

"The Potential Impact Of Artificial Intelligence Applications On Enriching Art Design Education By Exploring Kuwait's Traditional Crafts."

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Abstract

The current research examines the relationship between digital image technology and Kuwait's Traditional Crafts design. It discusses the processing criteria of digital image technology by developing the AlSadu textile design. In this paper, the authors highlight the possible benefits and challenges of amalgamating generative AI tools into art and design classrooms, confirming the importance of developing artwork by exploring Kuwait's traditional crafts and the processes of making portfolios with ethical considerations as these technologies continue to evolve. AI successfully collects information on national environmental artworks and crafts. Moreover, it systematically analyses, classifies, and displays this national artwork. On the other hand, traditional arts and crafts can be introduced to the teaching curriculum of art design courses so that the art forms of minority nationalities can be passed on through classroom teaching content. Eventually, artwork design students considered a deeper understanding and recognised the total worth of the connotations of their national artworks and crafts.

Keywords: generative AI tools, Kuwait's traditional crafts, curriculum, e-portfolios.

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I. Introduction

In the field of designing or redesigning artwork professionally, AI enriches the teaching content and diversifies the teaching resources, especially for art design forms the very special, professional, scarce, obscure, or incomplete. The advancement and upgrading of computer technology, network information technology, or any data technology, AI technology have greatly assist, collect, summarise, arrange, and share teaching knowledge.

In the landscape of art and design education, the rapid advancement and adoption of generative artificial intelligence (AI) tools have created both opportunities and challenges for professionals in the field. The content of art design education, however, has an essential positive effect on the teaching content organisation of art design courses, the planning of teaching schemes, the formulation of syllabi, the compilation of teaching materials, the instruction of artwork creation, and the marketing of art design works, etc.

The integration of AI enhances the quality of teaching content and diversifies teaching resources, especially for specialised, professional, rare, unrecognised artwork or incomplete art design forms. With the assistance of AI, relevant art design information can be more easily gathered. The progress and development of computer technology, network information technology, and AI have greatly encouraged the gathering, summarising, organising, and sharing of teaching knowledge and art design education content. These advancements have seriously influenced the association of teaching content in art design courses, the development of teaching plans, the creation of syllabi, the collection of teaching materials, the guidance of artwork innovation, and eventually, the promotion of art design works, among other aspects. They have an essential promoted effect on the teaching content community of art design courses, the planning of teaching schemes, the formulation of syllabi, the compilation of teaching materials, and the instruction of artwork creation as well.

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II. Terminology

AlSadu [1&2]

- The traditional weaving of Al AlSadu refers to the traditional woven textile made by Bedouin women. In Arabic, 'Al AlSadu' means weaving done in a horizontal style. The weaving is a warp-faced plain weave made on a ground loom.
- AlSadu, or simply AlSadu, is an embroidery form in geometrical shapes hand-woven by Bedouin people. The Al AlSadu Society established the AlSadu House in Kuwait in 1980 to protect the interests of the Bedouins and AlSadu weaving is commonly seen on fabric used in tents or majlis floor pillows, carpets, and mats.
- AlSadu is a traditional form of weaving practised by Bedouin women in rural communities of the United Arab Emirates to produce soft furnishings and decorative accessories for camels and horses.
- AlSadu traditional pattern is based on narrow bands of geometric designs, including triangles, zigzags, diamonds, and dotted markings.
- The other fabric-woven designs visualise the desert and nomadic lifestyle. They might include the symbol of "horse's teeth," which are stripes like a comb (diamond shapes), tents (triangles), water (ripple diamond shapes), desert animals, and sometimes camel forms.

E-portfolios [3 &4]

- An academic e-portfolio is a digital collection created by students that includes various elements from their courses, such as essays, posters, photographs, videos, and artwork.
- Academic e-portfolios can highlight various aspects of student life, including volunteer experiences, employment history, extracurricular activities, and more.
- In essence, E-portfolios make student learning visible. However, a well-designed E-portfolio should be more than just a collection of artifacts.
- A good E-portfolio is both a product (a digital collection of artifacts) and a process (reflecting on those artifacts and what they represent). Like a Learning Management System (LMS), E-Portfolio exists online and supports the student education process. They differ from LMS in two categories: ownership and control. In a university classroom, the instructor directs the LMS, which decides who is to access and what tools are allowed. With an E-portfolio, the student chooses who can view the E-portfolio, what artifacts are admitted, and how it is created. A student typically loses access to the LMS when courses end, while an E-Portfolio remains the student's property after university.

