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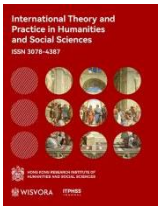

The application of NFT in art education: the impact on teaching, the market and certification

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Abstract

NFT (non-fungible token), as a significant application of blockchain technology, is reshaping the model of art education. This paper explores the potential applications of NFT in art education, focusing on how it influences teaching methods, the value transformation of students, the evaluation of art education, and international development. The study employs a mixed-method approach, combining questionnaire surveys (N=100) and semistructured interviews (N=15), to analyse the acceptance and impact of NFT in art education. The results show that NFT can increase students' market awareness and copyright protection awareness and promote the global circulation of artworks. However, technical barriers, market volatility, and insufficient educational practice experience remain the main challenges to the widespread application of NFT in art education. This research not only reveals the value of NFT in art education but also provides practical guidance for future curriculum design, educational assessment, and academic certification.

1. Introduction

1.1 Research background

With the rapid development of blockchain technology, non-fungible tokens (NFT), as decentralized digital assets, profoundly impact the creation, trading, and dissemination of art. NFT enables the unique identification of digital artworks, clarifies copyright ownership, and provides traceability, bringing new business models and opportunities to the art market (Liang & Chi, 2021). NFT technologies not only protect the rights of artists but also transform the trading model of artworks, allowing digital artworks to be collected, auctioned, and invested in just like traditional artworks do (Selen et al., 2023). Additionally, the risk aversion characteristics of NFT in financial markets have garnered attention; studies have shown that NFT assets can serve as a hedge against market volatility under certain conditions (Ko & Lee, 2023).

In the field of art education, the application of NFT is also gaining increasing attention. Traditional art education relies primarily on offline teaching models, where students' work is

typically limited to classroom displays or graduation exhibitions, making it difficult for them to be widely disseminated and stored long term. The introduction of NFT allows students' artworks to be digitized, copyrighted, and stored on blockchain, ensuring their immutability and enabling market circulation (Liang & Chi, 2021). This technology not only expands the boundaries of artistic creation but also provides new teaching methods and evaluation standards for art education. Using NFT technology can help students build digital portfolios and gain broader attention and economic returns through decentralized markets (Solovtsova & Shipitsyn, 2021). The digital transformation of art education has also influenced educators' understanding of contemporary art, leading to a greater emphasis on the integration of technology and creativity in art courses (Zupancic, 2020).

NFT also provides economic incentives for art education. Students can earn financial rewards by minting their works into NFT and selling them in the market. This not only increases students' motivation to create but also helps them gain early exposure to the art market, fostering an awareness of commercializing art (Apostu et al., 2022). The transparency of NFT transactions and the automatic execution features of smart contracts make royalty distribution for artworks more equitable, which aids in cultivating students' copyright protection awareness (Markulin, 2021). Additionally, NFT facilitates the integration of the art market with financial markets, providing more practical opportunities for art education (Herzog & Duh, 2020).

In the context of globalization, NFT has also facilitated the international development of art education. NFT artworks can circulate globally, allowing student creations to reach a broader international audience rather than being confined to local markets (Um & Zhang, 2021). NFT technology can also be used to issue digital certificates and document students' academic achievements, making cross-border educational certification more convenient (Nijs et al., 2021). The development of virtual education platforms has also enabled art education to transcend geographical boundaries, providing equal learning opportunities for students from different countries (Puppe et al., 2020).

The rise of NFT technology has brought new opportunities and challenges to art education. This study explores the application status, advantages and potential problems of NFT in art education to provide theoretical support and practical reference for the future development of art education.

1.2 Research objectives and problems

This study aims to explore the application of NFT in art education, focusing on the following issues:

a. How will NFT change the art teaching model?

b. What is the role of NFT in the value transformation and commercialization of student art works?

c. How feasible is NFT in art education assessment and certification?

d. How can NFT promote the international development of art education?

