

# Examining the impact of the flipped classroom model on student engagement and academic performance in college dance theory courses

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## ABSTRACT

This study examines the role of the flipped classroom model in college dance theory courses based on constructivist learning theory. The research used structural equation modeling to explore the connections between the flipped classroom model (FC), student engagement (SE), and academic performance (AP) among 365 students. The results showed that the FC positively influenced SE but had a slightly negative direct effect on AP. These findings suggest that while the flipped classroom can enhance student engagement, its direct impact on academic performance is more complex and requires further investigation. This study adds to the understanding of teaching strategies in higher education and highlights the complexities of applying constructivist principles in course design and delivery.

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## 1. Introduction

The landscape of higher education is undergoing a significant transformation in pedagogical strategies, with innovative models being adopted to heighten student engagement and bolster learning outcomes. Central to this shift is the flipped classroom model, which has gained notable attention for its potential to revolutionize the educational experience. Rooted in constructivist learning theory, this model reimagines the traditional teaching approach. It delivers instructional content, often digitally, outside the classroom, while in-class time is repurposed for engaging activities that traditionally constitute homework (Velegol et al., 2015). While the efficacy of the flipped classroom has been extensively validated in STEM disciplines (Doğan et al., 2023), its impact in the context of college dance theory courses remains less explored and understood. In collegiate dance education, the interplay between practical skill development and theoretical understanding is complex and critical. Dance theory courses are pivotal in providing analytical and conceptual frameworks essential for a deeper engagement with the art form. However, these courses frequently encounter challenges in

sustaining student engagement and active participation (Camper Moore, 2023). Addressing this issue is crucial, considering the established correlation between student engagement and outcomes such as academic achievement, retention, and overall satisfaction. This paper quantitatively examines how the flipped classroom model impacts student engagement in college dance theory courses, drawing on constructivist learning theory to model the relationships between this approach and various educational outcomes. Using statistical modeling rather than traditional pre- and post-tests, the study tests theoretical assumptions and explores complex interactions between teaching methods and engagement. This research holds significance for improving dance theory education and extends its findings to arts education more broadly. By exploring the flipped classroom in a discipline that often prioritizes practical skills, it contributes valuable insights for educators seeking to foster interactive and engaging learning environments, thereby enhancing the quality of arts education.

## 2. Literature review

### 2.1. Student engagement in higher education

Student engagement represents a pivotal metric in evaluating educational quality and student success within higher education (Bowden et al., 2021). It is characterized by the degree of attention, curiosity, interest, optimism, and passion that students exhibit in the process of learning, which extends to the level

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of motivation they must learn and progress in their education. Research consistently highlights the correlation between student engagement and various positive academic outcomes, including higher grades, retention rates, and overall student satisfaction (Fisher et al., 2021).

In the context of arts education and dance specifically, engagement is not only academic but also physical and emotional. The inherently active nature of dance requires a teaching approach that transcends cognitive engagement, demanding physical participation and emotional connection (Borowski, 2023). However, the theoretical components of dance education, particularly in dance theory courses, often struggle to elicit the same level of engagement as practical components (Green, 2001). This is a noteworthy concern, given that engagement in theory classes is essential for students to contextualize and critically reflect upon their practical experiences.

The unique challenge within dance theory courses lies in bridging the gap between the practical and theoretical domains of dance (Martin, 1998). Traditional lecture-based methods may not sufficiently captivate students who are accustomed to the kinesthetic nature of their art. Therefore, exploring pedagogical strategies that can enhance engagement in these theory courses is of critical importance to educators in the field (Goode et al., 2014). Despite the extensive research on student engagement, there is a paucity of literature focusing specifically on engagement strategies in dance theory courses within higher education. This gap underscores the need for empirical studies that investigate innovative teaching methodologies, such as the flipped classroom model, which have the potential to foster higher levels of engagement in academic settings more broadly and within the arts disciplines (Al-Samarraie et al., 2020). Qualitative research has also highlighted various aspects of student engagement. Guckian et al. (2021) explored how social media influences medical students' engagement and found that emotional and social connections significantly impact engagement levels. Similarly, Merriam and Tisdell (2015) emphasized the role of social interactions and community in enhancing student engagement in adult learning environments. These qualitative insights can provide a richer understanding of how different teaching methodologies, such as the flipped classroom, might impact student engagement by fostering a more interactive and socially connected learning experience. This review underscores the importance of student engagement and sets the stage for examining how the flipped classroom model can be an effective pedagogical approach to enhance engagement in college dance theory courses.

## 2.2. The flipped classroom model

The flipped classroom model represents a significant departure from traditional educational paradigms, particularly in higher education, where

lecture-based teaching has long been the norm. According to the views of Akçayır and Akçayır (2018), the flipped classroom involves reversing the typical sequence of learning activities. Instead of introducing new material in class, instructors assign students to learn it outside of class, typically through video lectures or other multimedia materials. Class time is then devoted to activities that deepen understanding, such as problem-solving, discussions, and practical applications.

