Research and Visual of Data Journalism

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Abstract: This paper studies the application status of Visual design and the research status of Data journalism, summarizes the problems of Data journalism, discusses the application of Visual design to Data journalism, and studies the status and cases of Data journalism based on Visual design. Cultural heritage needs to be integrated with emerging information technologies and that formal culture (school culture) and informal culture should be combined in the field of culture.

1. Introduction

With the quick development of science and technology, in recent years, culture informatization has shown a rapid development trend, and culture informatization is also an inevitable trend of development. Chinese Ministry of culture has issued the "Teacher culture Revitalization Action Plan (2018-2022)", and plans to propose an "Internet + Teacher culture" innovation initiative. The main content is to make full use of new technologies such as virtual reality and artificial intelligence to promote the culture of teachers. The construction and application of the teaching service platform promotes the transformation of teaching methods with the main characteristics of autonomy, cooperation and inquiry. [1] With the emergence of the concept of "revitalizing the country through science and culture ", "science and technology are the primary productive forces", and "science and technology are the foundation of the country's prosperity", China has clearly defined the importance of science and technology in China's strong road, so we must strengthen the emphasis on Cultural heritage and the need to recognize Cultural heritage. In the following, we study the problems faced by Cultural heritage and explore the research of visualized design technology in Cultural heritage. The emergence of visualized design technology has brought new opportunities and challenges to the development of Data journalism. The research proposes a new direction for the development of Data journalism and contributes to the integration and development of Data journalism and Visual design.

2. Research Status of visualized design Technology Application

Visualized design is a kind of technology that integrates virtual information into the real world and enriches the real world by simulating and overlapping it with computer technology. The commonly used implementation methods of AR are as follows: (1) specific image recognition; (2) geographic information localization; (3) human motion recognition; (4) facial recognition; (5) reality as background. For example, "Little Bear Neo" is an AR game based on specific image recognition. "Safety culture AR" is also used in the matching books to achieve AR effects with specific picture recognition. "We Love Science" is developed for the magazine named "China Love Science" and published by China Children's Press and Publications.

3. Virtual Environment Application of Visual design

Key technologies for visualized design technology implementation are: (1) 3D space registration technology; (2) calibration technology; (3) display technology. Display technology is the basic technology of Visual design. The display for AR has helmet-type, hand-held, projection display and so on. IKEA uses 3D modeling technology and display technology to realize visualized design virtual furniture. Oxford University's startup VA-ST has developed a hand-held visualized design

device called Smart Space based on real-world technology. The culture and Training Evaluation Center of Guangdong Power Grid Co., Ltd. uses visualized design technology to carry out innovative simulation training mode. [2] The complex operational training can be practiced and trained in the virtual environment. Some scholars study to design and develop the learning aid software or culture al games based on visualized design technology, and apply them to teaching or training, which can save costs and form a sustainable and recycling employment, and the training of virtualization can also enhance the safety factor.

4. Educational Application of Visual design

Jianzhong Hu developed a learning aid software with image recognition based on Unity 3D engine and Easy AR software. This software is mainly for the students to understand the structure and process of the single screw pump. It supports learners to understand the equipment structure, learn the disassembly process and watch the dynamic running effects. [3] Scholar Fei Cheng conducted an experimental comparative analysis in order to explore the mobile learning model and its effects of visualized design. The experimental results show that the mobile learning mode teaching with visualized design can make students understand knowledge faster, more firm and more flexible.[4] It can be seen that the necessity and advantages of visualized design culture al application. The application potential of visualized design technology in culture is mainly reflected in [5]: (1) visualizing abstract learning content; (2) supporting contextual learning in a ubiquitous environment; (3) enhancing learners' sense of intuition and concentration; (4) using natural methods to interact with learning objects; (5) traditional learning combined with new learning. The culture al applications of visualized design technology cover classroom learning (discipline classification) and extracurricular informal learning.