III. Literature Review

Christian et al., (2023)[5], explore the impact of Artificial Intelligence (AI) on the art world, particularly its integration with computer science. Through a Systematic Literature Review (SLR), they identified many relevant papers, highlighting how AI enables artists to create avant-garde works using tools like computer vision and generative adversarial networks (GANs). They found that AI enhances artistic creation and increases audience interaction and participation in artistic experiences.

Li (2020)[6]indicated that Students could explore new forms of artistic expression and gain fresh perspectives on current styles using techniques and tools driven by artificial intelligence. AI supports creative instruction, enabling students to produce innovative and refined works. Through unprecedented analysis and interpretation of art, AI opens up new possibilities for understanding and appreciating artistic creations.

Xiao et al. (2020). [7] highlighted that integrating artificial intelligence (AI) into education significantly transforms teaching and learning. It is crucial to analyse the effectiveness of AI platforms in enhancing students' educational skills. This research aims to explore AI's diverse impacts, offering insights into its role in promoting academic excellence.

Tuomi et al. (2018). [8] explained that The Impact of Artificial Intelligence on Learning, Teaching, and Education," published by the Publications Office of the European Union, explores the implications of Artificial Intelligence for the educational landscape, providing valuable insights into its effects on learning and teaching methodologies.

Peng (2020) [9] reported that in contemporary education, more attention is paid to training professional talents, and art design plays an important role. The rapid rise of intelligent education technology has also brought about profound changes in the patterns where talent is cultivated. The AI microcosms being used in art by understanding a history of where biological platforms themselves lie are valuable references for the education practice that STEMs to be. Different approaches to how the application can be improved in contemporary art design education have been put forward, and scholars in this regard have provided varied voices.

Yan S. (2021). [10] indicated that modern art design education has significantly benefitted from integrating intelligent equipment into the transformation process. This has led to the development of increasingly sophisticated and considerate teaching tools. Intelligent equipment has become pivotal in training modern art

design professionals through the prompt improvement of network technology and its widespread application. Multimedia is the most predominant pedagogy tool in contemporary art design education, offering complete teaching content and plenty of educational resources. Furthermore, recent years have seen the emergence of various online teaching tools, including online classrooms, converted classrooms, cloud classrooms, and rain classrooms. These innovations assist the teaching activities in art design education, encourage the delivery of teaching content, and ultimately elevate teaching quality and efficiency.

Bhutani et al. (2018). [11]. Emphasised that AI plays a crucial role in improving the quality and efficiency of artwork projects, presenting practical assistance in purifying artwork design. As the request for experienced professionals, particularly in higher education, continues to grow, AI is increasingly being integrated into the teaching process of art education at the higher level. It plays a significant role in transferring knowledge to senior talents and students where art is a fundamental part of the higher art of education. The education process, however, involves transmitting satisfactory professional knowledge points, especially for lecturing highly professional skills or techniques.

Zhenyu (2019)[12] reported that the development of information technology and the popularity of internet computer technology have expanded the application field of digital image technology. It can facilitate image interchange, adjustment, colour texture, and shape changes. Digital technology and imaging are invaluable in graphic design to meet growing cultural needs. The relationship between digital image technology and graphic design is discussed, providing references for relevant researchers.

Jurjo et al. (2015). [13] emphasised that applying digital technology and imaging in graphic design has become an inevitable trend, and they play an invaluable role in graphic design. However, graphic design has been established to meet the growing cultural needs of people, and it is clear that high standards of digital technology and imaging are not lacking. The combination of digital technology and graphic design results from the cross-border intersection and integration of art. It is an inevitable trend in the development of modern multimedia technology. The various elements of digital technology can meet the development needs of complex graphic design. With the development of the market and the improvement of people's aesthetic consciousness, the digital design requirements for graphic design are getting higher and higher.

