Retraction

Retracted: Digital Media Application Technology in Tourism Management Major VRAR Direction Talent Training Model Reform and Practice Research

Heqing Zhang; Jing Ma; Yiping Li; Morris

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Digital Media Application Technology in Tourism Management Major VRAR Direction Talent Training Model Reform and Practice Research

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ABSTRACT Digital media application technology has become the main expression of digital information media in the era of society through the perfect combination of art design and technical language through digitalization and informatization platforms. This paper studies the reform of the training mode of digital media application technology in the VR and AR direction of tourism management majors. Here, digital media application technology is used to reform the training model of tourism management professionals, and the teaching method of the talent training model is analyzed. A comparative analysis of the talent training programs of various universities is also conducted, and the experimental results of the reform of the talent training model are summarized. It shows that through the reform of the talent training model in the VRAR direction of the tourism management major, the overall learning performance of talents has been improved by 13.2%, and the research investment in VR and AR technology has increased by 23.7%.

INDEX TERMS Digital Media Application Technology, Tourism Management Major, VR and AR Technology, Virtual Reality, Talent Training Model

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I. INTRODUCTION

A. BACKGROUND AND SIGNIFICANCE

With the rapid progress of science and technology, Augmented Reality (AR) and Virtual Reality (VR) are being favored by more and more people and have made great progress [1]. An investment report in 2005 stated that AR and VR are promising technologies. From the analysis of the current market situation, HTC, Facebook, Samsung, Apple, Alphabet and other technologies have been developed in this field.

The digital content industry has the characteristics of high knowledge content and strong cultural ability, high technical quality, and extensive division of labor and cooperation [2]. It has become a new driving force for economic development in this century and a new industry in the new century. Many foreign universities have followed the trend of historical development. They have seized the huge opportunity of combining digital technology with digital technology, successfully combined digital technology with art. In-depth interaction between scientific research departments, and there are also large-scale digital multimedia in China [3]. In particular, the talent training model, talent training objectives and training methods all have good reference significance.

B. RELATED WORK

The digital media technology proposed by Qian D is slowly developing. Traditional animation has been updated and entered the digital age, in which architectural animation has undergone tremendous changes. Therefore, traditional

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two-dimensional animation is difficult to meet the market demand, and multi-dimensional architectural animation with special scene effects has occupied the market. With the development of digital media technology, architectural animation can better restore the real scene inside and outside the building, and has a certain visibility. However, the visibility of digital media technology is not very high, making the real scene not so intuitive [4]. Wei W proposed to examine the major developments in virtual reality (VR) and augmented reality (AR) research in the hotel and tourism industries. He also pointed the right direction for tourism and hospitality research on VR and AR applications and conducted a selective literature review of full-length papers published between 2000 and 2018. A total of 60 journal articles were searched and thoroughly reviewed. But the scope of his investigation is too small, so the results are not very accurate [5]. Bastug E put forward the concept of virtual reality sweeping the entire 5G ecosystem, which has aroused unprecedented interest in academia, industry and others [6]. He emphasized the importance of VR technology as a disruptive use case for 5G (and beyond), which takes advantage of the latest developments in storage/memory, fog/edge computing, computer vision, artificial intelligence, etc. However, the success of an immersive VR experience depends on solving many challenges across multiple disciplines [7].

C. MAIN CONTENT

This article focuses on analyzing the factors that affect the design of the "order-type" talent training model for higher vocational tourism management. Based on the principles of construction, it elaborates on the advantages and disadvantages of the existing training model. Some models have been improved, and an order-based training model combining supply and demand and four links has been established.

This article points out the problems in the current digital media technology application-oriented talent training model, puts forward thinking skills on the model, conveys educational concepts, clarifies educational goals, innovates teaching models, and provides exploratory comments on the evaluation system.

