

Original Paper

Research on the Application Strategy of Virtual Reality Technology under the Background of Media Integration -- Take Chinese Minnan Culture Short Video as an Example

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Received: July 29, 2023

Accepted: August 22, 2023

Online Published: August 25, 2023

doi:10.22158/sss.v4n3p226

URL: <http://dx.doi.org/10.22158/sss.v4n3p226>

Abstract

In this study, an experiment was designed to verify the communication effects and impacts of virtual reality technology on the viewers of a short video on Minnan cultural content. A control experiment and a questionnaire survey were chosen as the main research methods. According to the requirements of the experiment, the research subjects meeting the requirements were selected and divided into the control group and the experimental group. At the end of the experiment, a questionnaire survey was conducted on all the participants. The results and data of the questionnaire were analyzed at the end.

By analyzing the data from the results of the questionnaire and with almost similar other variables in the control group, the minor effects of some subjective and objective factors on the experiment were excluded. The samples of the two groups showed significant differences in all eight items of the questionnaire, including the degree of interest in the content of the short videos, the richness of the content of the short videos, the rating of the degree of integration of the traditional culture and the short videos, the rating of the sense of visual experience and satisfaction with the content of this part of the short videos, the willingness to create this kind of short videos, the likelihood of recommending this kind of short videos to your family members or friends, the complete explanation of the connotation of traditional culture by using the short videos, and whether or not it will attract you to watch the similar content the next time, and the question of whether the traditional culture is fully explained through the short videos.

It was found by analyzing the result data of this experiment and the questionnaire survey conducted after the experiment. Compared with Group B who watched the short video of Minnan culture

supported by virtual reality technology, the audience of Group A had a better sense of video viewing and content experience, and gained a better viewing and using experience. This method makes traditional culture better disseminated and presented with the help of virtual reality technology. Therefore, we believe that combining virtual reality technology with short videos of Minnan culture can better spread the traditional culture of Minnan. And virtual reality technology has the characteristics of low cost and easy to operate. It is convenient for short video creators to choose and create.

Keywords

media convergence, virtual reality technology, traditional Chinese culture, short video

1. Introduction

1.1 Background

Through the combing of past research and literature review, we found that there are more current research results related to the communication strategy of short videos, and the application of virtual reality. However, no specialized research has been found to be conducted on the short video dissemination of traditional Minnan culture combined with virtual reality. Therefore, this study selected this important branch of traditional culture in China, Minnan culture short video, as the research object, and set up an experiment to study the communication effect and influence of virtual reality technology on Minnan culture short video. This study is the first to explore the impact of the use of virtual reality technology in the dissemination of short videos on Minnan culture. However, due to the variability of the experimental samples, this study is unable to provide a comprehensive overview of all cases.

1.2 The Current Situation of New Media Communication of Traditional Minnan Culture

The cultural self-confidence of the Chinese nation comes from the long-standing and profound Chinese culture. China's vast territory has given rise to a rich and colorful regional culture. As the unique cultural traditions of a particular region, these regional cultures are embodied in distinctive regional dialects, diets, folklore, beliefs, architecture, folk art, etc., and constitute an indispensable part of Chinese culture. Therefore, the active dissemination of excellent regional culture can play an important function in strengthening cultural self-confidence and realizing the great rejuvenation of the Chinese nation (He, 2021).

During the eight hundred years from Jin to Southern Song Dynasty, the culture of Southern Fujian, with the southward migration of a large number of people from the Central Plains, brought the culture of the Central Plains, which constituted the main body and foundation of the culture of Southern Fujian. Under the influence of the specific coastal geographic environment and the indigenous culture of Fujian and Yue, the culture of the Central Plains and the marine culture fused to form a regional culture unique to the flavor of southern Fujian, reflecting the indigenous nature of southern Fujian culture (Wang, 2023). Southern Fujian culture is an important folk culture in China, with a special scope of generation, performance characteristics and historical connotation. The study of new issues of inheritance and dissemination of Minnan culture is a challenge that the valuable traditional Minnan