2. Literature Review

2.1 Theoretical basis

Constructivism was proposed by Piaget and Vygotsky, who emphasized that learners construct knowledge through practice and social interaction (Piaget, 1950; Vygotsky, 1978). In NFT applications, students can actively build their knowledge systems by creating, trading, and

managing NFT art pieces rather than merely passively receiving knowledge from teachers. This interactive learning model aligns with the core ideas of constructivism, enhancing students' creativity and digital literacy. Unlike traditional passive learning methods, NFT-based learning provides an authentic learning environment, where students engage in real-world transactions, copyright management, and digital curation, reinforcing their sense of ownership and responsibility in the learning process. Additionally, the collaborative nature of NFT marketplaces fosters peer-to-peer interactions, allowing students to exchange feedback, co-create digital works, and participate in decentralized creative communities, further deepening their knowledge construction.

The theory of digital learning ecosystems emphasizes that the intervention of technology not only affects the way learning resources are obtained but also affects the interaction mode between learners (Siemens, 2005). As a kind of digital asset, NFT can make students' work circulate on decentralized platforms, thus creating a richer learning environment. Through NFT-based platforms, students can not only exhibit their work globally but also receive validation and critique from international audiences, making learning more situated and connected. This decentralized structure also shifts the role of educators from knowledge transmitters to facilitators of inquiry-based learning, guiding students in navigating blockchain ecosystems, evaluating market trends, and making informed decisions in the digital economy.

The blockchain economic model explores how decentralized technology can change the economic structure, especially in digital asset management (Tapscott & Tapscott, 2016). NFT, as an important application of blockchain technology, is redefining the digital art market. By leveraging smart contracts, NFT ensures transparency in transactions, enabling students to establish direct ownership and retain royalties from secondary sales. This mechanism provides an economic incentive, reinforcing constructivist principles by motivating students to actively experiment with market-driven strategies in digital art monetization. Furthermore, as NFTs function within a decentralized economy, students develop an entrepreneurial mindset, gaining hands-on experience in branding, market positioning, and audience engagement—skills essential for professional artistic careers in the digital age.

2.2 Definition and characteristics of NFT

NFT is a unique digital asset built on the blockchain. Unlike Bitcoin and other homogenized tokens, each NFT has a unique identifier and metadata, making it impossible to directly replace or swap (Apostu et al., 2022). NFT enhances the credibility of digital assets by recording ownership information through smart contracts, ensuring their authenticity and immutability (Alam et al., 2023). Since NFT rely on blockchain technology, all transaction records are transparent and public, not only enhancing transaction security in fields such as art, gaming, and finance but also promoting the development of new business models (Apostu et al., 2022). Each NFT contains specific metadata, and unlike Bitcoin and other tokens, the NFT cannot be split into smaller units for trading. Ownership information and transaction history are stored on the blockchain, allowing for public verification to ensure the authenticity and reliability of transactions (Alam et al., 2023). The NSF leverages smart contracts to enable automated functions, enabling artists to set royalty rules and continuously earn income when trading in the secondary NFT market (Apostu et al., 2022).

2.3 Current application status of NFT in the field of art

NFT first emerged in the digital art market, where artists can list their works on NFT platforms to ensure authenticity and scarcity. The Beeple auction of an NFT art piece for $69 million

brought significant attention to NFT in the art world (Apostu et al., 2022). As the NFT market matures, more artists, galleries, and auction houses are embracing this emerging technology. In addition to independent artists, many renowned museums and art institutions have ventured into NFT. Institutions such as the British Museum and the Museum of Modern Art (MoMA) are experimenting with the NFT for their collection to expand the digital collection market and attract younger audiences (Alam et al., 2023). The development of NFT has also driven new business models in the art industry, allowing multiple investors to collectively own a piece of art through distributed ownership, thereby lowering the threshold for collecting and enhancing market liquidity.

Many art schools have also begun to incorporate NFT into their teaching. NFT are used to issue digital certificates for students, ensuring their authenticity and increasing their employability (Kassen, 2019). This blockchain-based certification method also facilitates international exchange and collaboration in art education, enabling student creation to gain global recognition.

2.4 The potential value of NFT in education

The potential of NFT technology in the education sector is enormous. NFT can be used to establish copyright for student work, ensuring its originality and immutability, allowing student creations to be stored permanently and protected by digital rights management (Apostu et al., 2022). This technology is particularly suitable for fields such as art education and creative writing, helping students build verifiable digital portfolios that provide an advantage for future career development.

