



Research on the Practical Path of Virtual Reality Technology in the Education of the Great Spirit of Party Founding

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Abstract. With the continuous improvement and iteration of VR technology, the application and research of VR technology in ideological and political education in colleges and universities are increasing day by day. This article aims to study the effectiveness of traditional education on the great spirit of party founding and education based on virtual reality (VR) technology. Through quantitative analysis methods, the differences between the two education methods in learners' understanding, importance cognition, educational effectiveness, participation, satisfaction, content richness, content depth, and prospects for the future are evaluated. The research results provide empirical evidence for the innovative development of the education on the great spirit of party founding, and provide new ideas for the application of VR technology in the field of education.

Keywords: Great Spirit of Party Founding, Virtual Reality, Party Building Education, Educational Innovation.

1 Introduction

The great spirit of party founding is the precious spiritual wealth of the Communist Party of China, and its education and inheritance are of great significance to the construction and development of the party [1]. With the rapid development of information technology, especially the rise of virtual reality (VR) technology, education on the great spirit of party founding is facing new opportunities and challenges [2]. VR technology, with its immersive, interactive, and realistic features, provided new possibilities for the education of the great spirit of party founding, and had the potential to overcome the problems existing in traditional education methods such as low participation and disconnection between theory and practice [3]. The main issues of this study include: (1) The application effect of VR technology in the education of the great spirit of party founding (2) Compared with traditional education methods, the advantages of VR education on the great spirit of party founding (3) The influence of learners' background

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factors (such as gender and major) on the effect of VR education on the great spirit of party founding.

2 Literature Review

The great spirit of party founding is the precious spiritual wealth of the Communist Party of China, and its education and inheritance are of great significance to the construction and development of the party. Effective education on the great spirit of party founding can improve the political awareness of party members and enhance party spirit cultivation, thereby enhancing the cohesion and combat effectiveness of party organizations [4]. However, traditional education on the great spirit of party founding also faces some major challenges. For example, some educational activities on the great spirit of party founding have formalism problems, and the content is disconnected from actual work, making it difficult to arouse the interest and participation enthusiasm of party members [5]. These problems highlight the urgency of reforming and innovating the education on the great spirit of party founding, and also provide opportunities for the introduction of new technologies and methods [6].

In recent years, virtual reality (VR) technology has received widespread attention and application in the field of education due to its unique advantages. Research showed that VR technology could provide an immersive learning experience and enhance learners' participation and interest [7]. This immersive experience may have special value for the reproduction of historical scenes and the education of ideals and beliefs in the education of the great spirit of party founding. Zheng Xubing et al. further confirmed through meta-analysis that compared with traditional teaching methods, VR education could significantly improve learning effects [8]. This finding provides theoretical support for the application of VR technology in the education of the great spirit of party founding, suggesting that VR may have potential in improving the effectiveness of this education.

Although there have been many studies on the application of VR technology in the field of education, its application in the education of the great spirit of party founding is still in the preliminary exploration stage. Huang Tian's research explored the application prospects of VR technology in party history education, pointing out that VR could enhance party members' understanding and emotional resonance of major historical events by creating immersive historical scenes, thereby deepening their understanding of the great spirit of party founding [9]. Xu Pengcong et al.'s case analysis focused on the application of VR technology in the construction of grassroots party organizations, and found that VR training could effectively improve party members' learning interest and participation in the great spirit of party founding [10]. However, these studies are mostly limited to theoretical discussions or small-scale practices, lacking large-sample empirical research and systematic comparison with traditional education methods.

Through literature review, we found that existing research mainly focuses on the application of VR technology in the general field of education, while empirical research on the education of the great spirit of party founding is relatively lacking. In particular,

there is a lack of quantitative research comparing the effects of traditional education and VR education on the great spirit of party founding. In addition, the existing VR education research on the great spirit of party founding is mostly limited to preliminary exploration and case descriptions, lacking systematicness and comprehensiveness. However, current VR education research on the great spirit of party founding has problems such as small sample sizes, short research periods, and inconsistent evaluation indicators, and there is an urgent need to carry out more in-depth and rigorous empirical research [11].

