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Art in the Age of Technology

Analysis on the Application of New Media in Russian Education and Teaching

Ying Zheng

Yunnan Arts University Kunming, China 650500 Moscow State University Lomonosov, Russia

Abstract—Art and technology are indispensable to artists. The development of new media has fundamentally changed the way information is disseminated. The integration of art works and new technologies has brought new vitality to art. In today's era, only by correctly understanding the relationship between art and technology can we better carry out artistic creation. Starting from the convergence and reconstruction of art, based on the experimental results of students in three Russian art colleges, this paper has explored the deep influence of new media technology on art, hoping to promote the further development of young talent education and teaching.

Keywords-art; technology; new media; Russia

I. INTRODUCTION

With the rapid development of science and technology, the integration of art works with new media technologies such as augmented reality and virtual reality has blurred the boundaries of style, genre and form. We have to pay attention to the relationship between technology and art, as well as the influence of new media on artistic creation.

Art and technology go hand in hand and are inseparable. Nowadays, every artist should understand the integrated technology innovation, which puts forward a realistic topic for Russian art education: the integration of new technology in teaching. On the one hand, it provides a knowledge base for the use of new tools; on the other hand, it can initiate action for innovation and development. This paper studies the influence of technological progress on the convergence and reconstruction of art. By analyzing the experimental results of 550 fourth-grade students in four majors in three Russian universities, it tries to point out the direction of education and teaching for the cultivation of young talents nowadays.

II. RESEARCH BACKGROUND

The twenty-first century has brought essential changes to the inherent form of art. Dance, music, drama, film and other arts are constantly creating new forms under mutual influence. The combination of VR, AR and works of art clearly illustrates this point. The transformation of modern art forms is believed to depend entirely on science. ¹In fact, all changes rely on computer technology. This paper studies the influence of new media technology on two aspects of art, convergence and reconstruction. From the perspective of reconstruction, new technologies can substantially change the form of works of art (such as VR movies); ² from the perspective of convergence, inherent forms use new technologies to create new elements (such as online theatres). Thus, there has been a critical change in the educational concepts of young talents in the fields of film, drama, design, dance and so on, which has put forward an urgent task for Russian education. So are students willing to use new technology to create?

- III. RELEVANT WORK AND RESEARCH METHODS
- Choosing questionnaire survey method and thesis analysis method to study students' willingness.
- Using new media technology to carry out teaching experiments (See "Table I")

¹ Ahmad Rafi M.E. and Karboulonis P., The Aggregation of Art and Science - Carriers of Creativity (2000). CAADRIA 2000 [Agenda of the Fifth Asian Association of Computer-Aided Architectural Design Conference/ International Standard Book No. 981-04-2491-4], Singapore, 18-19 May 2000, PP. 491-500.

² Slowinska M.A., The Convergence of Art and Marketing in Contemporary Culture (2014). Transcript Verlag Press.

TABLE I. CONDUCTING TEACHING EXPERIMENTS WITH NEW MEDIA TECHNOLOGY

		A.N. Cassikin Russian National, Moscow		C.A. Grasimov Russian National Film Academy		St. Petersburg National College of Culture	
	Total number	male	female	male	female	male	female
Number	550	83	61	92	80	119	115
Percentage	100%	15.09%	11.09%	16.73%	14.55%	21.64%	20.91%

a. Note: The subjects of study are 550 students in the fourth grade of Moscow and St. Petersburg's Department of Creation. Because they are completely in the traditional educational system, they can use new

Grouping of participants

In order to carry out systematic analysis, experimental participants were divided into groups according to the teaching specialty. (See "Table II")

	Interior Design	Film and Television Production	Art History	Dance Art
Number	144	221	98	87
Percentage	26.18%	40.18%	17.82%	15.82%

Professional teachers finished the teaching of three elective courses for all students in three weeks, and conducted diagnostic surveys in the conclusion class. Questionnaires are as follows:

1). Are you considering using new technology in your work of art creation within your professional scope?

A) Yes

B) No

C) Uncertainty

2). Do you think that the new technology teaching curriculum is a necessary item in the educational policy within your professional scope?

A) Yes

B) No

C) Uncertainty

3). If there is no such course, how will you learn to use new technology in art?

A) Self-study

B) Paid remedial courses

C) No learning at all

Next, students are required to complete the prototype of creative projects with new technologies within one month, in order to determine:

A) Students' motivation to create the project;

B) How to complete the theoretical understanding of the project;

C) New concepts on the existing forms of works of art.

4. ECTS scoring system

The three elements mentioned above are the main criteria for evaluating student projects, so ECTS 100 scoring system is used for reasonable analysis of data (See "Table III").