NFT also has unique value in academic certification. Educational institutions can use the NFT to issue digital certificates and record students' academic achievements, skill certifications, and learning journeys (Esani et al., 2024). Compared with traditional paper certificates, NFT certificates offer advantages such as anticounterfeiting, easy storage, and global recognition, making international educational certification more convenient.

NFT market also offers students opportunities to showcase and trade their work, expanding the commercial possibilities of art education. Through NFT trading platforms, students can directly sell their creations to the global market, achieving early career specialization and exploring art monetization models in the digital economy (Alam et al., 2023). This mechanism not only boosts students' creative motivation but also provides them with the opportunity to practice market operations, fostering business acumen and adaptability to the digital economy.

3. Research technique

This study used a mixed methods approach, combining quantitative analysis (survey data) with qualitative analysis (semi-structured interviews) to ensure the scientific and reliable nature of the findings.

The quantitative survey (N=100) captured broad trends in students' awareness, attitudes, and challenges in applying NFTs in art education. In contrast, qualitative interviews (N=15) provided insight into the experiences of students and educators, allowing for a deeper exploration of emerging themes.

This methodological combination adhered to the principles of triangulation (Creswell & Plano Clark, 2011), ensuring that qualitative findings complemented and explained quantitative trends. Interview data were thematically analyzed (Braun & Clarke, 2006), while survey data were analyzed using SPSS regression models to determine statistical correlations. This integration of methods enhanced the robustness of the findings by providing generalizable patterns and

contextual understanding.

3.1 Quantitative analysis method

This study uses a questionnaire survey to collect data, focusing on the acceptance of NFT in art education, its application status and its influence on students' learning results.

Research subjects: The questionnaire survey subjects of this study are undergraduates and postgraduates from art colleges at home and abroad, as well as teachers engaged in art education.

Target sample size: A stratified random sampling method was adopted to ensure the representativeness of the sample. A total of 100 valid questionnaires (86 students and 14 teachers) were collected.

Questionnaire design:

The questionnaire uses a 5-point Likert scale to measure respondents' attitudes toward and practical application of NFT in art education.

Main survey dimensions:

a. NFT, degree of cognition
b. The application of NFT in art creation
c. The impact of NFT on art education
d. NFT technology challenges

Table 3.1 Dimensions of the questionnaire survey

Dimensions of the survey	description	Measurement method
NFT, cognition degree	The extent to which respondents know about NFT	Likert 5 Scale (1= completely unaware, 5= very aware)
The application of NFT in art creation	Whether the respondent uses NFT to confirm or trade works	Likert 5 Scale (1= never used, 5= always used)
The impact of NFT on art education	Whether NFT has improved the interactivity and commercial value of art courses	Likert 5 Scale (1=strongly disagree, 5=strongly agree)
NFT technology challenges	Whether respondents think there is a technical learning threshold or market instability for NFT	Likert 5 Scale (1=strongly disagree, 5=strongly agree)

Data analysis method:

Descriptive statistical analysis: This analysis was used to analyse the popularity of NFT in art education.

Correlation analysis: Measuring the relationship between NFT usage and student learning outcomes.

Regression analysis: The effect of the NFT adoption rate on art education performance was explored, and the control variables included students' professional background and NFT awareness.

Statistical tools: Data analysis will be performed via SPSS software to ensure the accuracy of the data analysis.

3.2 Qualitative analysis method

This study uses a semistructured interview method to understand the application experience and challenges of NFT in art education in detail. Thematic analysis was employed to analyze the interview data, following the framework proposed by Braun and Clarke (2006), which involves systematically coding qualitative data to identify key themes and patterns.

Interviewee:

College art educators (with at least 3 years of teaching experience, NFT-related course practitioner, target number: 5).

Art students (those with experience in trading NFT works or participating in NFT courses, target number: 10).

Interview question design:

Have you used NFT-related technology in class?

What do you think is the greatest impact of NFT on art education?

What are the main challenges students face in NFT trading or rights confirmation?

Can NFT improve students' market awareness and business ability?

Data analysis method:

Thematic analysis: Using the method of Braun & Clarke (2006), the interview data were coded and classified, and key themes were extracted.

Triangulation: Cross-validate the questionnaire results with interview data to improve the reliability and validity of the study.