This pedagogical model is grounded in constructivist learning theory, which posits that learners construct knowledge through experiences and reflections on those experiences (Hannafin et al., 1997). By engaging with course content independently, students can pace their learning and approach class time with a prepared foundation upon which to build. Moreover, the in-class component of the flipped model allows for a more student-centered approach, with opportunities for collaborative learning and personalized feedback from instructors (Kay et al., 2019).

The role of the flipped classroom has been the subject of numerous studies across various disciplines. In STEM fields, for instance, research has found that flipping the classroom can lead to improved student performance, increased student engagement, and higher levels of student satisfaction (Martínez-Jiménez and Ruiz-Jiménez, 2020). These findings are attributed to the active learning environment fostered by the flipped model, which aligns with Bloom's Taxonomy by facilitating higher-order thinking skills during class time.

However, the literature on the flipped classroom within the context of arts and humanities education is less developed. Some studies suggest that the model can be adapted successfully to these disciplines by allowing for more nuanced discussion and critique of artistic concepts and theories in class (Lawson et al., 2019; Duker et al., 2015). However, these studies often focus on qualitative outcomes rather than quantitative analysis, which might more convincingly demonstrate efficacy.

In terms of dance education, the potential for the flipped classroom to enrich student engagement is particularly compelling. Dance theory, with its blend of history, criticism, and kinesthetic learning, may benefit from an approach that allows students to absorb information at their own pace and then apply it in a collaborative, interactive setting (Kassing, 2007). Despite this potential, empirical research specifically examining the impact of the flipped classroom on dance theory courses remains scarce, indicating a clear gap in the literature.

The lack of quantitative analysis in this area hampers the ability to draw definitive conclusions about the flipped classroom's impact on student engagement and learning outcomes in dance theory education. The present study aims to address this gap by providing a quantitative analysis of flipped classroom efficacy in enhancing student engagement in college dance theory courses. The subsequent section will review the limited but growing body of

literature on flipped classrooms in the arts, setting the stage for the current investigation.

### 2.3. The flipped classroom in dance theory courses

In the evolving landscape of higher education pedagogy, particularly within arts education, the flipped classroom model has emerged as a compelling instructional approach, especially in disciplines such as dance, where the embodiment of knowledge is as integral as its intellectual understanding. Studies, including those by [Hwang et al. \(2015\)](#) and [Han and Klein \(2019\)](#), have underscored its potential to foster critical thinking and deeper engagement with complex concepts. In this context, students interact with materials beforehand, allowing class time to be dedicated to discussion, performance, and critical analysis, which are quintessential to the learning process in arts education.

However, the integration of the flipped classroom in arts, and specifically in dance theory courses, is not without challenges. These challenges encompass accommodating diverse learning styles, ensuring equitable access to technological resources, and the substantial preparation time needed for instructors to create effective pre-class materials. Despite these challenges, as [Steen-Utheim and Foldnes \(2018\)](#) note, preliminary studies suggest that the flipped classroom can enhance dynamic interactions and facilitate a richer understanding of artistic concepts compared to traditional lecture-based formats.

In the realm of dance education, the flipped classroom model offers a significant pedagogical advantage. It allows students to engage with theoretical material at their own pace, thereby freeing up class time for physical practice and the application of theoretical principles, as [Johnson \(2013\)](#) observes. This approach aligns with the holistic nature of dance education, which seeks to integrate cognitive, physical, and affective learning experiences. However, the literature reveals a gap in quantitative evidence supporting the efficacy of the flipped classroom in dance theory education. Qualitative accounts from educators, such as those reported by [Guckian et al. \(2021\)](#), suggested improvements in student engagement and satisfaction, but these have not been systematically measured. The potential of the flipped classroom to enhance student learning in dance theory courses is an area ripe for research, particularly through quantitative methodologies that can provide robust evidence of its impact, a notion supported by [Yoo et al. \(2023\)](#). Traditional pedagogical approaches in dance theory education, influenced by broader educational practices in the humanities, often involve lecture-based sessions where theoretical knowledge is imparted in a unidirectional manner from instructor to student ([Tawfik and Lilly, 2015](#)). While efficient for information conveyance, these methods have been criticized for their limited ability to actively engage students, especially in disciplines

where physical engagement is central to the learning experience ([French and Kennedy, 2017](#)). Dance theory courses require a balance between imparting conceptual knowledge and applying that knowledge in a way that resonates with the kinesthetic nature of dance. Traditional methods may fall short in engaging students whose primary learning mode is through movement and sensory experience ([Hargreaves, 1998](#); [Crow, 2020](#)). In response, educators have experimented with active learning strategies such as collaborative learning and problem-based learning, but the integration of these strategies within dance theory education has been inconsistent, often struggling to find a balance between theoretical rigor and engaging delivery ([Budhai, 2021](#); [McCarthy-Brown, 2017](#)).

The flipped classroom model has surfaced as a potential solution to these pedagogical challenges. Inverting the traditional classroom structure allows for theoretical content to be individually engaged outside of class time, thus freeing up in-person sessions for discussion, application, and deeper exploration of concepts ([Demirel, 2016](#)). This model aligns well with the active and participatory nature of dance, potentially enabling students to engage with dance theory in a more dynamic and embodied way. This section of the literature review underscores the need for innovative pedagogical approaches in dance theory courses and sets the stage for an in-depth exploration of the flipped classroom to enhance engagement and learning in this field.