Chen et al. (2016). [14] assured that the designer should use the appropriate digital technology to process the graphic design according to the customer's needs and accurately express the design scheme instead of stacking the special effects or doing whatever they want. Today, whether it is print advertising, bookbinding, product packaging, commercial posters, etc., are inseparable from digital technology. Therefore, after the designer has figured out the idea and theme of the design, he should appropriately select some image processing editing tools (such as Photoshop, etc.) to transform an ordinary image into a work that meets the design theme. Although digital image and post-digital processing are a new form of graphic design, graphic design skill requires designers to have a strong artistic and solid artistic background. Obtaining digital Image requires graphic designers to have a firm control ability and specific processing power for colour, proportion, composition, etc. Only in this way can they create graphic design works that conform to the public aesthetic standards and consumer mentality.

IV. Portfolios

Portfolios are widely used in graphic arts and design. Authors create a "dossier" with their best works. An electronic portfolio in education takes a different dimension. It is a collection of works and includes a series of reflections that allow an understanding of the learning and teaching process and facilitate evaluation. E-portfolios are often used as assessment tools, and the reflection process should be more noticed. Therefore, portfolios, assessments, and reflective tools should be exposed and used to improve educators and students' work. Buzzetto, (2010)[15].

Li. (2019). [16] reported that E-portfolios have become increasingly important with the rise of web technologies and their impact on teaching practices. In education, e-portfolios can enrich students' learning experiences and support educators' assessments. Although numerous tools are available for educational e-portfolios, many are primarily focused on evaluation.

Barberà et al. (2006). [17] emphasised that the most exciting e-portfolios are educational portfolios that could be used individually or by groups of students, aiming to present themselves as a set of developed or managed artefacts. It is worth mentioning that students' e-portfolios select a namespace of work or evidence for achieving e-personal or professional goals, which are organised and presented as the required artefact. They have the function of enhancing reflection on each educational and professional practice. Therefore, when a student makes an e-portfolio, it will constantly be subjected to a personal assessment and external achievement of objectives.

E-portfolios have grown and expanded due to the importance of web technologies and their benefits to teaching practices. In education, e-portfolios improve students' learning processes and support educator's assessment. Although many tools encourage the application of educational e-portfolios, their use is relegated to evaluation purposes. For this reason, e-portfolios can become personalised tools with specific characteristics focused on different purposes.

Amaya et al. (2013). [16] reported that the Students' Perspective Educational E-portfolios allow students to learn to manage themselves, be more autonomous in the learning process, and promote decision-making with the instructor's guidance. E-portfolios will allow the regulation of their learning process and make student participants more active. It is generally used as an evaluation system integrated into teaching and learning. Regarding the evidence presented by the student, a reflection and justification process will establish a relationship between what is imagined to be true and possible and what is educated. Allowing the students to set their own learning and working rhythm. This includes a selection of evidence or samples, giving the student a period to respond to a specific goal [16]. These samples allow the student to demonstrate his learning while the educators track the learning process.

Chen,(2020)[18]. Reported that the concept of "Internet Plus" has promoted art design majors in colleges and universities to enter a new era of talent training—the art design significant needs to innovate talent training on an original basis. Based on the multimedia background of "Internet Plus", the art design must build an adequate curriculum course. Educators start "self-study" and "guidance", respectively. The "Internet Plus" platform provides a space for sustainable development to cultivate learners' practical ability, innovation ability, and professional quality. Therefore, under the influence of the Internet Plus", the reshaping of the exercising mode of artwork professionals in higher practical colleges must update the teaching concept and innovate the teaching mode and learning mode.

Khudai et al. (2023). [19] Show that AI can radically transform education, affecting the content and methods. As AI becomes more prominent in education and society, educators, institutions, and policymakers must grasp its potential. This research lays the groundwork for the future integration of responsible AI across different academic fields.

Sun. (2021)[20] discusses the challenges of using artificial intelligence (AI) to train art and design professionals. It assesses the impact of AI on teaching content, methods, and tools. An enhanced fuzzy evaluation system is introduced to demonstrate how AI applications improve the training of art and design professionals. The system incorporates a fuzzy similarity calculation model based on fuzzy theory. Additionally, the paper presents various strategies for integrating AI into the training of art and design professionals. Overall, this research effectively illustrates the positive impact of AI on the training of art and design professionals and offers suggestions for enhancing training outcomes.

V. Methodology

The research aims to comprehensively investigate the impact of Artificial Intelligence (AI) in education within a specific academic student artwork education. This section outlines the research design, participant selection criteria, data collection methods, data analysis techniques, and ethical considerations, providing a robust framework for the study.