3.3 Research reliability and validity assurance

The reliability of the questionnaire was analysed by using the Cronbach's alpha coefficient to ensure the internal consistency of all the indicators of the questionnaire. The questions were reviewed by three art education experts to ensure that the questions could accurately measure the research variables.

4. Results and Discussion

4.1 Finding

According to the descriptive statistical analysis in Table 4.1, NFT has a high level of recognition in art education (M=4.06, SD=0.99), but the actual trading frequency is low (M=2.55, SD=0.77). Most students believe that NFT has a positive effect on learning (M=3.99, SD=1.03) and market awareness (M=3.59, SD=0.79), as well as on employment competitiveness (M=3.87, SD=0.97). However, some students are cautious about the market value of NFT transactions, indicating that the commercial application of the NFT in education still needs further development.

Table 4.1 Descriptive statistics of NFT-related variables

metric	NFT_ cognition degree	NFT_ transaction frequency	NFT_Learning impact	NFT_market awareness	NFT_ Employment competitiveness
count	100	100	100	100	100
mean	4.06	2.55	3.99	3.59	3.87
SD	0.99	0.77	1.03	0.79	0.97

SE	0.099	0.077	0.103	0.079	0.097
min	1	1	1	1	1
25%	3.75	2	4	3	3
50%	4	3	4	4	4
75%	5	3	5	4	5
max	5	4	5	5	5

According to the correlation analysis in Figure 4.1 and Table 4.2, there is a strong positive correlation between NFT awareness, the impact of NFT learning, and NFT market consciousness on NFT employment competitiveness ($r > 0.5$). These findings indicate that these factors can influence students' perceptions of whether NFT experiences are beneficial for employment to some extent. Among them, the correlation between NFT trading frequency and NFT market consciousness is the highest ($r = 0.62$, $p < 0.01$), suggesting that students who frequently engage in NFT trading generally have greater market consciousness. This finding is consistent with existing research, which indicates that actual market participation can effectively enhance art students' understanding of market mechanismsLin et al. (2024).

The frequency of NFT trading is highly correlated with market awareness, but its correlation with employment competitiveness is low ($r = 0.43$, $p < 0.05$), indicating that NFT trading itself is not a core factor determining employment competitiveness. NFT trading experience may not directly enhance students' employability; instead, it indirectly boosts their employment competitiveness by promoting market awareness and learning experiences. The correlation between the impact of NFT on learning and employment competitiveness is the highest ($r = 0.65$, $p < 0.01$), suggesting that students who believe that NFT has a positive effect on learning are also more likely to believe that NFT experience can enhance their career competitiveness.

Awareness of NFT ($\beta = 0.3028$, $p = 0.001$), the impact of NFT learning ($\beta = 0.3406$, $p < 0.001$), and market awareness of NFT ($\beta = 0.2469$, $p = 0.048$) have significant positive effects on employment competitiveness. This finding indicates that students' understanding, learning, and market awareness of NFT can enhance their employment competitiveness to some extent. The frequency of NFT trading ($\beta = -0.0167$, $p = 0.889$) has no significant effect on employment competitiveness, suggesting that NFT trading practices themselves do not directly improve job-seeking competitiveness but need to be indirectly enhanced through other factors. This further validates the mediating role of market awareness in the relationship between NFT experience and employability. From an educational practice perspective, universities should not only encourage students to engage in trading practices in NFT course design but also focus on enhancing their market analysis skills and understanding of the NFT ecosystem, helping them better adapt to the future digital art industry.