### 2.4. Implications of constructivist learning theory for the use of the flipped classroom

In the realm of educational pedagogy, the alignment of the flipped classroom model with constructivist learning theory presents significant implications. Constructivist learning theory, articulated by scholars such as [Piaget \(1952\)](#) and later expanded by [Vygotsky \(1978\)](#), posits that learners construct their knowledge through experiences and interactions rather than passively receiving information. This perspective is echoed in the flipped classroom approach, where the traditional lecture and homework elements of a course are reversed. [Bergmann and Sams \(2012\)](#) argue that this inversion enables a more student-centered learning environment, allowing learners to first encounter new material independently, thus fostering deeper, more personal engagement with the content.

The constructivist approach emphasizes the importance of active learning, an aspect central to the flipped classroom model. According to [Prince \(2004\)](#), active learning strategies, which are a staple in the flipped classroom, involve students in doing things and thinking about what they are doing. This aligns with the constructivist view that knowledge is constructed through meaningful and reflective activities. The flipped classroom, by devoting in-class time to interactive, practical exercises, facilitates this

active, reflective engagement with learning materials, a process that is crucial for deep and meaningful learning.

Additionally, the flipped classroom can be seen as a practical application of Vygotsky's social constructivism. Vygotsky's emphasis on the social context of learning and the importance of interaction in knowledge construction (Vygotsky, 1978) finds relevance in the flipped classroom model, where in-class time is often dedicated to collaborative learning and peer-to-peer engagement. This interactive aspect of learning is particularly emphasized in flipped classroom studies, such as those by Bishop and Verleger (2013), who note the model's propensity to facilitate higher engagement and interaction among students.

However, implementing the flipped classroom in a manner consistent with constructivist principles is not without its challenges. Teachers need to carefully design pre-class materials to ensure that they are engaging and conducive to independent learning. Furthermore, as Abeysekera and Dawson (2015) point out, the role of the teacher shifts from being the primary source of knowledge to a facilitator of learning, guiding students in their knowledge construction process. This shift requires a reevaluation of traditional pedagogical roles and may necessitate professional development for educators to adapt effectively to this new model.

In conclusion, the flipped classroom model offers a promising avenue for applying constructivist learning principles in modern education settings. Its focus on active, self-directed learning and social collaboration aligns well with the tenets of constructivism, proposing a transformative approach to teaching and learning.

## 2.5. Conceptual framework

The conceptual framework for this study is depicted in Fig. 1, which encapsulates the hypothesized pathways between the implementation of the flipped classroom model (FC), student engagement (SE), and academic performance (AP) in dance theory courses. Grounded in constructivist learning theory, the framework postulates that FC serves as a catalyst for enhancing SE, which is anticipated to positively influence AP, illustrating a sequential relationship tested through this research. This model provides the structural basis for a quantitative analysis to empirically validate these interconnections within the educational setting.

The implementation of the FC model is the independent variable in this study. This model inverts traditional teaching methods by delivering instructional content, often online, outside of the classroom. In-class time, therefore, is repurposed for engaging activities that deepen understanding and application of the material. Integral to this implementation is the teacher's guidance, which is a critical element in facilitating a flipped classroom environment. Teachers in a flipped classroom transition from traditional roles as knowledge

dispensers to facilitators of learning, guiding students through content they have preliminarily engaged with independently. This shift is essential for creating an effective flipped learning experience and aligns with the constructivist emphasis on the teacher's role in scaffolding student learning and supporting the construction of knowledge.

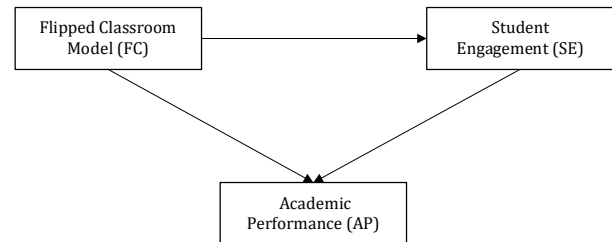


Fig. 1: Conceptual framework

What is more, SE in this model acts as a potential mediating variable between flipped classroom implementation and academic performance. Engagement is multifaceted, encompassing behavioral, emotional, and cognitive dimensions. In the context of a flipped classroom, engagement might manifest as active participation in class activities, emotional investment in the learning process, and deep cognitive processing of course material. The level and quality of student engagement are hypothesized to mediate the relationship between the flipped classroom model and academic performance outcomes. This mediation is critical in understanding how the flipped classroom influences learning and underscores the importance of engagement in educational success.

