

Research on the Design of Early Childhood Education App Based on Augmented Reality Technology

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Keywords: Early Childhood; Education; App; Augmented Reality Technology

Abstract: With the development of technology, smart phones, ipads and other smart mobile terminals have become necessities of people's lives. Artificial intelligence, multimedia technology, interactive technology and augmented reality technology are also gradually integrated into our life. Children's education, as the basis of public education, has been paid more and more attention. There are many different ways of education for children in the current age. Children's books, electronic books, intelligent early education machine, network school and other complicated educational products are everywhere. The purpose of this paper is to develop an app for educational products, which based on the existing intelligent platform, and used the AR technology to extending the functions of picture books. From the aspects of color, visual design, interaction design and augmented reality technology, this paper proposes the design method of augmented reality early childhood education APP.

1. Features of education app for children

Children education is generally defined as children aged 3-6 years old. Due to the particularity of children's age, their bodies, physiology and cognition are obviously underdeveloped. Children's character is lively and active, strong curiosity, sensitive to new things. Children's education is a special stage in education, It is the foundation period of one's development. Children's personal character, character, ability, social behavior formation period. Designing this app for some features of children is the focus we need to pay attention to.

2. Design system of children's picture book app with augmented reality technology

From the functional perspective of augmented reality (AR) early childhood education products, the purpose of product design is to achieve the purpose of learning and education, and to fully attract children's attention in terms of visual design. The emphasis is on the content and teaching methods in the design of products. From the perspective of user experience, user-experience-centered content design conforms to the principle of education. Design (AR) learning and entertainment module of early childhood education products from children's cognition, memory and understanding. According to the nature of children, through the visual, auditory, interactive learning experience.

2.1 APP visual design from the perspective of children's color psychology

Color can affect the person's feelings, the use of color is especially important in the design of visual interface, color setting and colour element collocation to conform to the aesthetic characteristics of color psychology. In the visual development of young children is more sensitive for bright color bright, bright color can make interface design reflects the interest more can attract children's attention. The reasonable use of colors in the design makes human-computer interaction more convenient and fast. Children in the speed of thinking problems is relatively simple, so the design style has the mind not tedious, button, level interface design achieve style unity color close. The layout of the interface should have a sense of balance, and each module area should be obvious. Avoid overcrowding among visual elements, highlight the main body, and clear operation steps.

2.2 App font and board design

Children's mastery of words is limited, and relative to the text, children prefer lifelike picture. So in the function of app font design, mainly children's artistic words. The font by dealing with increase visual graphic design elements. Achieve character recognition function and aesthetic feeling. Text design features should be concise, clear and easy to read, beautiful, lovely, fun, innovative and readable and artistic quality.

3. Ar program interaction technology design

Action Script 3.0 was adopted as the development language in the AR application part, FLAR ToolKit was used as the tracking class library, Papervision3D was used as the 3D framework, and 3D MAX and Collada were respectively responsible for model making and transformation call. FLAR Tool Kit is used to realize the fusion of real video image and virtual 3d model, image recognition and interaction and other important functions. The FLAR ToolKit is an AS3 version of the AR ToolKit that is compatible with Adobe Flash, Flex, AIR and extensible to support the C language. It can achieve AR development involves the most basic tag recognition, coordinate transformation and video merge and other low-level interactive functions.(Fig.1)

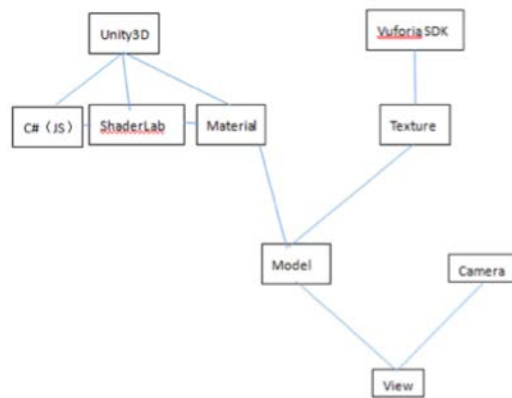


Fig.1 Ar programming principles

4. Conclusion

Design for children's APP should further study of children's psychological and cognitive development characteristics, to better understand the children's own development needs and cognitive way, make the augmented reality children draw this APP can better adapt to the children's cognitive and law of development. In the design process, should fully take into account the product content, interactive experience design and visual interface design effectively. Children can experience and learn in the process of entertainment in a deeper level.

In the process of interaction, children's initial reading, painting, language and character learning ability is cultivated. Today, with the rapid development of new media, iPad, smart phone and other mobile devices have become a new trend of education. It is an inevitable trend to use multimedia to optimize children's education, but researchers still need to constantly study and explore the balance between children's education and multimedia interaction.

References

- [1] STAFF C, Free the Digital Natives. Communication of the ACM, 2013, 56(12): 8-9.
- [2] LYU Zong-wei, XU Mao-qi, Interfacial Design of Children's Game for Preschooler. Design, 2015(8): 132-133.
- [3] ZHOU Nian-li, Development Psychology of Preschool Child. Shanghai: East China Normal

University Press, 2014(8): 4.

[4] SUN Zi-lin, LI Shi-guo, The Design Research about Emotional Experience for Preschooler in Interactive Toys. Art and Design, 2014(1): 120-122.

[5] HILLYER, Child Training: Education Training of Pre- school Children. Tianjin: Tianjin Education Press, 2012.

[6] MONTESSORI, The Montessori Method. Beijing: China Development Press, 2006.