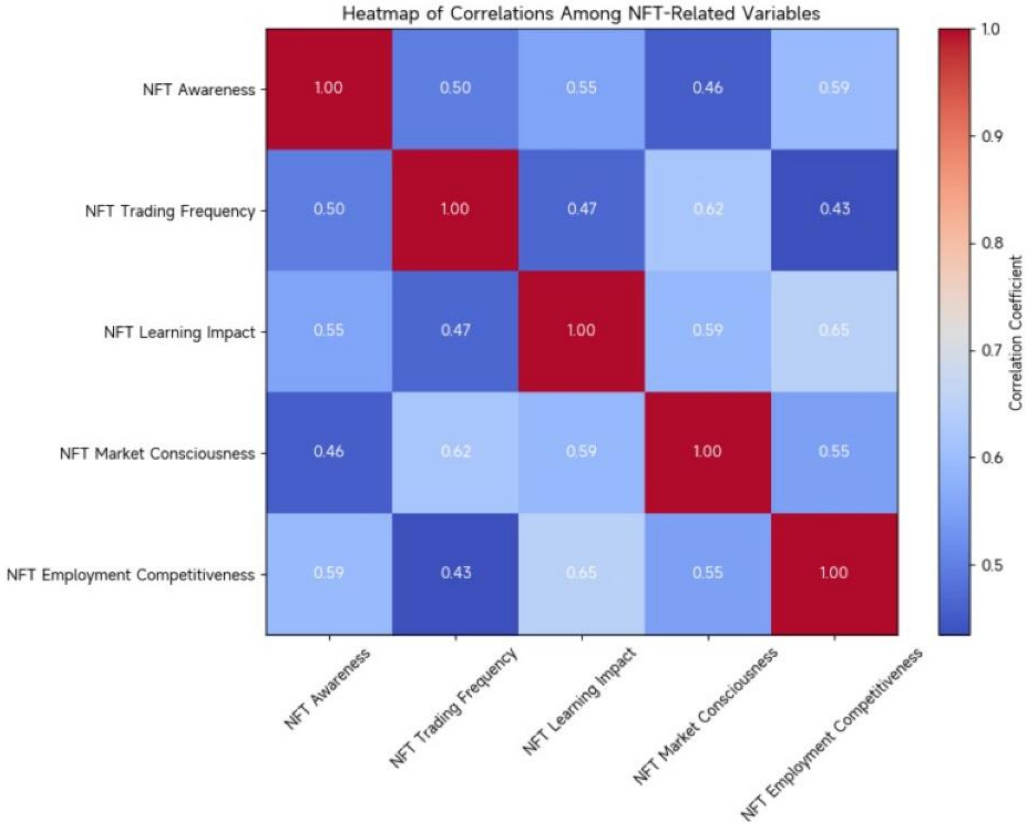

Figure 4.1 Regression analysis thermal map

Table 4.2 Regression analysis of NFT-related variables on employment competitiveness

variable	coefficient (β)	standard error (SE)	t price	p price	95% confidence interval (2.5% -97.5%)
constant term	0.4382	0.359	1.222	0.225	(-0.274, 1.150)
NFT, cognition degree	0.3028	0.088	3.434	0.001	(0.128, 0.478)
NFT trading frequency	-0.0167	0.12	-0.14	0.889	(-0.255, 0.222)
NFT learning impact	0.3406	0.09	3.774	0	(0.161, 0.520)
NFT market awareness	0.2469	0.123	2.006	0.048	(0.003, 0.491)

Model explanatory power:

$R^2 = 0.522$ (explanatory power 52.2%)

F value = 25.92, p <0.001 (model overall significant)

The model has high explanatory power ($R^2 = 52.2\%$), indicating that NFT-related variables are representative in predicting employment competitiveness.

4.1.1 Artworks display

A total of 73% of the surveyed students understood the NFT, but only 45% tried to use the NFT to authenticate their work, indicating that the application of the NFT in art education is still in the exploratory stage. Eighty percent of the surveyed students believe that the NFT can effectively

prevent the theft of artworks and consider the authentication function of the NFT to be protective for digital art creation.

Regression analysis revealed that NFT awareness has a significant positive effect on employment competitiveness ($\beta = 0.3028$, $p = 0.001$), indicating that the greater the degree of students' understanding of NFT is, the greater the likelihood that they are to recognize the value of NFT in career development.

Correlation analysis revealed a moderate positive correlation between NFT awareness and market awareness ($r = 0.46$, $p < 0.05$), indicating that students who were more aware of NFT tended to be more concerned about development trends in the digital art market.

One teacher (interviewee T-A) said, "NFT gives students more confidence to show their work because they know that ownership of the work can be clearly recorded. This not only prevents unauthorized copying but also makes it easier for students to prove the originality of their work in their future careers."

One student (interviewee S–E) said, "In NFT course, I learned for the first time how to register my work on the blockchain and make sure it was not stolen at will. This gave me a new understanding of the security of digital art."