In addition, AP is the dependent variable in this study. It is measured through objective criteria such as grades, assessment scores, and other performance indicators. The study aims to explore how the flipped classroom model, through its influence on student engagement, impacts students' academic achievements in dance theory courses. This relationship is vital in assessing the overall role of the flipped classroom as an instructional strategy in higher education, particularly in courses that require a balance between theoretical knowledge and practical skills. In addition, we also examine the correlation between FC and AP, with the aim of directly assessing their relationship while excluding the potential influence of mediation. Continuing from the theoretical framework, the study proposes the following hypotheses:

**H1:** There is a significant relationship between FC and SE among students enrolled in dance theory courses.

**H2:** There is a significant relationship between SE and AP among students enrolled in dance theory courses.

**H3:** There is a significant relationship between FC and AP among students enrolled in dance theory courses.

### 3. Methodology

#### 3.1. Research design and participants

This study explores the relationships between FC, SE, and AP in an introductory college dance theory course. Located at a mid-sized public university known for its performing arts program, the study aims to understand these dynamics within a constructivist learning framework.

The questionnaire in this study was meticulously crafted to capture key variables related to the flipped classroom model and student engagement in college dance theory courses. Utilizing a five-point Likert scale, the survey began with demographic questions, providing a foundational context for the responses.

The first substantive section delved into the specifics of the flipped classroom implementation. It comprised questions assessing the nature of pre-class materials, the types of in-class activities, and the degree of teacher guidance. This section aimed to gauge the depth and role of the flipped classroom model's application, shedding light on the interactions between instructors and students within the modified course structure.

Subsequently, the focus of the questionnaire shifted to measuring student engagement. This part was crucial for evaluating the cognitive, emotional, and behavioral aspects of student engagement in the context of the flipped classroom format. Respondents were prompted to reflect on and rate their level of involvement, interest, and active participation in the course, providing insights into the engagement dynamics fostered by the flipped classroom approach.

#### 3.2. Data collection instruments

Data collection was efficiently carried out using Wenjuanxing (jx.cn), an online survey platform known for its proficiency in managing survey distribution and gathering responses. The survey period, spanning from November 20 to December 1, 2023, was strategically chosen to optimize response rates and ensure a robust dataset for thorough analysis. The thoughtful construction of the questionnaire, coupled with the strategic use of a reliable data collection platform, played a pivotal role in achieving the study's objectives. This approach was instrumental in exploring the interplay between flipped classroom implementation and student engagement and their collective impact on the educational experience in a dance theory course at the college level.

#### 3.3. Population and sample

To quantify the required sample size for reliable Structural Equation Modeling analysis, the following formula (Cochran, 1977) was employed:

$$n = \frac{Z^2 \times p \times (1-p)}{E^2}$$

where,

n = required sample size

Z = Z-value (The Z-value for a 95% confidence level is 1.96.)

p = estimated proportion of the population (Based on preliminary studies, p was estimated at 0.5 to maximize the sample size requirement.)

E = margin of error (Set at 0.05 for this study)

Substituting the values into the formula gives us:

$$n = \frac{1.96^2 \times 0.5 \times (1-0.5)}{0.05^2} = 384.16$$

Adhering to the specified formula for calculating the sample size, the study aligned with the requirements based on the enrollment figures for dance theory courses. The calculation indicated a minimum sample size considerably smaller than the total targeted population of 650 students. Nevertheless, to ensure a comprehensive analysis and to account for potential non-responses, the study aimed to include as broad a participant base as possible, given the logistical parameters.

#### 3.4. Data analysis

In this study, the collected questionnaire data were analyzed using SEM. It was employed to test the hypothesized relationships among the variables FC, SE, and AP. This involved correlational analyses to explore direct relationships between variables to understand the indirect effects of flipped classroom implementation on academic performance through student engagement. This approach allowed for a comprehensive and robust examination of the proposed model within a constructivist framework.

### 4. Result

As discussed above, the survey, which focused on assessing FC, SE, and AP in a dance theory course, garnered substantial participation. From the 650 targeted students, 365 completed and returned the questionnaire, achieving a response rate of approximately 56%. This sample size fulfills the requirements of Cochran's (1977) formula calculation.

The response rate and sample size are considered representative and robust for quantitative analysis in educational research, as supported by Babbie (2010), who notes that a response rate of 50% is adequate for analysis and reporting, and Krejcie and Morgan (1970), who provide guidelines for determining sample sizes that ensure representativeness in research. This level of response reflects robust engagement with the topic among the student body. To enhance the generalizability of the findings, it is important to replicate the study in different contexts or with a broader range of subjects within arts education or other disciplines. As suggested by scholars such as Abeysekera and Dawson (2015) and Akçayır and Akçayır (2018), increasing the diversity of study

samples can help in understanding the varied impacts of flipped classroom methodologies across different educational settings. As shown in Table 1, assessing the interrelations among FC, SE, and AP demonstrated a robust model fit. Key metrics included a chi-square ( $\chi^2$ ) value of 116.185, df of 62, and a  $\chi^2/df$  ratio of 1.874, well under the recommended maximum of 3. The GFI stood at 0.968, and the RMSEA was 0.049, both indicating a strong model fit. CFI, NFI, and NNFI values exceeded 0.99, suggesting excellent model robustness.

Additionally, the AGFI at 0.952 and the SRMR at 0.040 further confirmed the model's adequacy. The RMSEA 90% Confidence Interval ranged from 0.035 to 0.063.

In addition, the SEM analysis examining the interrelationships among FC, SE, and AP in dance theory courses yielded insightful results, as detailed in Table 2. This analysis provided a quantitative exploration of both direct and indirect effects within the proposed research model.

