regarding ethical review and approval, the research proposal was reviewed and approved by the ethics review committee before the commencement of the study, ensuring that all ethical issues were addressed. Additionally, the researcher obtained permission from the administrative department of the school where the experiment was conducted, ensuring that data access and usage complied with the school's policies and regulations. The researcher committed to adhering to ethical standards to ensure the credibility and validity of the research. Furthermore, all participants were informed about the purpose, methods, roles, and rights associated with the study before the interview session. Prior to the interviews, participants signed an informed consent form that detailed the study's purpose, procedures, potential risks, and benefits, ensuring they had sufficient time to review the information and make an informed decision. Participants were assured of their voluntary participation and the right to withdraw at any time. The personal privacy and academic data of the students were strictly protected, with identities and confidentiality managed according to the requirements of the university's research ethics committee.

Author contributions

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