NFT ownership function is widely recognized, but the actual usage rate is still low (only 45% of students have tried it). In the future, when promoting NFT in art education, we should focus on solving issues such as technical training, cost reduction, and market application guidance to improve the acceptance of NFT among students.

4.1.2 Commercialization of NFT trading

According to the survey data, 65% of the surveyed students were positive about NFT trading, but only 40% of them had tried NFT trading. This shows that NFT has a high degree of recognition among students, but their actual participation is still limited.

Regression analysis reveals that the relationship between NFT trading frequency and employment competitiveness is not significant ($\beta = -0.0167$, $p = 0.889$), indicating that NFT trading alone does not directly enhance students' job-seeking competitiveness. However, there is a significant positive correlation between NFT trading frequency and market awareness ($r = 0.62$, $p < 0.01$), suggesting that students who frequently engage in NFT transactions tend to have stronger market awareness, which aligns with findings from Lin et al. (2024) on peer effects in financial market participation.

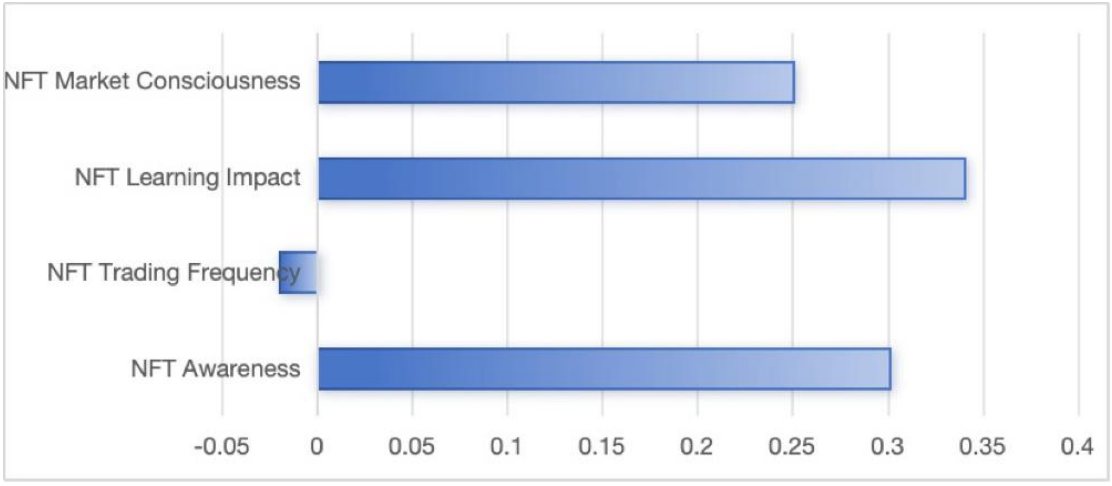

Figure 4.2 Regression Coefficients of NFT-Related Variables on Employment Competitiveness

As shown in Figure 4.3, the frequency of NFT transactions has a significant positive effect on

market awareness (β = 0.639, p <0.001). The correlation analysis revealed a moderate positive relationship between the two variables (r = 0.621). The analysis reveals that for every one-unit increase in NFT transaction frequency, the predicted value of NFT market awareness increases by 0.639 units, indicating that students participating in NFT transactions generally have stronger market cognition. The P value (p = 5.35 × 10^-¹²) is much less than 0.05, suggesting that this relationship is statistically significant. Therefore, it can be inferred that NFT trading is not just an economic activity but also a process of market learning, enabling students to better understand market mechanisms, pricing strategies for work, and the NFT ecosystem.