**Table 1: Model fit indices**

| Common indicators       | $\chi^2$ | df   | p     | Chi-square to degrees of freedom ratio $\chi^2/df$ | GFI   | RMSEA | RMR   | CFI          | NFI           | NNFI  |
|-------------------------|----------|------|-------|--|-------|-------|-------|--------------|---------------|-------|
| Judgment criteria value | 116.185  | 62   | 0.000 | 1.874  | 0.968 | 0.049 | 0.010 | 0.996        | 0.991         | 0.995 |
| Other indices           | TLI      | AGFI | IFI   | PGFI   | PNFI  | PCFI  | SRMR  | RMSEA 90% CI |               |       |
| Judgment criteria Value | >0.9     | >0.9 | >0.9  | >0.5   | >0.5  | >0.5  | <0.1  | -            | 0.035 ~ 0.063 |       |

Default model:  $\chi^2(78) = 13074.486$ ;  $p = 1.000$

**Table 2: Model regression coefficients**

| X  | → | Y     | Unstandardized regression coefficient | SE    | z (CRValue) | p     | Standardized regression coefficient |
|----|---|-------|---------------------------------------|-------|-------------|-------|-------------------------------------|
| FC | → | SE    | 2.200                                 | 0.321 | 6.863       | 0.000 | 1.000                               |
| FC | → | AP    | -0.022                                | 0.003 | -7.921      | 0.000 | -0.010                              |
| SE | → | AP    | 1.010                                 | 0.006 | 161.771     | 0.000 | 1.010                               |
| FC | → | FC Q4 | 1.047                                 | 0.158 | 6.626       | 0.000 | 0.451                               |
| FC | → | FC Q3 | 0.990                                 | 0.154 | 6.421       | 0.000 | 0.428                               |
| FC | → | FC Q2 | 0.851                                 | 0.147 | 5.799       | 0.000 | 0.366                               |
| FC | → | FC Q1 | 1.000                                 | -     | -           | -     | 0.431                               |
| SE | → | SE Q5 | 1.000                                 | 0.007 | 134.915     | 0.000 | 0.995                               |
| SE | → | SE Q4 | 1.000                                 | 0.007 | 134.914     | 0.000 | 0.995                               |
| SE | → | SE Q3 | 1.000                                 | 0.007 | 134.918     | 0.000 | 0.995                               |
| SE | → | SE Q2 | 1.000                                 | 0.007 | 134.914     | 0.000 | 0.995                               |
| SE | → | SE Q1 | 1.000                                 | -     | -           | -     | 0.995                               |
| AP | → | AP Q4 | 1.000                                 | 0.007 | 134.916     | 0.000 | 0.995                               |
| AP | → | AP Q3 | 1.000                                 | 0.007 | 134.919     | 0.000 | 0.995                               |
| AP | → | AP Q2 | 1.000                                 | 0.007 | 134.913     | 0.000 | 0.995                               |
| AP | → | AP Q1 | 1.000                                 | -     | -           | -     | 0.995                               |

Note: → indicates regression effect or measurement relationship; Dash '-' indicates the item is a reference item

In the relationship between FC and SE, an unstandardized regression coefficient of 2.200 (SE = 0.321, CR = 6.863,  $p < 0.000$ ) was observed, with a standardized coefficient of 1.000, indicating a robust positive impact of FC on SE. Conversely, the FC to AP pathway showed a slightly negative association (unstandardized coefficient = -0.022, SE = 0.003, CR = -7.921,  $p < 0.000$ , standardized coefficient = -0.010). The relationship between SE and AP was strongly positive, as evidenced by an unstandardized regression coefficient of 1.010 (SE = 0.006, CR = 161.771,  $p < 0.000$ ) and a standardized coefficient of 1.010.

The analysis also delved into the effects of individual questionnaire items on their respective constructs. For instance, the influence of specific FC questionnaire items (FC Q4, Q3, Q2, Q1) on the FC construct was assessed, with coefficients suggesting varying degrees of influence. It is notable that for certain items (e.g., FC Q1, SE Q1, AP Q1), a coefficient of 1.000 was assigned with no corresponding standard error or CR value, designating these as reference items in the model.

The research model with the data results is shown in Fig. 2.

### 5. Discussion

The results of this study show a positive correlation between FC and SE with constructivist educational theories that emphasize active, student-centered learning environments. This outcome suggests that when students are actively involved in their learning process, particularly in a structured environment such as the flipped classroom, their engagement levels significantly increase. This aligns with the findings of Velegol et al. (2015) and Doğan et al. (2023), who observed similar increases in engagement with the flipped classroom model in other disciplines.

However, the study also revealed a more complex picture regarding the direct impact of FC on AP. While FC was effective in increasing SE, which in turn positively influenced AP, the direct relationship between FC and AP was slightly negative. This unexpected finding indicates that the influence of FC

on academic outcomes might involve additional factors or mechanisms not directly captured in this study. This complexity is echoed in the works of Al-Samarraie et al. (2020), who noted that while FC generally improves engagement and satisfaction, its impact on performance can vary based on several contextual factors. These findings have important implications for educational practice, particularly in the context of dance theory courses. They suggest that educators should not only focus on the design and implementation of FC but also consider how it aligns with and supports overall course objectives, including assessment strategies. The study underscores the need for a holistic approach to teaching and learning, where student engagement is integrated with academic achievement goals.