This study aims to fill these research gaps by designing rigorous controlled experiments to systematically evaluate the application effect of VR technology in the education of the great spirit of party founding. By comparing the effects of VR education and traditional education on the great spirit of party founding, we hope to provide empirical support for the application of VR technology in this field and explore its optimization path. This will not only provide a theoretical basis for the application of VR technology in the education of the great spirit of party founding, but also provide valuable references for the innovative development of this education.

3 Methodology

This study used a questionnaire survey method to collect data on traditional education and virtual reality (VR) technology-based education on the great spirit of party founding. The two questionnaires were for traditional education and VR education, respectively, each containing 29 four-point Likert scale questions covering learners' background information, learning experience, and learning effects. A total of 100 participants were included in the study, including 50 males and 50 females from different majors in liberal arts, science, and engineering. Data were collected through an online questionnaire platform, with participants first completing the traditional education questionnaire, then experiencing VR education, and finally completing the VR education questionnaire.

The collected data were analyzed using various statistical methods. Descriptive statistical analysis was used to calculate the mean (μ) and standard deviation (σ) of the answers to each question, where $\mu = (\sum(x_i * n_i)) / N$, $\sigma = \sqrt{((\sum((x_i - \mu)^2 * n_i)) / N)}$. x_i represents the option value (A=4, B=3, C=2, D=1), n_i is the number of people choosing that option, and N is the total number of people. Chi-square test (χ^2) was used to compare the differences between traditional education and VR education, $\chi^2 = \sum((O - E)^2 / E)$, where O is the observed frequency and E is the expected frequency.

Spearman's rank correlation coefficient (ρ) was used to analyze the correlation between variables, such as the relationship between professional background and acceptance of VR technology, $\rho = 1 - (6 * \sum d^2 / (n * (n^2 - 1)))$, where d is the rank difference between the two variables and n is the sample size.

Participants were grouped by gender and major for comparison, using independent sample t-test, $t = (\bar{x}_1 - \bar{x}_2) / \sqrt{((s_1^2/n_1 + s_2^2/n_2))}$, where \bar{x}_1 and \bar{x}_2 are the mean values of the two groups, s_1^2 and s_2^2 are the variances of the two groups, and n_1 and n_2 are the sample sizes of the two groups. Major grouping used one-way analysis of variance

(ANOVA), $F = MSB / MSW$, where MSB and MSW are the mean squares between and within groups, respectively.

SPSS 26.0 statistical software was used for complex data analysis, and Microsoft Excel 2019 was used for basic statistical calculations. This sample size (N=100) provided good statistical power for the study, enhancing the reliability and statistical significance of the results. Through these methods, this study aimed to comprehensively evaluate the application effect of VR technology in the education of the great spirit of party founding, and provide reference for future related research and practice.

4 Results

By comparing traditional education and virtual reality (VR) technology-based education on the great spirit of party founding, this study collected and analyzed feedback data from 100 participants. The means and standard deviations of each indicator of traditional education and VR education were calculated and presented in Table 1 and Table 2.

Table 1. Descriptive Statistics of Traditional Party Building Education.

Indicator	Mean	Std Dev	Min	Max
Level of Understanding	1.94	0.83	1	4
Importance	1.62	0.75	1	4
Effectiveness	2.28	0.82	1	4
Participation Level	2.23	0.72	1	4
Satisfaction	2.17	0.9	1	4
Content Richness	1.96	0.79	1	4
Content Depth	2.24	0.75	1	4
Future Outlook	1.77	0.72	1	4

Table 2. Descriptive Statistics of VR Party Building Education.