Research Design:

This study adopts a mixed-methods research design, combining quantitative and qualitative approaches to understand AI's impact on education better. The quantitative aspect involves surveys to collect numerical data, while the qualitative component includes interviews to capture in-depth insights. This mixed-methods design allows for a nuanced exploration of quantitative trends and qualitative nuances related to AI in education.

Participants of Sample Selection:

- The study involves 200 participants from students of the final level of academic art backgrounds.
- The selection criteria include representation from various college art departments, ensuring a comprehensive understanding of AI's impact across disciplines.
- The sampling method is stratified random sampling, facilitating a balanced representation of participants.
- This method was chosen to ensure a representative and unbiased sample for robust data analysis.

Data Collection Methods:

- Data is collected through surveys and interviews. Surveys consist of structured questions assessing AI educational skills, platform utilisation, impact on academic performance, and user satisfaction.
- Interviews are conducted to delve into participants' experiences, perceptions, and qualitative aspects that surveys may not capture.
- The instruments used in the surveys undergo rigorous validation to ensure reliability and validity.
- The data collection process adheres to ethical guidelines, with participants providing informed consent, ensuring confidentiality, and addressing potential conflicts of interest.

Data Analysis:

- Quantitative survey data undergoes statistical analysis using descriptive statistics, regression analyses, and normality tests.
- The results are presented in tables, providing a clear overview of trends and relationships.
- Qualitative interview data undergoes thematic analysis, identifying recurring themes and patterns.
- Integrating quantitative and qualitative findings allows for comprehensively interpreting the collected data, aligning with the research objectives.

Research collecting Result

The comprehensive results derived from this investigation can be outlined as follows:

- Table: Student satisfaction

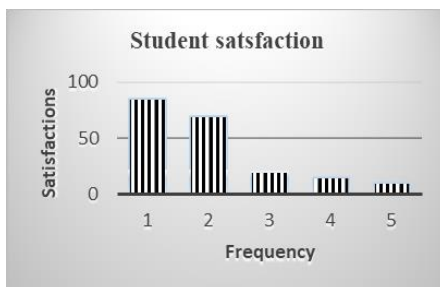
The Table presents the results of a descriptive analysis assessing participants' satisfaction levels with the overall experience of using AI platforms in their educational artwork.

- Participants were asked to rate their satisfaction on a scale ranging from "Very dissatisfied" to "Very satisfied."

Table (1) and graph (1) provide insight into participants' satisfaction with integrating AI platforms into their educational art curriculum.

Table (1)

	Satisfaction	Frequency
1	Satisfied	85
2	Very satisfied	70
3	Not sure	20
4	Dissatisfied	15
5	Very dissatisfied	10
	Total	200



Graph (1)

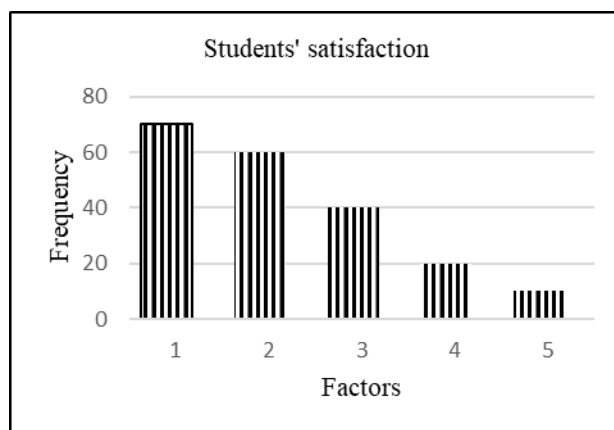
- The table summarise the frequency of responses for each satisfaction item.
- Most participants reported being satisfied, with (85) indicating satisfaction and expressing dissatisfaction (10).
- A smaller number of respondents reported being dissatisfied (15), very dissatisfied (10) and not sure (20).

Table (2) displays the results of a descriptive analysis exploring the factors that contribute to participants' satisfaction with the integration of AI platforms in their education. Participants were asked to identify the factors that significantly influenced their satisfaction, with options including "Ease of use," "Content relevance," "Personalisation," "Technical issues," and an open-ended category labelled "Other (specify)."