II. VR AND AR TECHNOLOGY METHODS

A. VR PANORAMIC VIDEO PROJECTION METHOD

The first step in displaying a VR panoramic video in a planar video format is to display the upper and lower hemispheres of a unit sphere in two planar periods. The design is shown in Figure 1. Taking the northern hemisphere as an example, the hemisphere with radius R is mapped to the plane of a circle with radius R, that is, the ratio of the surface area S_h of the hemisphere to the area S_d of the plane is as follows:

$$\frac{S_h}{S_d} = \frac{2\pi R^2}{\pi R^2} = 2 \tag{1}$$

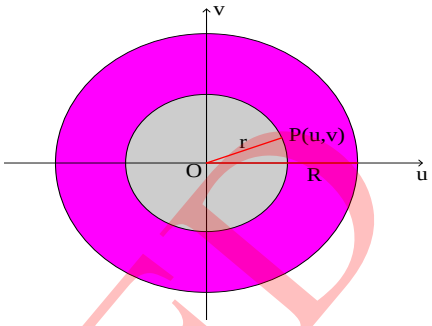

FIGURE 1. Hemispherical plan view

Let S_1 be the area of the gray spherical crown on the hemisphere, and the height is H. After projection, the area of the gray campus row inside the corresponding flat circle is S_2, and the radius is r. It is known that the surface area formula of the spherical crown is S = 2 π RH, then the ratio of the spherical crown area S_1 to the projected small circle area S_2 is:

$$\frac{S_1}{S_2} = \frac{2\pi RH}{\pi r^2} = \frac{2\pi R \times (R - R\sin\sigma)}{\pi r^2} = \frac{2R^2 \times (1 - \sin\sigma)}{r^2} \tag{2}$$

Considering the retained product projection of the plane circle of the hemisphere, according to the property of the area mapping described above, it can be obtained that the ratio of the area of any area on the sphere and its corresponding area mapped to the plane circle is equal, and should be equal to the entire hemisphere The ratio of the surface area S_h to the plane circle area S_d [8]. Therefore, according to formula (1), the area ratio can be obtained as 2, then combining formula (2), we can get:

$$\frac{S_1}{S_2} = \frac{2R^2 \times (1 - \sin\sigma)}{r^2} = 2 \tag{3}$$

Among them, the square $r^2 = u^2 + v^2$ of the radius of the small circle after the projection, if R = 1, the relationship between the latitude value a of any point P on the spherical surface and its corresponding point $p'(u,v)$ on the plane can be obtained according to equation (3):

$$\beta = \arcsin(1 - (u^2 + v^2)) \tag{4}$$

Mapping the longitude in a uniform manner with equal angles means that the longitude value of P at any point of the ball is the same as the included angle of the u axis, which is:

$$\alpha = \arctan\frac{v}{u} \tag{5}$$

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According to the calculation method of the projected differential area ratio, the area of the differential element $d\alpha d\beta$ at any $P(\alpha,\beta)$ point on the spherical surface is:

$$\partial S(\alpha,\beta)=\cos(\beta)\,|\,d\alpha d\beta\,| \quad (6)$$

After mapping to a plane circle, the corresponding differential element area dudv is expressed as $\delta S(u,v)=|\,dudv\,|$ at point $P'(u,v)$, then the relationship between the two areas can be expressed by the formula:

$$d\alpha d\beta = J(u,v)dudv \quad (7)$$

In the above formula, the Jacobian determinant is represented by $J(u,v)$, which is derived from the combination of formulas (5) and (6), and the final derivation result can be seen here [9]. The calculation formula of the two area stretch ratios is as follows:

$$SR(u,v)=\frac{\partial S(\alpha,\beta)}{\partial S(u,v)}=\frac{\cos(\beta)\,|\,d\alpha d\beta\,|}{|\,dudv\,|}=\cos(\beta)J(u,v) \quad (8)$$

According to the results derived in (8), the differential ratio of the element SR (u, v) in the unified method of area conservation proposed in this paper is constant 2, and the area differential ratio of the hemisphere projection on the circular plane is stable. According to the definition, we can know that the projection process is uniform.