5. Entertainment Applications of Visual design

With the development of mobile software and mobile devices getting better and better, the AR penetration rate achieved by the camera principle is getting higher and higher. "Dili Love Science" is a visualized design culture al game. The content covers astronomy, nature, geography, physics, mathematics, art, biology and many other fields. The content is rich and varied, showing the wonderful science, the starry sky, the cool battleship, the Jurassic Park, the exotic flowers, Animal world and other content. Combining visualized design technology of today's technology front, the real world and the virtual world are "seamlessly integrated" to create a three-dimensional space, presenting vivid 3D models and interactive experiences in front of children, which is conducive to developing children's intelligence and expanding imagination. Inspire most of the sensory cognitive functions, so that children can achieve the purpose of playing technology and learning. Visual design can develop AR games. It can use the immersive, competitive, antagonistic and other elements of the game to integrate Visual design, virtualize the game scene into "real", more immersive and Art. Pokemon Go is a game that captures, battles and exchanges Pokémon in the real world. Players discover elves in the real world, capturing and fighting elves. "IButterfly" is a 2010 Japanese visualized design application. In the designated area, you can see the butterfly and capture it, and the captured butterfly can redeem the coupon. In addition to developing AR games, at present, people like to use visualized design technology to highlight the future of technology in concerts and large evening parties.

6. Development and Research Status of Data journalism

The Chinese Academy of Sciences has clearly defined the concept of Data journalism in the 2001 Science Development Report. Data journalism is a kind of culture that pays attention to the Art literacy that modern people must possess in the era of science and technology. It is the

Art knowledge, Art thought, and Art method. The Art spirit as a whole system, internalizes it into the culture al process of the conviction and behavior of the educated, so that the Art attitude is closely related to the daily life of every citizen, and the Art spirit and humanistic spirit are blended in modern civilization. [6] From the concept, it is not difficult to find that the final purpose of Data journalism is to cultivate students' Art attitudes and improve their Art literacy. It can be seen that the concept of Data journalism in China has changed from cultivating a small number of Art and technological elites to cultivating and improving the Art quality of citizens.

Developed countries such as the United States and the United Kingdom have invested a large amount of human and financial resources in Data journalism since the last century and have vigorously developed Cultural heritage. In 2013, the American Association for the Advancement of Science (AAAS) released the Next Generation Cultural Heritage Standard, which provides a blueprint for the next Data journalism. As early as 1988, the United Kingdom listed science as one of the three core courses. In 2014, the Royal Society published the "Vision for Science and Mathematics culture" report, which proposed the most important position in science and mathematics as far as culture is concerned. In recent years, STEAM (Science, Technology, Engineering, Art, and Mathematics) culture has become the mainstream of culture research in developed countries such as the United Kingdom and the United States. [7] The aim of STEAM is to encourage students to development and improve comprehensively in the field of Science, Engineering, Art and Mathematics. The three most important evaluation projects in the world are PISA, TIMSS, and NARST, all of which include Art literacy and Data journalism. All of them are internationally important Art evaluation projects, and Art literacy and Data journalism are included in the test standards.

Overall, the development of Data journalism in China is in its infancy. The STS (Science, Technology, and Society) movement in the 1990s, shows the impact of modern science and technology culture on the natural teaching of primary schools. In 2011, the Ministry of culture introduced the "Science Curriculum Standards" (revised draft) for primary schools. After that, the primary schools began to pay attention to the science curriculum for primary students, matched the professional science teachers and specialized science courses. However, at that time, the teachers of science and technology culture in primary and secondary schools in our country were still very scarce. In some places, the science curriculum was in the form of insufficient input and the level of Data journalism was very different. Until 2017, the Ministry of culture issued the Compulsory Primary School Science Curriculum Standards to further strengthen primary school Data journalism. It is required that since the fall of 2017, a science course will be added as a basic course in the first grade.

Scholars Lanqing Wu and Wei Ma [8] reflect on the development of Data journalism in China based on the field of Art literacy. From the concept of Data journalism, they propose to promote the basic Art literacy of all students' sustainable development. From the practical level, students are required to explore Art attitudes in activities. The spirit of methods and sciences, from the aspects of system and management, requires the improvement of teacher training methods, culture and teaching level and teaching ability. Therefore, teachers should learn to keep pace with the times, learn new teaching modes, teaching methods, teaching techniques, integrate information technology into the classroom, apply it to teaching and improve teaching ability and competitiveness. Accelerate the transformation of traditional teaching resources into networked teaching resources, use visualized design technology to develop teaching resources, integrate teaching resources, and share teaching resources.

In summary, it is not difficult to find that China's Data journalism has the following problems.