TABLE III. CTS SCORING SYSTEM

Scoring	Definition		
90-100	Excellent		
80-89	Good, but with some defects		
65-79	Good, but with some defects in main aspects		
55-64	Qualified, but with soem defects in main aspects		
50-54	Completely meet the minmum standards		
35-49	Unqualified, hardly considering any requirements		
1-34	Uncomplted work or not considering any requirement		

A week after the completion of the creative project, the participants were assessed and investigated, and the content was the same as the diagnostic investigation.

Permissions to use data and analyze creative works were obtained from the University Administrations and the participants in the experiment. The statistical error of the results was 2.2%.

IV. EXPERIMENTAL RESULTS

The experimental diagnosis stage shows that students are interested not only in using new technologies in their own creation, but also in learning the knowledge in courses of universities. 72% of respondents said they were enthusiastic about the use of new technologies; 12% rejected the possibility, and 16% were not yet certain.

Interestingly, 65% of the students who refused to use new technology in their creative activities belonged to the group of "Art History", 13% to the group of "Dance Art" and 13% to the group of "Film and Television Production", and only 9% to the group of "Interior Design".

Although 12% of students don't want to use science in their own creation, only 9% of them think that they don't need to learn new technology courses in modern universities. At the same time, 54% of students are willing to study by themselves and 21% of students are willing to pay for courses.

Detailed data for the experimental diagnosis stage are shown in "Fig. 1", "Fig. 2" and "Fig. 3".



Fig. 1. Problem: Are you considering using new technology in your work of art creation within your professional scope?



Fig. 2. Problem: Do you think that the new technology teaching curriculum is a necessary item in the educational policy within your professional scope?



Fig. 3. If there is no such course, how will you learn to use new technologies in art?

463 students completed the required work in the experimental creation stage. Among them, 29% of the

students completed their projects with the score of 90-100, 35% with the score of 80-89, 21% with the score of 65-79, 10% with the score of 55-64, and only 5% of the students failed.

The highest scores were found in the groups of "Interior Design" and "Film and Television Production" (see "Table IV").

Scoring of Creative Items in Groups (Data in Percentage)

 TABLE IV.
 Scoring of Creative Projects in Each Group (Data Expressed as Percentage)

Score	Interior Design	Film and Television Production	Art History	Dance Art
90-100	47%	45%	21%	24%
80-89	33%	36%	19%	28%
65-79	13%	12%	35%	31%
55-64	7%	5%	15%	8%
50-54	-	2%	6%	5%
35-49	-	-	4%	4%
1-34	-	-	-	

These figures indicate that students are really interested in creating cross-border projects and have the ability to do so. Most of the students completed their tasks with excellent and good grades, even though they only attended three elective courses.

The occupations of participants who have the best knowledge and can interpret knowledge well are all related to visual reproduction, which shows that technology is most commonly used in this field nowadays. Compared with the abstract concepts, it is more difficult to use new technologies to supplement the concepts in the fields of consciousness, sensation and action.

It is noteworthy that 10 students in the group of "Interior Design" and 28 students in the group of "Dance Art" focused on the use of AR technology as a performing element. The idea of using AR as a background or augmented reality as a prop may be a major step forward in theatre art in the university.

Given trends in the use of new technologies were also observed in students' creative work (See "Table V").

Analysis of creative projects using new technologies (in descending order of the most frequently mentioned and less mentioned)

TABLE V.	ANALYZING CREATIVE PROJECTS USING NEW
TECHNOLOGIES	(RANKED IN DESCENDING ORDER WITH THE MOST
Freq	UENT AND LESS FREQUENT MENTIONS)

Interior Design	Film and Television Production	Art History	Dance Art
Use VR and AR Technologies for Design	Use VR for Film Production	Use AR and VR Technologies to Build Virtual Museums	Use AR Technology as Elements of Dance Performance
AR and VR Simulation	Use AR technology to produce interactive film clips	Use AR and VR Technologies for Live Broadcast	Use VR for Dance Performance s
Use AR technology to systematize the knowledge of interior design course	Use AR and VR technology to broadcast	Use AR and VR Technologies to Teach Students	Use AR and VR technologies to produce interactive dance performance
Use AR and VR Technologies to Teach Students	Using VR and AR technologies to prepare for the shooting process		Use AR and VR Technologie s to Teach Students
Supplement VR and AR Technological Elements for Performance	Use AR and VR Technologies to Teach Students		

After completing the creative task, the participants were assessed and surveyed. The results show that task execution is the reason why students are more interested in new technology. (See "Fig. 4", "Fig. 5" and "Fig. 6")

The number of students willing to use innovative tools increased by 14%, the number of students wishing to learn new technologies in university education increased by 13%, and the number of students willing to self-study increased by 11%.



Fig. 4. Are you considering using new technology in your work of art creation within your professional scope?



Fig. 5. Do you think that the new technology teaching curriculum is a necessary item in the educational policy within your professional scope?



Fig. 6. If there is no such course, how will you learn to use new technologies in art?