B. COLLISION DETECTION SEARCH ALGORITHM

When judging whether there is a conflict between convex polyhedrons, on the one hand, we must judge the relationship between each face and each vertex, on the other hand, we must judge the relationship between each edge and each face. When judging the relationship between the edge and the surface, divide the edge into small parts, use the midpoint of the cross section to approach the small part, and then discuss the relationship between the edge and the curved surface based on the relationship between the midpoint of the cross section and the curved surface [10]. The more the number of sections, the higher the accuracy of collision detection, and the calculation speed and calculation speed are relatively high. But we can see that the relationship between edges and faces can be attributed to the relationship between vertices and faces. Then, taking the detection of vertex collision as an example, an acceleration algorithm is given [11].

The first search algorithm starts from the root of the tree. If the detected peak is within the defined frame corresponding to the end node, accurate collision detection should continue. Regarding the scope of this article, it can be assumed that there is a conflict and that the algorithm has been completed. If the detected peak is included in the delimited frame corresponding to the non-terminal node, but not included in the delimited frame corresponding to any child node of the non-terminal node, then there must be no conflict at this vertex [12]. This node is called the final node and completes the peak collision detection. Finally, please note the location of the last node of the summit. The main steps are as follows:

Step 1: Use the root node as the current node.

Step 2: Specify whether the top is in the space occupied by the bounding box corresponding to the current node. If not, continue to step 3. If yes, proceed to step 4.

Step 3: If the node has no undetected siblings, it means there is no collision at the top. After considering the current node, return. If the node has undetected sibling nodes, the next sibling node is used as the current node in turn, and step 2 is performed retrospectively.

Step 4: Specify whether the current node is a terminal node. If this is the case, it indicates that the summit has collided. After recording the current node, conflict detection ends. If the node is a non-terminal node, all node subsidiaries of the node are the current node in turn, and step 2 [13] is performed retrospectively.

The second search detection algorithm is based on the detection results of the first algorithm and subsequent search detection results. According to the position theorem, a continuously detected motion peak is most likely to appear at the next spatial position and is close to the previous spatial position at that position. It reflects a layered boundary shape on the tree, and is the least likely to detect the collision of the last node in the next collision detection and the path with the shortest distance from the last node [14]. Therefore, in the second search detection algorithm, we use the last node of the last conflict detection as the starting node, and other search methods are similar. Use the first algorithm to remember the last node as the starting node for the next collision detection. The main steps are as follows:

Step 1: Use the last node of the last conflict detection as the current starting node.

Step 2: Specify whether the top is in the space occupied by the bounding box corresponding to the current node. If it is, then the other algorithms are the same. If not, continue to step 3.

Step 3: Specify whether the current node has a parent node. If yes, use the parent node as the current node and continue to the second step. If there is no parent node, it means that there is no collision of vertices, and the algorithm ends [15].

III. TALENT TRAINING MODEL EXPERIMENT IN THE DIRECTION OF VR AND AR

A. STEPS OF TALENT TRAINING MODEL

1) CAREER ANALYSIS

According to the development strategy of the community or enterprise served by the country and the school, there is a demand for a postgraduate diploma of intermediate professor. Through the questionnaire survey, we can understand the recent situation of service enterprises and institutions, including government services and social organizations, which positions will have many vacancies, and which positions need to further improve the skills and levels of

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workers. Then choose the more urgent and concentrated, the school has the opportunity to open a large activity for curriculum development. This step fully embodies that education serves local economic construction and social development, and their training seems to be completely market-oriented [16].

2) WORK ANALYSIS

After selecting the professional positions to be recruited, it is necessary to analyze the skills required by those responsible for these jobs through job analysis. Canadian experience shows that the method of operating a workstation is effective. In system development, it is an important link between education and industry.

3) SPECIFIC CAPACITY ANALYSIS

After entering the form, it is necessary to set up a special capability analysis committee to briefly explain the level of each capability, such as working conditions and quality standards. Through analysis, each specific skill on the table is broken down into: learning steps, necessary knowledge, required tools and equipment, specific skills that must be mastered, working posture, safety issues, protective measures, etc.