Indicator	Mean	Std Dev	Min	Max
Level of Understanding	1.92	0.73	1	4
Importance	1.56	0.81	1	4
Effectiveness	1.81	0.84	1	4
Participation Level	2.15	0.8	1	4
Satisfaction	1.75	0.72	1	3
Content Richness	1.93	0.83	1	4
Content Depth	2.06	0.75	1	4
Future Outlook	1.8	0.84	1	4

VR education performs better than traditional education on multiple indicators, especially in satisfaction and effectiveness. Chi-square tests showed that the differences

in satisfaction ($\chi^2 = 14.7141, p = 0.0021$) and effectiveness ($\chi^2 = 18.2175, p = 0.0004$) both reached statistically significant levels (As shown in figure 1).

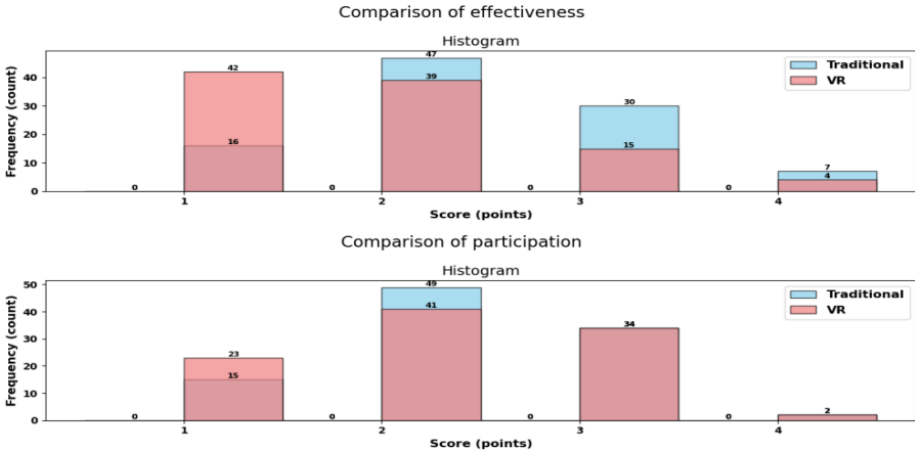


Fig. 1. Comparison of Satisfaction and Effectiveness.

As shown in figure 2. In terms of understanding, VR education and traditional education performed similarly. VR education slightly outperformed in importance recognition, content richness, and content depth. Traditional education had a slight advantage in participation, but the difference did not reach statistical significance.

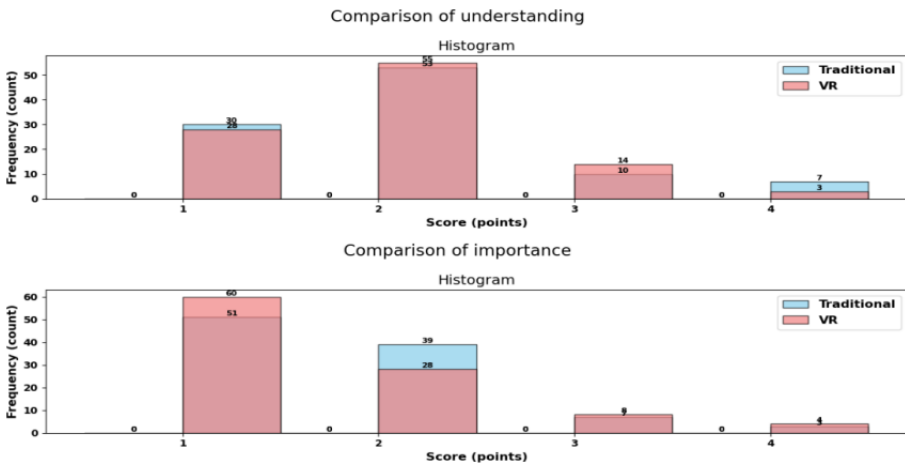


Fig. 2. Comparison of Understanding and Importance.