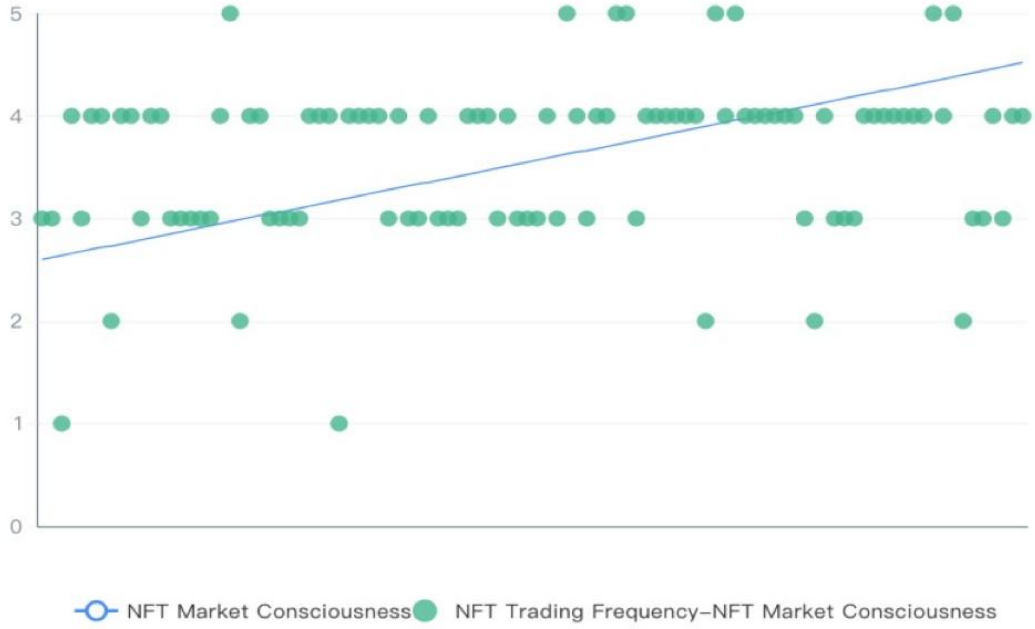

Figure 4.3 Scatter plot of regression analysis between NFT trading frequency and market awareness

A student (interviewee S-C) stated, "NFT trading has truly made me realize that art is not just about creation; it can also be an investment." Another student (interviewee S-B) added, "When I minted my work as an NFT and sold it, I began to think about how to make my work more marketable, not just complete assignments."

The market-oriented operation of NFT transactions has gradually influenced the creative methods of young artists, but its application in education still requires further exploration. Given that NFT transactions themselves do not significantly impact employment competitiveness, universities should place greater emphasis on cultivating market awareness when designing NFT courses rather than just focusing on NFT trading operations.

4.1.3 Educational certification

According to the survey data, more than 70% of the respondents believe that NFT certificates are more credible than traditional paper certificates, especially in the fields of international certification and distance education, where the immutability and transparency of NFT certificates provide greater credibility for transnational academic certification.

The regression analysis results show that the awareness of NFT (β = 0.3028, p = 0.001) and market consciousness of NFT (β = 0.2469, p = 0.048) both have a significant positive effect on employment competitiveness. These findings indicate that students' understanding of NFT certification and their overall perceptions of the NFT ecosystem influence their confidence in their ability to apply NFT in their future career development.

One teacher (interviewee T-D) said, "NFT certificates make academic certification more transparent, can reduce academic fraud, and have greater potential in cross-border education

certification."

4.2 International NFT education application cases

MIT launched the Blockcerts project in 2017, collaborating with the MIT Media Lab (MIT Media Lab) and Learning Machine to use blockchain technology for storing and verifying degree certificates. Although the certificate itself is not an NFT, its decentralized storage and immutability share technical similarities with NFT certificates, providing a reference for the application of the NFT in academic credentials.

UALs Central Saint Martins (Central Saint Martins) has launched a short course called "Blockchain Art and NFT," which aims to provide students with foundational knowledge of blockchain applications in visual arts, design, and fashion. The course covers topics such as digital collectibles, generative art, on-chain art, and crypto art.

The NTU has teamed up with HackQuest to launch the NTU I&E x HackQuest MOOC open course, which aims to provide free learning opportunities for students interested in Web3. NTU launched its Master of Science in Blockchain in 2023, providing students with the opportunity to gain a deeper understanding and practical experience in blockchain technology.

This trend indicates that NFT certification technology not only enhances the credibility of academic credentials but also has the potential to become a significant method for digital asset management in the future education sector. Given that NFT certification is still in its early stages of development, universities need more practical cases and policy support when promoting NFT certification to ensure its feasibility for widespread application.