4) TEACHING ANALYSIS.

The members of the first two committees are from the company and the stage, and they are professionals and experts from a certain perspective. Teaching analysis must also set up a committee. Committee members should be training experts, including courses and educational institutions) programmers, trainers, the number depends on the requirements. The purpose is to compare the results of the DACUM table and skill analysis to design and develop learning content. In order to enable students to achieve the purpose of skill development, it is necessary to design individual skills in the learning unit or unit. The knowledge and skills of each unit are classified according to the actual needs of the work to determine the basic courses. The result of teaching analysis is to determine the educational methods and courses, and to make teaching plans [17].

B. CONSTRUCTION OF TALENT TRAINING MODEL

According to the actual problems currently displayed, digital media technology has an important training role in the application of vocational schools. With the background of talent training modernization, the needs of talents have been adjusted accordingly [18]. Realize the vision of digital media technology profession and provide more complex talents to the society. The deficiencies of professional digital media technology in personnel training should be adjusted and designed in terms of personnel training and positioning of talent construction, learning plans, teaching methods, school-enterprise cooperation, etc. [19]. Form a student-centered talent training model. In the study of the student-centered talent training model, students Gaoming divided their components into educational considerations, training goals, training goals, etc., curriculum systems, teaching methods, and evaluation methods. In the professional digital media, students as a center. The construction model of vocational training for technical application personnel is shown in Figure 2:

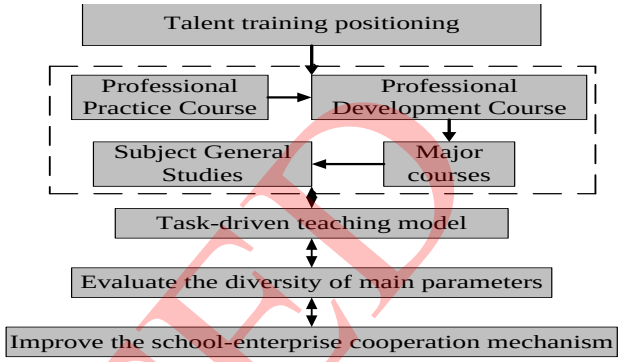

FIGURE 2. Talent training model

In this model, emphasis is placed on school-enterprise cooperation to jointly develop a talent training plan. Under the guidance of this program, a systematic project structure should be adopted [20]. In the teaching process, teachers make full use of work-based teaching modes, such as method engineering, case analysis method and other teaching methods, combined with the evaluation of disciplinary differentiation mode, to jointly complete the cyclic process of promoting students' ability training [21].

C. AR AND VR HUMAN-COMPUTER INTERACTION EXPERIMENT

The object of this experiment is Leap Motion. Its main components are a narrow-band filter, two infrared cameras, three infrared light sources and a high-speed USB chip. Leap Motion is an optical monitoring system based on bidirectional stereo vision [22]. Just like the human eye, dual cameras can coordinate the position of space objects, and the visual difference produces a sense of depth and depth in space. The Leap Motion controller should provide a back light source through ultraviolet LED lights. When an object moves like a finger, the infrared light is reflected, and the narrow-band filter can filter out other visible light and ultraviolet rays to ensure infrared energy [23]. Come in with high penetration. At the same time, the dual camera takes a stereoscopic shot of the target object, records the screen from different angles, and reproduces the data information of all aspects of the target object through calculation. The detection range of Leap Motion is about 25-600mm above the controller, and the recognition range is basically an inverted pyramid. First, the jumping motion creates a right-handed coordinate system, with the control center as the starting point, in millimeters, the X and Z axes are horizontal, and the Y axis is vertical [24].