The table summarises the frequency of responses for each factor. Among the participants, 70 indicated content relevance contributed to their satisfaction, while 60 mentioned ease of use. Additionally, 40 respondents mentioned personalisation and 20 participants cited technical issues. The open-ended category "Other (specify)" received responses from 10 participants who provided additional factors contributing to their satisfaction. This table provides valuable insights into the diverse factors influencing participants' satisfaction with integrating AI platforms in their educational journey.

Table (2)

	Factors	Frequency
1	Content relevance	70
2	Ease of use	60
3	Personalisation	40
4	Technical issues	20
5	Other (specify)	10
	Total	200



Graph (2)

In Kuwait, traditional crafts are deeply rooted in the country's rich cultural heritage, reflecting centuries-old traditions, artisanship, and artistic expression. From intricate textiles and pottery to exquisite jewellery and metalwork, Kuwait's traditional crafts encompass various artistic disciplines passed down through generations. Artisanal work continues to thrive today, with skilled artisans preserving and revitalising conventional techniques while infusing contemporary elements into their creations. Let us delve into the world of Kuwait's traditional crafts and explore the beauty, creativity, and cultural significance of these timeless art forms.

VI. Kuwaiti Textiles: Weaving And Embroidery

Textile arts have been an integral part of Kuwaiti culture for centuries, with weaving and embroidery techniques passed down from generation to generation. Traditional Kuwaiti textiles are renowned for their intricate patterns, vibrant colours, and exquisite artisanship, reflecting the diverse influences of Bedouin, Persian, and Indian traditions. Women play a central role in textile production, using handloom weaving and intricate embroidery techniques to create stunning garments, rugs, and tapestries that display the beauty and artisanship of Kuwaiti culture, as shown in the Image.[19&20].

VII. Al Alsadu Weaving Is A Traditional Hand-Woven Embroidery By Bedouin Women.

Alnajadah (2018).[21] represents a unique and intricate collection of pictographic symbols and codes constructed by the master weavers of Al-ALSadu. Each design in this long set is a testament to their exceptional creativity, displaying the vastness and intricacy of their knowledge and weaving skills. The patterns reflect their artistic prowess and embody deep cultural significance, revealing layers of meaning woven into each piece. Four significant weaving techniques used by Al-ALSadu master weavers are included in the weaving techniques used in Al-ALSadu weavings.

- 1) Plain weaving is the simplest and fastest technique in Al-ALSadu weaving.
- 2) Warp face weaving is a durable and practical technique for creating necessary textiles.
- 3) Zoleyaha is a Pile weaving primarily creates a thick area rug.” This rug is an excellent insulator and provides a soft surface, protecting the Bedouin's body from the coolness and dampness of the desert ground during winter.
- 4) The “Raqoum” is a tapestry weaving technique often used for decorative purposes. It is designed to be useful or practical rather than attractive.

VIII. Experimental Designs

The experimental designs demonstrate the possibility of achieving sustainability by exploring Kuwait's traditional crafts and using traditional ALSadu fabric to preserve the traditional ALSadu craft in Kuwait. Moreover, applying the aesthetic and functional aspects in the design process generates new ideas that combine ALSadu textile design as inspiration to design ALSadu weaving wall panels design.

IX. Design The Wall Panel.

According to the above terminology, textile pieces from the ALSadu inscriptions were chosen to study the possibility of using the beauty of ALSadu fabric in traditional Kuwaiti panel design.

Six different styles of textile unit designs of ALSadu (Image 1 to 6) have been carefully chosen, especially the construction, textures, and colours, as motives for the students' inspiration to be used on a group of questions of learning ALSadu fabrics properties directed to the AI programs including the fabric constructions, textures, and colours.



Image (1).



Image (2).



Image (3).



Image (4).



Image (5).



Image (6)

With verbal permission from the Al-AISadu Weaving Cooperative Society
The Image were taken cordially,

Image (1). Is a geometric design that takes the shapes of side-by-side diamond shapes separated by alternating two triangles connected from the top sides

Image (4, 5, and 6). Different types of Raqoum weave fabrics use a particular pattern of small triangles lined in a diamond shape, giving the shape of human or animal ribs.

The above Image shows the weaving style, which is characterised by geometric shapes forming distinctive patterns. Traditional colours, as shown, are black, brown, beige, and red. The desert environment influences Bedouin weaving patterns, which consist of simple, pure geometric designs that flow rhythmically and symmetrically. Weavers also incorporate bright reds and oranges to enliven their surroundings.