TABLE VI. CONCLUSIONS DRAWN FROM THE EXPERIMENTS

Questions	A)	B)	C)
Are you considering using new technology in your work of art creation within your professional scope?	86%	7%	7%
Do you think that the new technology teaching curriculum is a necessary item in the educational policy within your professional scope?	96%	2%	4%
If there is no such course, how will you learn to use new technologies in art?	65%	20%	15%

The result in "Table VI" shows that most students are interested in innovative technology. 96% of them are in favor of offering such courses; 65% of the students surveyed are willing to study by themselves; 20% are willing to pay for the studies of such courses; 86% of the respondents are willing to use new technology in their major. Students' creative direction is mainly reflected in: using VR and AR technology to design and create; using VR technology to create films; using VR and AR technology to create virtual museums; using AR technology as dance performance elements. The analysis results also reflect the new direction of drama art of college students - using AR technology for stage design, using pictures to replace classical scenes and props.



The projects also indicate that universities need the corresponding material and technological basis for teaching and creative experiments, and students need courses on the use of innovative technology (in which some students are unwilling to study by themselves or pay extra for the corresponding courses).

V. DISCUSSION

The value of art lies in creation, and creation is innovation. To innovate, we shall make a breakthrough from the technical level. We cannot be confined to the traditional creative plane in exploring new forms of works of art, but can extend to the use of new media technologies such as virtual and augmented reality.

Volume mobile software is a noteworthy example of using AR technology. It can cut any scene from a twodimensional movie and reproduce it under the condition of user location. Although the software has periodic work failures, it has been actively used in dance schools in Western countries. The interactive elements contained in the software not only help to ensure the accuracy of action repetition, but also provide additional incentives for students and turn teachers into mediators.³

Another unusual application of AR technology is in the Cuseum project. In 2018, Isabella Stewart Gardner Museum of Art (Boston, USA) released Hackling the Heist software to reproduce Rembrandt paintings stolen 28 years ago (just point smartphone cameras at the walls with canvas hanging in the front of the museum). (See "Fig. 7")



Fig. 7. Cuseum, Vimeo.com, 2018.

Another trend is that the boundaries between various types of art have become blurred, most prominent of which is the theatre. At the Spartak Cinema in Voronezh, audiences can watch live dramas on the stage of the Moscow Theatre, and the cinema can also keep a backup of live broadcasts, which can be broadcasted according to the schedule. In addition, the project can be operated as an online cinema, where audiences can watch their favorite performances via the Internet and even reserve regular theatrical broadcasts by purchasing a fee-paying service license. Nowadays, video recording makes drama with the characteristics of film art. (See "Fig. 8" and "Fig. 9")

In modern art, AR and VR technology cannot restrict a single visit to the exhibition center. In 2016, the Street Art Exhibition of Metaform was held in Moscow. The exhibition space is also in virtual reality. Representatives of classical dance (Dutch national ballet) and modern dance recorded vivid dance performances here. Thanks to panoramic photography, audiences could choose their own perspective and follow the movements of the dancers they were interested in.



Fig. 8. Center Mars, KudaGo.com, 2016.



Fig. 9. Center Mars, KudaGo.com, 2016.

Compared with traditional forms, interactive elements and minimal choice illusion arouse great interest of art consumers, and vivid on-the-spot effect and augmented reality expand the scope of perception and attraction.⁴ It is also an excellent opportunity for artists to not only re-create the inherent art forms, but also reap a wider audience group.

VI. CONCLUSION

On the premise that Russian universities with creative majors do not have sufficient material and technical foundation and lack the training plan for students required for creative majors, most of the students have realized the necessity of using innovative tools in the creation of works of art, and have the intention of integrating VR, AR and

³ Brockhoeft T., Petuch J., Ackerman M. and Tyson G., Interactive Augmented Reality Technology for Dance Art (2016). Department of Computer Science and School of Dance, Florida State University.

⁴ Bendor R., D. Maggs, R. Peake, J. Robinson and S. Williams. 2017. Sustainable Virtual World: Observations of Interactive Art Facilities. Ecology and Society 22 (2): 17.



other technologies into their future creative projects. Students are interested in new methods and new technologies. These ideas also show professionals that the younger generation is well prepared for the change from syllabus to traditional artistic concepts, which has certain guiding significance for Russian educators.

At present, due to insufficient material and technical support, the project cannot be realized in the schools of the participants. At the same time, the time has come to realize new technology, MR and hybrid reality. However, due to the insufficient mastery of existing AR and VR technologies, full learning in Russian universities may be delayed. Under the condition of setting up the course of "New Media Technology of Art", this research can be applied in the teaching and research room of interior design, film and television production, art history and dance art.

The performance of art has been developing towards perfection, and people are advancing step by step in the process of pursuing beauty. Today, with the continuous improvement of science and technology, the reconstruction and convergence of artistic forms will continue with the development of new media technology. Virtual and augmented reality technology will actively integrate with art. Artists have the ability to complete works that want to express their intentions, and the level of beauty will rise to a new level.

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