When a target object, such as a finger, enters the detection range, Leap Motion software assigns a unique identifier

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within the unchanged field of view (objects entering the detection area will be redirected to the identifier). In addition, the related functions provided by the jumping exercise will be added. The controller sends periodic motion data (called frames) of the target object. The frame in the frame contains functions such as fingers, hands, pointing, and tools, and is responsible for providing monitoring data, gestures and data related to the overall motion factors within the visual range [25]. Based on the data identified in each frame, the controller translates the motion into factors such as translation, rotation, and upgrade. It uses complex algorithms to create motion information, identify and judge the trajectory of the target object, and finally interact with the display screen.

Leap Motion uses infrared imaging principles to monitor hand activities. Fingers and portable devices use a unique combination of hardware and software technology to realize human-computer interaction with both hands and interact with digital content in the real world. It has extremely high accuracy and extremely low delay. The error is within 0.01 mm, and the delay is 5-10 ms. It can track both hands at a speed of not less than 200 carats per second. This accuracy to a large extent guarantees that the user successfully completes the functions required for human-computer interaction [26].

IV. ANALYSIS OF TALENT TRAINING MODEL

A. ANALYSIS OF THE TRAINING MODE OF DIGITAL MEDIA TECHNOLOGY TALENTS

1) ANALYSIS OF PRACTICAL ABILITY IMPROVEMENT

Under the guidance of the learner-centered talent training model, the school is more closely connected with enterprises. From the breadth of school-enterprise cooperation, from 4 cooperative units in 2015 to 10 excellent local enterprises in 2018, close Related to students' majors, such as wedding photography companies, film and television media companies, etc. In terms of the depth of the school-enterprise cooperation, the school and the enterprise cooperate in depth. The enterprise provides first-line technical staff to the school and regularly provides technical guidance to the school according to industry needs, cooperates with the teacher's explanation, and better communicates to students [27]. Skill knowledge, understand the specific standards of talents required by society, and learn how to fully apply the learned knowledge to actual product realization. Through the teacher's assessment of the work results, it is found that the students' practical ability is continuously improved, which broadens their horizons [28].

Through the learning and practice of knowledge and technology of professional courses, students continuously improve their practical ability and innovation level [29]. Through the Luban study group established by the school, through the form of assessment, the students of the school are mobilized to participate actively, show their strength, and select strong professional skills. 3. Excellent classmates with solid professional knowledge participate in the Luban study group, and excellent professional teachers are used as instructors to conduct instructive training. Under the guidance of the teachers, they have won the municipal skill competition gold medal, provincial skill competition gold medal, and national skill competition animation. Film production project gold award. In such a process, students get a more systematic experience, whether it is professional skills, professional knowledge, or psychological qualities, etc., and enhance the motivation of students to learn, and have a clearer picture of future life planning ideas [30].

2) ANALYSIS OF IMPROVEMENT IN ACADEMIC PERFORMANCE

Through the data in the figure, it can be intuitively seen that the enthusiasm of the students in the first class has reached a perfect score of 10 points, and the students in the second and third classes have only a general level of 6 points. From the overall analysis, you will find that the students in the first class are in the class At that time, the enthusiasm and the participation of all the staff were high. The students were able to listen actively in the classroom and earnestly and effectively carry out practical exercises. The group cooperation learning progressed smoothly and the results were more remarkable. The specific content is presented in Table 1:

TABLE I
. TEACHERS' EVALUATION OF STUDENT LEARNING

Class/Satisfaction	Knowledge acceptance	Enthusiasm for class	Works Presentation	average score
Class 1	general	excellent	good	general
Class 2	general	general	good	general
Class 3	good	excellent	excellent	excellent

The teacher's evaluation of the student's learning effect is expressed as a score, and then draw an intuitive graph, as shown in Figure 3.