culture must face in the process of development. The new communication technology and communication environment require that the southern Fujian culture must be innovatively communicated. Therefore, it is an important part of this research to study how to target the communication effect of Minnan culture on the short video platform under the new communication environment. At the same time, this paper can fill some of the existing research gaps in the short video communication of Minnan culture, and has high practical significance and practical value. Under the background of media convergence, the short video industry needs to keep up with the trend of technological development. As the audience groups' requirements for short video content, visual effect and viewing experience continue to improve, it also makes it necessary to introduce advanced technology to adapt to the change and development of the industry when traditional culture is disseminated on short video platforms. In this paper, by setting up a controlled experiment and conducting a questionnaire survey, we study the strategy of virtual reality technology in traditional culture dissemination under the background of media convergence by taking the short videos of traditional culture in southern Fujian, China as an example, and try to explore a new technology and a new road suitable for the development of traditional culture in southern Fujian.

1.3 Virtual Reality Brings New Sensory and Visual Experiences to Short Videos

Virtual reality technology is an information technology that digitizes images with the help of multimedia, artificial intelligence, sensors and other technologies to create a virtual space. With the application of virtual reality technology, users are able to explore the virtual space by entering it through wearable devices, experiencing the real sense of touch and feeling the existence of virtual things. Virtual reality technology can simulate any realistic environment, such as historical and cultural venues, attractions, and historical monuments, and allow users to participate in human-computer interaction. People can explore in the virtual space with the help of assistive tools to get realistic visual experience and real behavioral experience (Shi, Wu, Yu, & Wei, 2023).

The current development of virtual reality technology has tended to mature, and a large number of TV programs and films around the world are now using virtual reality technology to enhance the viewing experience of the audience in front of the screen. From the most common Chinese Spring Festival Gala to the news or military commentary programs watched in daily life, these programs either use AR technology to give effects that cannot be achieved by physical choreography props, or use the visualization of data and models to make the program content more watchable. Nowadays, a large number of TV news or variety shows make full use of 5G+AR technology to explore a new way of expression, combining virtual scene effects on the basis of the real stage, highlighting the tension of the performance, and utilizing the combination of digital media technology, electronic information technology and other technologies to bring the audience an unprecedented visual experience.

For example, in "Qixi Qimiaoyou" of Henan TV, virtual reality technology is used throughout the program to give viewers a sense of long-time immersive experience. Meanwhile, in "Dragon Boat Festival Wonderful Tour", "Pray" and "Tang Yin" extend the audience's perception with the excellent

play of the dancers themselves, supplemented by excellent choreography and presentation technology. According to Peters, “In the age of electronic media, also as an art, the success of communication becomes a matter of reaching across the soul to touch the body of another human being” (Lei, 2022). McLuhan emphasized that the medium is an extension of the human being. New media industry with the continuous innovation of technology, new technology continues to provide a new form of viewing for all kinds of programs, making the virtual infinitely close to reality. The role of technology in the collective level of human beings is mainly reflected in the change of “perception”, the concept of “perception” in the Boltzian theoretical system is inspired by the Benjaminian theoretical system, that is, “all the ‘perception’, all point to the key element of ‘distance’”, the innovation of media technology, such as the emergence of film, television, shorten the distance between the message and the audience, the new spatial and temporal “perception” forms appear, even if there is no such thing as “perception”. Forms appear, even if they are not physically present, the audience can still access the complete information. As a result, the presence of the body is dissolved by the innovation of media technology, and the objective spatial and temporal distance is “erased” to a certain extent, so that the audience can obtain a real sense of presence. Interactivity has become a major feature of the current new media background, the audience is no longer a pure information receiver, but a co-producer of content, in the process of enhancing the audience’s sense of immersion, through the fusion of virtual reality, enhance the audience’s audio-visual immersion is the most direct and effective method. The creation of this sense of immersion needs to rely on the combination of virtual reality technology and short videos to bring the audience beyond the real immersive experience space. The visual and auditory sensations created by the audience through realistic scenography, sound and virtual effects make the audience’s psychological and visual double stimulation to achieve emotional resonance.