4.3 The impact of NFT on art education

Table 4.3 Triangular measurement analysis of NFT in art education

project	statistical data	Interview data
Promote innovative teaching models	Seventy-five percent of the surveyed teachers said NFT helped with classroom interaction	"NFT makes my students more willing to take the initiative because they know that their work can have market value." (Teacher T-A)
Increase student engagement	Sixty percent of students said NFT make them more focused on the originality of their work	"NFT made me truly care about copyright for the first time." (Student S-F)
Expand employment opportunities	Fifty percent of students said their NFT trading experience would help their future career development	"I earned my first art income through NFT trading, which makes me confident about the future." (Student S-G)

The survey data show that NFT has multifaceted impacts on art education (see Table 4.3). Seventy-five percent of the surveyed teachers believe that the NFT enhances classroom interaction and supports innovative teaching methods; sixty percent of the students indicate that the NFT makes them more focused on the originality of their work, increasing their participation; and fifty percent of the students believe that the NFT trading experience is beneficial for future career development. Additionally, the interview data reveal that both teachers and students agree that NFT can increase market awareness and promote the practical application of artworks.

The results of the regression analysis show that NFT awareness ($\beta = 0.3028$, $p = 0.001$), NFT learning influence ($\beta = 0.3406$, $p < 0.001$) and NFT market awareness ($\beta = 0.2469$, $p = 0.048$) have a significant positive effect on students' employment competitiveness.

The correlation analysis shows that the frequency of NFT transactions is significantly positively correlated with market awareness ($r = 0.62$, $p < 0.01$). This finding indicates that practicing NFT can enhance students' understanding of the digital art market, but it does not necessarily directly impact their employability. One student (interviewee S-C) stated, "NFT trading made me realize for the first time that artworks are more than just creations; they can also be investments. I began to think about how to make my work more valuable in the market, not just as a class assignment."

5. Conclusion and Suggestion

5.1 Research summary

This study examines the use of NFTs in art education, revealing their transformative impact on teaching methods, market awareness, and academic accreditation. Findings suggest that NFT integration enhances students' understanding of digital ownership and the commercial art market, while also providing opportunities for international recognition.

Quantitative analysis revealed that NFT awareness was positively correlated with students' market awareness ($r = 0.62$, $p < 0.01$), indicating that students who engage in NFT trading tend to develop stronger business acumen. However, NFT trading itself did not significantly affect employment competitiveness ($\beta = -0.0167$, $p = 0.889$), suggesting that other factors such as curriculum integration and technological literacy play a crucial role.

Qualitative findings further support these conclusions, with interview participants highlighting the potential of NFTs to bridge the gap between traditional and digital art markets, while also noting challenges such as market volatility and technological accessibility.

By integrating blockchain technology into art education, this study provides practical insights for educators seeking to modernize curriculum, improve digital literacy, and prepare students for emerging market trends. These findings contribute to the ongoing discussion on the role of decentralized technologies in education and their implications for future pedagogical frameworks. From a constructivist perspective, this transformation fosters active learning, as students engage in real-world digital transactions, develop copyright awareness, and experiment with decentralized artistic expression. The ability to mint, trade, and manage digital assets allows students to construct knowledge through hands-on experience, reinforcing the principles of learning by doing emphasized in constructivist pedagogy. The application of NFT technology also expands the boundaries of art education, allowing students to showcase and trade their work on digital platforms and interact with global audiences.

5.2 Limitations of the study

The application prospects of NFT in art education are broad, but this study also has several limitations. The use of NFT in education is still in its early stages, and the long-term effects remain unclear, especially in areas such as academic certification and commercial operations, which require further exploration. NFT technology also involves a high level of technical barriers, making it costly for educators and students lacking blockchain knowledge to learn, potentially affecting their adoption in art education. The volatility of the NFT trading market also introduces uncertainty regarding the market value of student artworks, which could impact their commercial potential.

5.3 Future research directions

NFT, as an emerging technology, presents both numerous opportunities and challenges in the

application of art education. Future research should delve deeper into technological innovations, market development, and the transformation of educational models related to the NFT to promote their healthy development in art education. Future studies could explore how the NFT influences the education of other art forms, such as music, dance, and theater. Research also needs to examine how the NFT can be integrated with interdisciplinary teaching tools in areas such as multimedia art and game design.

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