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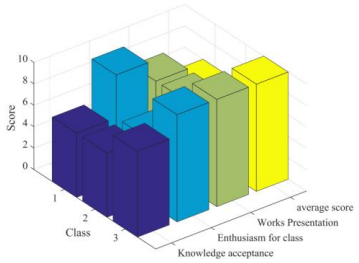

FIGURE3. Learning scores given to students by teachers

In the process of running a project-based curriculum system, combined with a diverse evaluation subject and task-driven teaching model, students are increased their interest and desire for knowledge learning. As scholars say, interest is the best teacher, students themselves Actively and spontaneously learning, the sense of learning achievement obtained is much higher than other forces driven by the outside world [31]. In short, under the construction of such a learner-centered talent training model, it is an irreversible trend for students to continuously improve their academic performance.

3) CLEAR ANALYSIS OF CAREER PLANNING

Under the guidance of the training goals of the learner-centered talent training model, the school and teachers actively guide the development of career planning courses in the first semester and the intensive vocational courses in the fourth semester, so that students begin to value their careers from the beginning of school Planning, based on the lack of understanding in the first semester, through the learning and practice of professional courses, in the fourth semester [32], another round of consolidation and strengthening will be carried out, so that students will choose their own career direction according to their own strengths and professional characteristics, Which is more conducive to students to realize their value and promote the development of their long-term interests. Through the form of a survey, a comparative analysis of the clarity of career planning between first-year students and second-year students was made [33].As shown in figure 4:

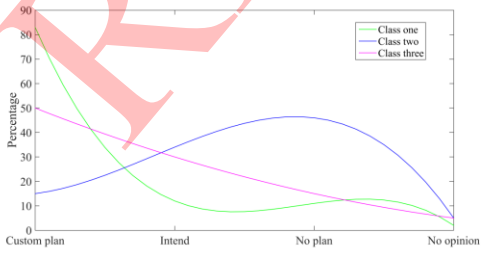

FIGURE 4. Comparison of career planning effects

Through the presentation of the above figure, it can be clearly found that the higher the grade, the clearer the future career plan of the students. From one to three classes, the growth rate for their future is very fast, from 5% to 82%, they all knowing what type of work you should choose in the future will be of great help and guidance for students in the future, and it will be more helpful for students to arm themselves with knowledge during school and continuously improve their comprehensive ability [34].

B. TEACHING ANALYSIS OF TOURISM MANAGEMENT PROFESSIONAL TRAINING MODEL

Enterprises participate throughout the process and explore the "school-enterprise linkage" talent training model. School-enterprise cooperation is a necessary way to train vocational students. Through close cooperation between schools and enterprises, enterprises participate in the formulation of training objectives, the design of training systems, the compilation of teaching courses, the guidance of internship processes, and the establishment of evaluation systems through the close cooperation of schools and schools. Students will be recognized by the industry [35].As shown in Table 2:

TABLE II
ANALYSIS OF TALENT TRAINING MODEL

Design level/Analysis dimension	Axiology	Ontology	Methodology
Institutional level	Employment-oriented	Government guidance	Multiple integration
Course level	Capability ontology	Project courses	Work analysis
Teaching level	Student-led	Unity in study	Work-study

"Undertaking outsourcing of enterprises"

To undertake the human resources outsourcing business of the enterprise, teachers and students have the dual roles of school and enterprise, so that students can practice operating skills in real scenarios, increase the opportunities for teachers to penetrate the industry, and let teachers understand the industry's operating processes, industry standards, and corporate management experience, Adjust professional knowledge in time to train talents more suitable for corporate needs. In order to train a group of teachers who are familiar with school teaching and understand the operation status of the industry [36].

"Practice Training-Employment" Integrated Teaching

This kind of teaching method, through in-depth intervention of the enterprise, integrates the advantageous resources of both parties to carry out project development or technical service and other activities, and aims to cultivate students' technical application ability and developmental ability, and the vocational education model oriented to student employment [37].