X. Experimental Work Design With AI Technology

AlSadu weaving wall panels.

The panels are specially designed to honour the timeless art of Sadu weaving, a cultural treasure of the Kuwaiti Bedouin people. They embody the history and tradition of Kuwait's enthusiasts of cultural textiles and artisans keen on authentic weaving techniques.

According to the above terminology of **AlSadu weaving**, the Experimental work began with a brief introduction to AI generative art. It swiftly progressed to hands-on experience with image generators with the three AI design generators (Craiyon, Leonardo, and AI photo). The students' final product was evaluated, and the educators' assessment groups chose the top and best designs.

After the students were tasked with designing Kuwait's traditional construction of multiple designs, they created a new textile, AlSadu fabric, represented by the wall panels.

The final six designs were submitted and reported by image (7 to 12).



Image (7).



Image (8).



Image (9).



Image (10).



Image (11).



Image (12).

XI. Discussions

- By examining the iterative process of refining original ideas through multiple iterations, verbal expansion, and using (Crayon, Leonardo, and AI photos) for generating diverse visual outcomes, students gain insights into these tools' potential benefits and pitfalls in an educational context.
- The students who participated in the current digital case study were taught artefact techniques and tasked with creating multiple prompts, focusing on refining their ideas over time.
- The student's modification was according to the objectives of the AI redesigning followed directly by:
 - A. **The lines:** The lines (broken, zigzag, curved), regular with repetitions, pf triangle and diamond are similar to the right and the left.
 - B. **The colour distribution** must consider symmetry and the relative weight of each colour.
 - C. **Fabric Construction:** General construction has varying and overlapping areas that focus on the middle.
 - D. **Symmetry and congruence** on the right and left sides. When working with color in a design, it is important to carefully consider both the distribution of colours and the symmetry of that distribution.
 - E. Students have to pay attention to the relative weight of each colour used to enhance the visual appeal and create a harmonious and balanced composition.

Students in the digital case study were taught prompt artwork techniques focusing on refining their ideas over time. Students demonstrated an increased understanding of the potential and limitations of generative AI tools combined with their E-portfolios and how to manipulate subject matter for more effective results.

XII. Conclusion

Since these tools are fundamental, integrating digital technology and imaging with graphics design is necessary. In the context of information technology and computer usage, especially with Internet access on computers everywhere in widespread use, digital Image have found numerous applications. In particular, digital image technology enables the main elements in a picture to be adjusted and changed (in colour, texture, or shape).

The gradual advancement of AI technology and the benefits of educational talent training plans in artwork design present some limitations in applying AI to produce art design education courseware. This creates numerous opportunities and potential for developing new evaluation systems or models to assess the training impact of AI and its application in art design professions. Additionally, there is potential to create mechanisms to implement these assessments effectively. The complementary phases, however, are not necessarily successive. Generally, this type of e-portfolio (Barberà et al., 2006) [22&23] is as follows:

- Presentation and index. In this first phase, it outlines students' personal and academic records.
- Collecting, selecting, reflecting on, and publishing evidence. This phase implies self-regulation of the learning process by providing evidence.
- The critical element is the student's reflection on why students chose that evidence and its relation to learning.
- Rating. Educators should assess the student's evidence.
- The criteria should be known from the beginning of the teaching-learning process.

XIII. Recommendation

- 1)The challenge of using AI-generated Images as final products was conceptually intriguing, requiring further investigation and consideration of the prompts.
- 2)It highlights the potential benefits and challenges of integrating generative AI tools into art and design classrooms.
- 3)Prompt engineering iterative processes and ethical considerations as these technologies evolve are recommended.
- 4)It is recommended that an e-portfolio be used to demonstrate a teacher's professional competence. Educators who work with students, including the materials, create such portfolios.
- 5)Educators should establish the advanced concept of modern art and design education, create a new education model, and integrate the art and design discipline with other disciplines.
- 6)In the context of "Internet Plus," the teaching of the art design speciality should integrate resources inside and outside the class and combine theoretical learning with practical operation.
- 7)Educators can provide guidance in professional theory and technology and communicate and make suggestions for students' employment and entrepreneurship, career planning, and even life emotions at any time.

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