The study, however, is not without limitations. The context-specific nature of the research, focused on dance theory courses at a single university, might affect the generalizability of the findings. Future research should conduct further analysis or possibly extend the study to explore and clarify the factors contributing to the direct negative impact of FC on AP. Investigating these factors in different educational contexts and among diverse student

populations could provide a deeper understanding of how the flipped classroom model affects academic performance. Additionally, considering qualitative approaches alongside quantitative methods might uncover underlying mechanisms and contextual variables that influence this relationship. To enhance the generalizability of the findings, replicate the study in different contexts or with a broader range of subjects within arts education or other disciplines. Comparing these findings with qualitative research by scholars such as Creswell and Poth (2016) and Merriam and Tisdell (2015) can provide deeper insights into student perceptions and experiences, which could explain some of the complex dynamics observed. Their studies emphasize the importance of emotional and social factors in student engagement, aligning with our quantitative findings and reinforcing the need for a comprehensive approach to educational strategies. For instance, the emotional engagement emphasized by Borowski (2023) and the physical and cognitive dimensions highlighted by Green (2001) are crucial factors that were observed to be enhanced through FC but need further qualitative validation to understand their impact on AP.

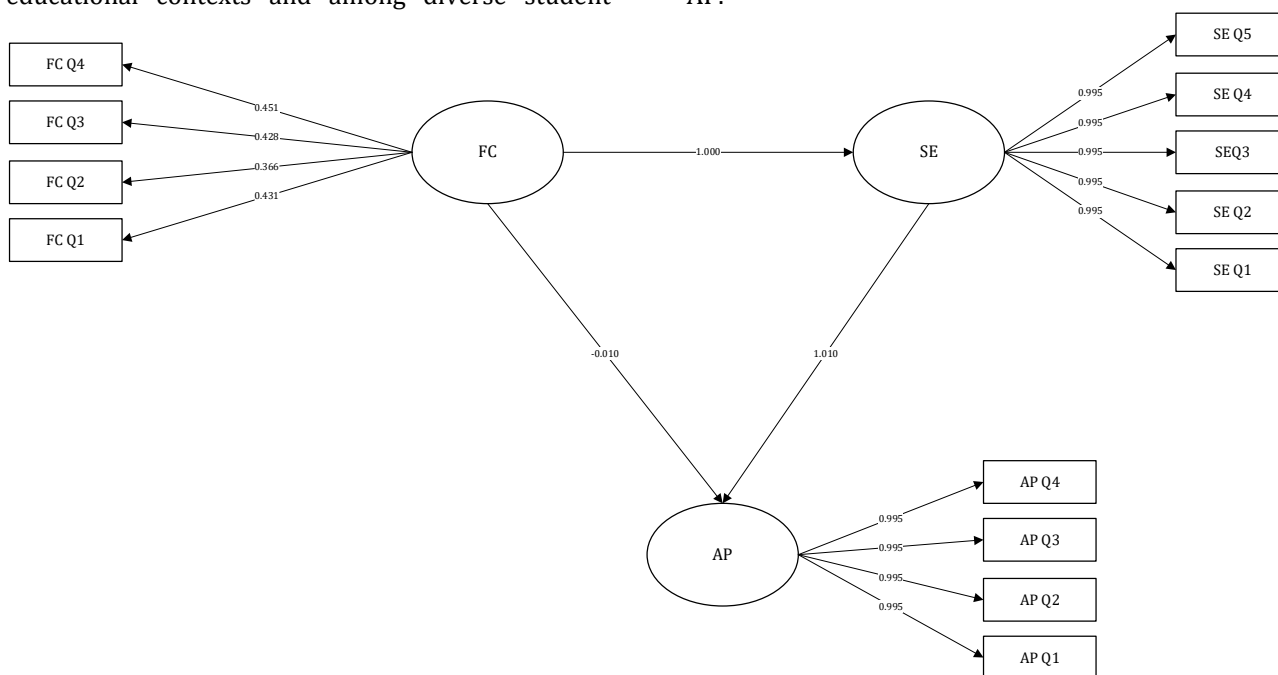


Fig. 2: Research model results

The constructivist alignment seen in the positive relationship between FC and SE is supported by Prince (2004), who argued for the benefits of active learning strategies. The social constructivist elements, as discussed by Vygotsky (1978), are evident in the collaborative learning opportunities provided by FC, which were found to enhance SE in this study. However, the slight negative impact on AP suggests that, as noted by Johnson (2013) and Hannafin et al. (1997), the success of FC might also depend heavily on how well it is integrated with traditional assessment methods and the specific needs of the subject matter, as seen in dance education. Overall, this study contributes to the

understanding of flipped classroom methodologies and their impact on student engagement and academic performance. It highlights both the potential and the complexities of implementing innovative teaching strategies in higher education, offering a foundation for future research and practice in this area.