"Modern apprenticeship" personnel training

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Taking the modern apprenticeship as the theoretical basis, it requires the cooperative enterprises to intervene deeply, strengthen the ternary cooperation between enterprises, schools, and students, hire key personnel of the enterprises as masters, and provide practical guidance to the students, with the participation of both schools and enterprises, teachers and masters. Build a practical training curriculum system that meets the characteristics of students' theoretical learning and corporate practice, complete work task analysis, teaching standards and the development of school-based textbooks, and constantly innovate teaching content to complement the advantages of both sides. Allow students to accept the influence of corporate culture and entrepreneurial spirit, save material costs for schools, save labor costs for enterprises, and save time costs for student employment, make education and economic society more closely linked, reflecting the fundamentals of modern education system Change [38].

C. ANALYSIS OF TALENT TRAINING IN VR AND AR

With the gradual maturity of technology, AR and VR have gained a lot of attention in recent years. More and more people are investing in AR and VR technology research. Many AR and VR technology enthusiasts suffer from limited learning channels. If you can use the Internet to build online learning websites and forums for AR and VR related technologies, let learners learn on the Internet, you can attract more people to participate in AR and VR learning, and you can also conduct learning exchanges in the forum [39]. In addition the construction of the website and the forum are similar, and the solutions adopted are also similar, which can provide a useful reference for the subsequent construction of other types of educational websites and forums. This article surveyed 100 students and counted their interest in VR and AR directions. A graphical description of the statistical data is shown in Figure 5:

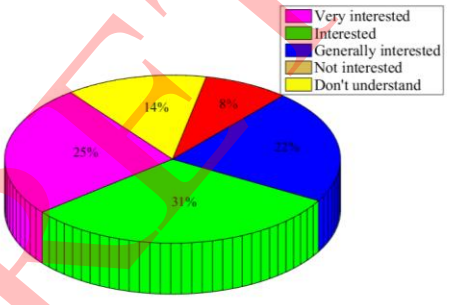

FIGURE 5. Interest in VR and AR

From the data in the figure, we can see that 25 of these 100 students are very interested in VR and AR, accounting for 25% of the total, indicating that VR and AR technology have a great impact on people and will develop in the future. The prospects are also very good and are suitable for contemporary technicians to learn [40-41]. Among them, 31 students are more interested in VR and AR, accounting for 31% of the whole, which is almost 1/3. Secondly, 14 students are generally interested in AR and VR, indicating that they are not very familiar with AR and VR. Of course, it is difficult to learn this technology. After all, it is developing rapidly as a contemporary, and the technology is innovative, and it is normal to not understand it [42]. Of these 100 students, it is inevitable that some students are not interested in AR and VR, accounting for 8% of the overall. The last remaining are students who do not understand VR and AR technology, and even have not heard of it, they account for 14 %, which also reflects the lack of knowledge and narrow knowledge of students from the other side [43]. From the overall analysis, 70% of people are interested in AR and VR technology, and want to learn and in-depth understanding, which has laid a good foundation for the reform of VR and AR talent training model [44-45].

V. CONCLUSIONS

This article summarizes the characteristics of the development of professional digital media in colleges and universities in my country, combined with the demand for digital media in society, this article discusses the training model of professional digital media in my country. In the exploration of talent cultivation, he has in-depth researched the guiding ideology, training objectives, curriculum and other issues, discussed the production and training mode of books, and put forward his own views.

This article outlines the development status and trends of the internal and external markets of the digital media industry and specifically analyzes the development status of domestic vocational schools using digital technology for vocational training; especially the professional construction in Chongqing. Investigate several influential top digital media companies in China, analyze the situation after the Digital Film Technology Group, TV production direction and cartoon design direction, adjust the work requirements of film and television and excellent cartoon production.

The innovation of this article is to use mobile terminal equipment as the main component of AR and VR development. Compared with the use of PC+VR programs to develop AR and VR content, it can significantly reduce material costs. Moreover, due to the large number of smart terminal users, this solution is also easy to promote. The second is to study the application of AR and VR technology in the initial book form and develop corresponding applications, which greatly enhances the vitality of the initial document and improves the learning effect of users.

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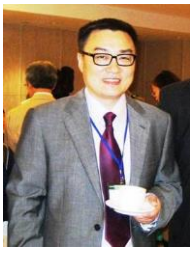

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