In the “scene first” nowadays, all kinds of film and television works, including film and television works, pay more and more attention to building aestheticized, immersive, ceremonial scene space, first of all, in the content of the screen and the scene construction, should break the audience and the traditional space of the “fourth wall First of all, in the content of the picture and the construction of the scene, the “fourth wall” between the audience and the traditional space should be broken, and the scene should penetrate into the audience and surround the audience. Virtual reality technology is able to stand under multiple perspectives and record the cultural excellence of southern Fujian through digital forms, creating more opportunities for the inheritance as well as the development of good culture. Southern Fujian culture is rich in local culture, which should be eliminated when spreading and displaying these cultures. The overall effect of the picture can be increased through the combination of virtual and real, with the help of live shooting and virtual reality technology. Therefore, short videos of the same type of traditional culture should take advantage of the advantages of virtual reality technology to make up for the disadvantages of traditional culture in the dissemination of new media platforms, so as to obtain better development.

2. Experimental Design

The purpose of this experiment is to verify whether the short video of the traditional culture content of southern Fujian can provide better audio-visual experience for the audience after combining with the virtual reality technology, and whether it can eventually make the traditional culture get better dissemination effect. A controlled experiment was designed, and the experiment was divided into an experimental group and a control group. Different types of short videos of southern Fujian culture are put into the experiment for the two groups of participants. After the experiment, the participants were invited to conduct a questionnaire survey. The results of the questionnaire survey are finally analyzed. So as to draw experimental conclusions. In terms of experimental participants: in order to exclude the digital divide caused by age from producing errors in the experimental results. 60 people were randomly selected for the experiment. Among them, 15 people are 20-30 years old, 15 people are 31-40 years old, 15 people are 41-50 years old, and 15 people are 51-60 years old.

2.1 Experimental Process

A total of 60 people of all ages from 20 to 60 years old were randomly selected, and these groups had similar education levels. And both groups of subjects can skillfully use smart phones to operate short video software. Setting up a control test, Group A is the experimental group and Group B is the control group. After pushing 10 short videos of Minnan culture with virtual reality content daily for people in Group A, 10 short videos of Minnan culture were provided daily for people in Group B. The experiment was conducted for 15 days. And at the end of the experiment, a questionnaire survey was conducted for the two groups of people, and the results of the questionnaire survey were data analyzed.

2.2 Experimental Results

2.2.1 Questionnaire Analysis

At the end of the experiment, we distributed questionnaires to the experimental subjects, the questionnaires were actually distributed 60, the actual recovery of 60, the effective questionnaires were 60, the effective recovery rate was 100%. Subsequently, we analyze the questionnaire data. As can be seen from the table below, the t-test was used to study the experimental and control groups' interest in the content of the short videos, the richness of the content of the short videos, the rating of the degree of integration of traditional culture and short videos, the rating of the visual experience and satisfaction with the content of this part of the short videos, the willingness to create this kind of short videos, the likelihood of recommending this kind of short videos to family members or friends, the connotation of traditional culture, the complete explanation of short videos, and the possibility of using short videos to explain traditional culture to the whole world. Whether the use of short videos can be fully explained, whether it will attract you to watch similar content next time, a total of eight differences can be seen from the following table: the degree of interest of different groups of samples in the content of the short video, the richness of the content of the short video, the degree of integration of traditional culture and the short video scores, the sense of visual experience of the content of this part of the short video and the degree of satisfaction with the content of the short video, the willingness to create this kind of short

videos, the possibility of recommending this kind of short videos to Possibility of family members or friends, Traditional cultural connotations are fully explained in short videos, Whether it will attract you to watch similar content next time all show significance ($p < 0.05$), which means that samples of different groups are interested in the content of the short videos, the richness of the content of the short videos, the degree of integration between the traditional culture and the short videos, the visual experience of the content of the video, and the degree of satisfaction with the content of the short videos, the willingness to create such short videos, the likelihood of recommending such short videos to family members or friends, the complete explanation of traditional cultural connotations through short videos, and whether it will attract you to watch similar content next time.