## 6. Conclusion

In the conclusion of this study, the responses to each of the three proposed hypotheses based on SEM analysis are detailed. The analysis robustly supports Hypothesis 1, which posited that FC significantly

increases SE in college dance theory courses. The SEM results revealed a strong positive relationship between FC and SE, as evidenced by a notable unstandardized regression coefficient. This outcome aligns with the theoretical predictions of the flipped classroom model, emphasizing the function of student-centered learning environments in enhancing engagement. Hypothesis 2 suggested that SE has a positive effect on AP. The data confirmed this hypothesis, indicating a significant and positive influence of SE on AP. The high regression coefficient for this relationship underscores the pivotal role of student engagement in contributing to academic success, suggesting that increased engagement, facilitated by the flipped classroom model, is likely to lead to better academic outcomes. Contrary to the expectations outlined in Hypothesis 3, the SEM analysis revealed a slightly negative direct relationship between FC and AP. While FC was shown to enhance SE, which positively impacts AP, the direct influence of FC on AP was not as straightforward. This result indicates the complexity of the relationship between teaching methodologies and academic outcomes and suggests that other factors might play a role in determining academic performance. Overall, the findings of this study offer valuable insights into the pedagogical role of the flipped classroom model within the domain of dance theory education. The clear positive impact of FC on SE is a significant endorsement of active, engagement-focused teaching methods. Furthermore, the positive link between SE and AP reinforces the crucial role of student engagement in educational achievement. However, the nuanced and somewhat unexpected findings regarding the direct impact of FC on AP highlight the multifaceted nature of teaching and learning processes. This suggests that while innovative teaching models such as the flipped classroom can significantly enhance engagement, their direct correlation with academic performance is more complex and may be influenced by additional, unexamined variables.

## Compliance with ethical standards

### Ethical considerations

Informed consent was obtained from all participants, ensuring their rights and privacy. Data were anonymized and stored securely to maintain confidentiality. Approval was granted by the UCSI University Institutional Review Board.

### Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## References

Abeysekera L and Dawson P (2015). Motivation and cognitive load in the flipped classroom: Definition, rationale and a call for

- research. *Higher Education Research and Development*, 34(1): 1-14. <https://doi.org/10.1080/07294360.2014.934336>
- Akçayır G and Akçayır M (2018). The flipped classroom: A review of its advantages and challenges. *Computers and Education*, 126: 334-345. <https://doi.org/10.1016/j.compedu.2018.07.021>
- Al-Samarraie H, Shamsuddin A, and Alzahrani AI (2020). A flipped classroom model in higher education: A review of the evidence across disciplines. *Educational Technology Research and Development*, 68(3): 1017-1051. <https://doi.org/10.1007/s11423-019-09718-8>
- Babbie ER (2020). *The practice of social research*. Cengage AU, Victoria, Australia.
- Bergmann J and Sams A (2012). *Flip your classroom: Reach every student in every class every day*. International Society for Technology in Education, Washington D.C., USA.
- Bishop JL and Verleger MA (2013). The flipped classroom: A survey of the research. In the ASEE Annual Conference and Exposition, Atlanta, Georgia. <https://doi.org/10.18260/1-2--22585>
- Borowski TG (2023). How dance promotes the development of social and emotional competence. *Arts Education Policy Review*, 124(3): 157-170. <https://doi.org/10.1080/10632913.2021.1961109>
- Bowden JLH, Tickle L, and Naumann K (2021). The four pillars of tertiary student engagement and success: A holistic measurement approach. *Studies in Higher Education*, 46(6): 1207-1224. <https://doi.org/10.1080/03075079.2019.1672647>
- Budhai SS (2021). *Best practices in engaging online learners through active and experiential learning strategies*. Routledge, London, UK. <https://doi.org/10.4324/9781003140405>
- Camper Moore C (2023). 'Culture of basic goodness'—Examining factors that contribute to student success and sense of place in undergraduate dance major programs. *Research in Dance Education*, 24(4): 410-431. <https://doi.org/10.1080/14647893.2021.2005558>
- Cochran WG (1977). *Sampling techniques*. John Wiley and Sons, Hoboken, USA.
- Creswell JW and Poth CN (2016). *Qualitative inquiry and research design: Choosing among five approaches*. SAGE Publications, Thousand Oaks, USA.
- Crow S (2020). *The ballet class: Educating creative dance artists?* Ph.D. Dissertation, University of Roehampton, London, UK.
- Demirel CMG (2016). *Exploring the flipped classroom: Possibilities and limitations*. Ph.D. Dissertation, Repositório da Universidade de Lisboa, Lisboa, Portugal.
- Doğan Y, Batdı V, and Yaşar MD (2023). Effectiveness of flipped classroom practices in teaching of science: A mixed research synthesis. *Research in Science and Technological Education*, 41(1): 393-421. <https://doi.org/10.1080/02635143.2021.1909553>
- Duker P, Gawboy A, Hughes B, and Shaffer KP (2015). Hacking the music theory classroom: Standards-based grading, just-in-time teaching, and the inverted class. *Music Theory Online*, 21(1): 1-23. <https://doi.org/10.30535/mto.21.1.2>
- Fisher R, Perényi A, and Birdthistle N (2021). The positive relationship between flipped and blended learning and student engagement, performance and satisfaction. *Active Learning in Higher Education*, 22(2): 97-113. <https://doi.org/10.1177/1469787418801702>
- French S and Kennedy G (2017). Reassessing the value of university lectures. *Teaching in Higher Education*, 22(6): 639-654. <https://doi.org/10.1080/13562517.2016.1273213>
- Goode J, Margolis J, and Chapman G (2014). Curriculum is not enough: The educational theory and research foundation of the exploring computer science professional development