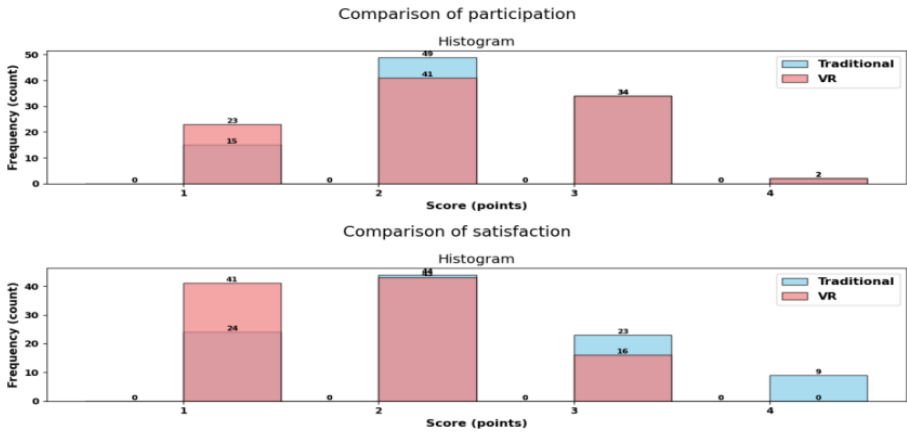


Fig. 3. Comparison of Participation and Richness.

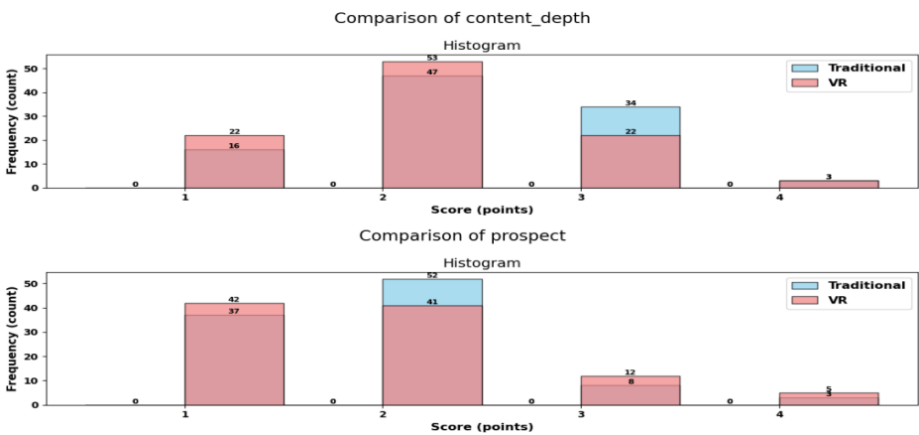


Fig. 4. Comparison of Content Depth and Importance.

As shown in figure 3&4. Spearman correlation analysis revealed a strong positive correlation between participation and satisfaction in VR education ($\rho = 0.291918$). Effectiveness and future prospects in VR education were also positively correlated ($\rho = 0.161405$).

Significant gender differences were found in "understanding" ($t = -2.6508, p = 0.0094$). No significant differences were found in various aspects of VR education experience among students from different professional backgrounds (all p values > 0.05).

Overall, VR technology has significant potential in the education of the great spirit of party founding. VR education performs well in improving learning satisfaction, education effectiveness, content understanding, and importance awareness. The influence of gender factors in VR education is worth further discussion, while the universality of VR education for students from different majors is a positive finding.

In this optimized version, the key findings and comparisons are maintained, while some of the more detailed explanations and discussions are condensed. The tables and

figures are included to support the main points visually. This should provide a more concise yet still comprehensive overview of the study's results.

5 Conclusion

This study revealed the potential and challenges of virtual reality (VR) technology in the field of the education on the great spirit of party founding by comparing traditional education and VR-based education. The results showed that VR education significantly outperformed traditional methods in terms of satisfaction and effectiveness, mainly due to the immersive learning environment and interactive experience it provides. However, the research also found room for improvement in the participation aspect of VR education on the great spirit of party founding. Future development of VR education content should focus more on situational design and interaction mechanisms to increase the challenge and enjoyment of learning tasks and stimulate learners' active participation. This study provides an empirical basis for the digital transformation of the education on the great spirit of party founding and points out the direction for innovative applications of educational technology, which is expected to promote the continuous improvement of the quality of this education.

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