(1) China's Cultural heritage started late, and development cannot keep up with international demands for technology and Art talents. (2) China pays insufficient attention to the Data journalism of primary and secondary schools. The standards of other subjects in the compulsory culture stage are set earlier and more vigorously than the Data journalism standards. (3) The professional level of science teachers in China is low, and many teachers are not bale to use new teaching methods and information technology.

7. Research on the Application of Cultural heritage Based on Visual design

The rapid development of science and technology and the competition of national comprehensive national power require countries to vigorously develop science and technology and cultivate innovative talents. Information technology is considered to be one of the most effective ways to lead the development of Data journalism and enhance the Art literacy of citizens. Visualized design refers to superimposing virtual objects on real objects through 3D technology to achieve a visual blending enhancement effect, featuring a combination of virtual and real, seamless interaction, and infiltration learning.

The main themes of visualized design culture applications are three aspects: culture al resource research, AR culture al game research, and design-based learning research. [9] Visualized design technology combined with Unity 3D software engine and Vuforia technology can develop visualized design culture al games. Using visualized design technology to develop and design culture al games can make learners turn virtual and abstract concepts into concrete and visible content. The game design supported by visualized design is based on immersion theory, driven by narrative, and uses two-dimensional code technology to create a mobile learning environment that encourages learners to constantly challenge tasks. [10] The use of new technologies to develop teaching resources requires a large amount of theoretical support. In the context of research on the status, it is necessary to develop culture al resources and visualized design culture al games that meet the needs of society and learners. The mobile game based on Visual design presents a scanned physical model through a mobile phone screen or a computer display screen. The visualized virtual model can perform interactive functions such as rotation and zooming with fingers. Su Cai et al. [11] of Beijing Normal University, think that the visualized design technology can make the abstract learning content specific, changeable and visual, and has great advantages for changing the abstract knowledge point teaching. At the same time, visualized design technology supports situational teaching. They believes that visualized design technology can help students achieve their goals in terms of emotions and values, and enhance their interest and concentration. So, visualized design technology can greatly improve learners' learning enthusiasm and interest, and inspire the intrinsic motivation of learners' learning. Learners will be immersed in the virtual simulation world to learn knowledge easier.

Laine Teemu H et al. analyze the children's low interest in science because of the lack of Motivation to learn and the relevance of the real world. Gamification learning and storytelling are important ways to learn intrinsic motivation. Linking abstract Art concepts to the real world can be done by contextual learning in the real world or by visualized design that connects virtual content with the real world. The article mentions the science point AR, which is a science learning game that creates a context-aware world. The results show that the platform is feasible. [12] The AR's immersive characteristics and the combination of virtual and real features are maximized, and their characteristics are used to abstract the Art knowledge points for specific reality learning. In summary, the application of Visual design in Data journalism can be concentrated in two aspects: development of teaching resources; application of culture al games.

8. Conclusion

There are huge challenges and opportunities in the application of visualized design in the Data journalism. (1) The culture al application of AR has high requirements on the teaching skills and professional quality of teachers. It requires teachers to continuously improve professional quality and learn new technologies and new teaching methods to develop the habit of lifelong learning. (2) Visualized design development equipment and visualized design technology arerequired to be taught by more professional people. The state, government and schools need to provide a good learning and teaching environment for science teachers, matching professional equipment and professional classrooms for learning and teaching. (3) The society and the country's Art literacy requirements for citizens are getting higher and higher, not only need to cultivate Art and technological talents, but the most important thing is to improve the Art literacy of citizens. However, the development

momentum of Data journalism cannot meet such requirements, and the contradiction between the two is both a challenge and an opportunity. From the levels of the national and government, we must pay attention to Data journalism. We must make good use of the conditions created by the state and vigorously develop Data journalism. (4) School culture is also called formal culture. Data journalism should not be limited to formal culture. It can take a long-term view, broaden culture al channels, and attach importance to informal culture (science popularization) in Data journalism. At present, the popularity of Art knowledge is often involved in TV programs. The construction and popularization of public places such as science and technology museums and museums are all in the category of informal culture. Finally, by taking advantage of the Internet, teaching resource sharing can maximize the use of culture, and it is necessary to build a platform for sharing teaching resources so that Data journalism can flourish.

Acknowledgments

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