- model. In the Proceedings of the 45<sup>th</sup> ACM Technical Symposium on Computer Science Education, ACM, Atlanta, USA: 493-498. <https://doi.org/10.1145/2538862.2538948>
- Green J (2001). Socially constructed bodies in American dance classrooms. *Research in Dance Education*, 2(2): 155-173. <https://doi.org/10.1080/14647890120100782>
- Guckian J, Utukuri M, Asif A, Burton O, Adeyoju J, Oumeziane A, Chu T, and Rees EL (2021). Social media in undergraduate medical education: A systematic review. *Medical Education*, 55(11): 1227-1241. <https://doi.org/10.1111/medu.14567> PMID:33988867
- Han E and Klein KC (2019). Pre-class learning methods for flipped classrooms. *American Journal of Pharmaceutical Education*, 83(1): 6922. <https://doi.org/10.5688/ajpe6922> PMID:30894772 PMCID:PMC6418854
- Hannafin MJ, Hannafin KM, Land SM, and Oliver K (1997). Grounded practice and the design of constructivist learning environments. *Educational Technology Research and Development*, 45: 101-117. <https://doi.org/10.1007/BF02299733>
- Hargreaves A (1998). The emotional practice of teaching. *Teaching and Teacher Education*, 14(8): 835-854. [https://doi.org/10.1016/S0742-051X\(98\)00025-0](https://doi.org/10.1016/S0742-051X(98)00025-0)
- Hwang GJ, Lai CL, and Wang SY (2015). Seamless flipped learning: A mobile technology-enhanced flipped classroom with effective learning strategies. *Journal of Computers in Education*, 2: 449-473. <https://doi.org/10.1007/s40692-015-0043-0>
- Johnson GB (2013). Student perceptions of the flipped classroom. Ph.D. Dissertation, University of British Columbia, Vancouver, Canada.
- Kassing G (2007). *History of dance: An interactive arts approach*. Human Kinetics, Champaign, USA.
- Kay R, MacDonald T, and DiGiuseppe M (2019). A comparison of lecture-based, active, and flipped classroom teaching approaches in higher education. *Journal of Computing in Higher Education*, 31: 449-471. <https://doi.org/10.1007/s12528-018-9197-x>
- Krejcie RV and Morgan DW (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3): 607-610. <https://doi.org/10.1177/001316447003000308>
- Lawson A, Davis C, and Son J (2019). Not all flipped classes are the same: Using learning science to design flipped classrooms. *Journal of the Scholarship of Teaching and Learning*, 19(5): 77-104. <https://doi.org/10.14434/josotl.v19i5.25856>
- Martin R (1998). *Critical moves: Dance studies in theory and politics*. Duke University Press, Durham, USA.
- Martínez-Jiménez R, and Ruiz-Jiménez MC (2020). Improving students' satisfaction and learning performance using flipped classroom. *The International Journal of Management Education*, 18(3): 100422. <https://doi.org/10.1016/j.ijme.2020.100422>
- McCarthy-Brown N (2017). *Dance pedagogy for a diverse world: Culturally relevant teaching in theory, research and practice*. McFarland, Jefferson, USA.
- Merriam SB and Tisdell EJ (2015). *Qualitative research: A guide to design and implementation*. John Wiley and Sons, Hoboken, USA.
- Piaget J (1952). *The origins of intelligence in children*. International Universities Press, Madison, USA. <https://doi.org/10.1037/11494-000>
- Prince M (2004). Does active learning work? A review of the research. *Journal of Engineering Education*, 93(3): 223-231. <https://doi.org/10.1002/j.2168-9830.2004.tb00809.x>
- Steen-Utheim AT and Foldnes N (2018). A qualitative investigation of student engagement in a flipped classroom. *Teaching in Higher Education*, 23(3): 307-324. <https://doi.org/10.1080/13562517.2017.1379481>
- Tawfik AA and Lilly C (2015). Using a flipped classroom approach to support problem-based learning. *Technology, Knowledge and Learning*, 20: 299-315. <https://doi.org/10.1007/s10758-015-9262-8>
- Velegol SB, Zappe SE, and Mahoney EMILY (2015). The evolution of a flipped classroom: Evidence-based recommendations. *Advances in Engineering Education*, 4(3): 1-37.
- Vygotsky LS (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press, Cambridge, USA.
- Yoo SC, Truong TA, and Jung K (2023). Entrepreneurship education for women through project-based flipped learning: The impact of innovativeness and risk-taking on course satisfaction. *Journal of Entrepreneurship, Management and Innovation*, 19(3): 229-260. <https://doi.org/10.7341/20231937>