Specific analysis shows that different groups are interested in the degree of short video content shows 0.05 level of significance ($t=2.493$, $p=0.016$), as well as specific comparative differences can be seen, the experimental group's average (3.20), will be significantly higher than the control group's average (2.57). Different groups show 0.01 level of significance for the richness of short video content ($t=3.039$, $p=0.004$), as well as specific comparative differences can be seen, the mean value of the experimental group (3.17), will be significantly higher than the control group's mean value (2.40). The scores of different groups on the degree of integration of traditional culture and short videos show 0.05 level of significance ($t=2.169$, $p=0.034$), as well as specific comparative differences can be seen, the mean value of the experimental group (3.17), will be significantly higher than the mean value of the control group (2.60). The visual experience and satisfaction ratings of the different groups for this part of the short video content show a 0.05 level of significance ($t=2.537$, $p=0.014$), as well as specific comparative differences can be seen in the experimental group's mean (3.10), which is significantly higher than the control group's mean (2.43). The willingness of the different groups to create such short videos is significant at the 0.01 level ($t=3.063$, $p=0.003$), and the difference in comparison shows that the mean value of the experimental group (3.27) is significantly higher than the mean value of the control group (2.47). The likelihood of recommending such short videos to family or friends is significant at the 0.05 level ($t=-2.202$, $p=0.032$), and the difference in comparison shows that the mean value of the experimental group (2.70) is significantly lower than the mean value of the control group (3.30). Different groups show 0.05 level of significance ($t=2.605$, $p=0.012$) for the complete explanation of traditional cultural connotations using short videos, as well as the difference in specific comparisons, the mean value of the experimental group (3.07) is significantly higher than the mean value of the control group (2.37). There is a 0.01 level of significance ($t=2.935$, $p=0.005$) for whether or not you will be attracted to view similar content next time, as well as a difference in specific comparisons, with the experimental group's mean (3.10) being significantly higher than the control group's mean (2.33).

To summarize, there are significant differences between different groups in terms of their interest in the content of the short videos, the richness of the content of the short videos, the degree of integration of traditional culture and the short videos, the visual experience and satisfaction with the content of the

short videos, their willingness to create such short videos, the possibility of recommending such short videos to their family members or friends, whether the traditional cultural connotations of the short videos can be fully explained, and whether it will attract you to watch similar content the next time, all of which show significant differences. All of them showed significant differences.

Table 1. Analysis of Questionnaire Data

	Group (mean \pm standard deviation)		<i>t</i>	<i>p</i>
	experimental group(<i>n</i> =30)	control group(<i>n</i> =30)		
Level of interest in short video content	3.20 \pm 1.00	2.57 \pm 0.97	2.493	0.016*
Richness of short video content	3.17 \pm 0.91	2.40 \pm 1.04	3.039	0.004**
Rating of the degree of integration of traditional culture and short videos	3.17 \pm 1.02	2.60 \pm 1.00	2.169	0.034*
Sense of visual experience and satisfaction ratings for that portion of the short video content	3.10 \pm 1.09	2.43 \pm 0.94	2.537	0.014*
Willingness to create such short videos	3.27 \pm 0.91	2.47 \pm 1.11	3.063	0.003**
Possibility of recommending such short videos to family or friends	2.70 \pm 0.95	3.30 \pm 1.15	-2.202	0.032*
Traditional cultural connotations are fully explained using short videos	3.07 \pm 1.05	2.37 \pm 1.03	2.605	0.012*
Will it entice you to watch similar content next time	3.10 \pm 1.06	2.33 \pm 0.96	2.935	0.005**

* $p < 0.05$ ** $p < 0.01$

3. Conclusion

Through this experiment and data analysis, it can be concluded that with the help of virtual reality technology to produce short videos of traditional culture of southern Fujian, compared with ordinary short videos of southern Fujian culture, viewers are more interested in the content of short videos produced by using virtual reality technology, and the audiovisual experience of the video and the sense of cultural acquisition are higher, and the overall satisfaction of the video is higher. More viewers are willing to continue watching such videos in the future after watching them, and more viewers express a higher willingness to create.

In the popularization of the Internet today, the visual era has arrived, people's aesthetic interests have changed and have become more and more demanding of visual elements, traditional culture and network technology are integrated with each other, and short videos have become an important way of media communication. In new media communication, short video communication is a major form of

expression (Xu & Li, 2011). Short video development to today's traditional audio-visual mode is gradually difficult to meet the diversified needs of users. Therefore, the introduction of virtual reality technology to the short video platform, especially its combination with the traditional cultural short video content production is imperative, with greater market prospects and development space.

Funding

This work was supported by Xiamen University of Technology, Graduate Student Science and Technology Innovation Program, Funding Number: YKJCX2021204.

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