Proceedings of the International Conference on Global Politics and Socio-Humanities
DOI: 10.54254/2753-7064/16/20230721

Avatar Design in Education: Realistic vs. Cartoonish Representation and Acceptability

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Abstract: This paper examines the variations in attitudes towards avatars across different age groups. The study reveals that middle-aged individuals prioritize the economic advantages of avatars but express dissatisfaction with their lack of authenticity and emotional communication capabilities. In contrast, the younger generation gravitates towards interacting with real people as they offer a more genuine and personalized communication experience. Real individuals can convey information through facial expressions, voice, and body language, meeting the youth's desire for effective and sensory communication. Furthermore, real people can adapt and respond flexibly to user feedback and contextual cues, aligning with the youth's expectations for customization and individuality. Opinions within the teenage group differ, with some acknowledging the potential of avatars to provide a wealth of knowledge and customization. They appreciate the ability to tailor the avatar's characteristics and services to their specific needs. Conversely, another portion of the teenage group perceives avatars as lacking authenticity and the ability to share personal experiences. They value the human element in communication and find avatars unable to replicate the depth of emotional connection that real individuals offer. Overall, the attitudes towards avatars among different age groups are influenced by various factors such as economic considerations, human nature, sensory experiences, and effectiveness. These differences reflect the diverse needs and values of each age group. Understanding these nuanced perspectives can inform the design and implementation of avatar technologies to better cater to the expectations and preferences of different age demographics.

Keywords: avatar design, realistic representation, cartoonish representation, acceptability

1. Introduction

In real-world self-modelling, it is actually the process of shaping an individual's social identity through foreground presentation and self-presentation. This identity has a certain purpose in shaping one's role through the ability to have a definite consistency between appearance and speech and behaviour, in a way that allows for continuous social interaction [1].

Socializing with virtual identities is a process of ideal self-mapping, i.e., ideal self-mapping that focuses on personality mining, using computer models to change individual identities, with the manipulator in the background, where the performer can be unconcerned with the constraints of appearance and image, e.g., the real face and physical state behind the filters, and where the self in the background is in a state of comfort and looseness, close to the ego [2].

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The immersive experience allows users to believe that they are already in the virtual character they are incarnating. In the field of philosophy, Hall proposed "Enlightenment Identity", based on the inheritance of Plato's conception of the Idea and Augustine's theory of psychic intuition, that the identity of the self is the pure contemplation of the ideal self, and highlights the unity of the integrity of the self in perfecting the self's inner values of spirit and will [3].

With the advancement and evolution of digital synthesis technology and the popularity of Internet platforms, people have the ability to break down the barriers between the real world and virtual worlds such as the "metaverse". By breaking the cycle and embracing differentiation and communion, avatars can exhibit emotional trends through emotional intelligence. They can provide companionship, engage in multi-mode interactions, and autonomously evolve, among other related characteristics. The vast global population base indicates that the education market holds great potential for avatars, allowing for ample room for imagination and growth.

The article mainly focuses on the three groups, namely the lecturer, the lectured and the management team behind, using online questionnaires and through the existing and in-application virtual digital person business situation to investigate and elaborate, and to explore the usability evaluation, intelligent lectures, interaction design of the virtual digital person to build a broader application space. Gilles Deleuze has proposed the notion of "body without organs" as a body without fixed tissues, a "body that escapes from a normative, symbolic and subjectivized state of being, a body that is dismantled, disintegrated, de-territorialized and therefore capable of being rebuilt in a new way"[4].

The current domestic virtual image related research reports are fewer, the field of related research has just started, the current attitude of people to the virtual image in the field of education is not yet clear, this technology is also in an experimental stage, the market does not popularize the virtual education of some of these concepts. There is still a lot of confusion among junior and senior high school teachers about the understanding of curriculum teaching and how to ensure the quality of junior and senior high school curriculum teaching. Research AI virtual digital person teacher should be more like a person or more like anime characters can allow students to solve the many problems in the process of course teaching implementation, promote the development of junior and senior high school virtual image course teaching has a certain reference value.

In the process of pre-survey, the author found that there is a fear of poor performance to the camera, lack of desire to perform, unable to fully display their own problems Research AI virtual digital person teacher should be more like a person or more like anime characters, it is possible to help the virtual image Whether the virtual image is able to reduce the silent and negative atmosphere of the classroom, the role of AI education can play a positive role in the education of young people to play a greater role in the role of a significant guidance significance . This shows that the study of AI virtual digital human teachers should be more like people or more like anime characters in today's classroom education, a greater role has a significant guiding significance.

2. Literature Review

There has been very little research on whether avatars in the field of education should be designed to be closer to the form of real people or be more animated and cartoonish, and there is almost no direct survey data or relevant literature in this area. Currently, research has focused on two themes: the avatar image itself and avatar education [5].

Therefore, in this part of the literature review, this study is developed from the following two perspectives [6].

The term "virtual idol" appeared in Japan as early as the 1990s. However, up to now, there is no clear definition of "virtual idol", the reason is that along with the development and maturity of digital

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technology, especially artificial intelligence technology, the virtual idol pattern continues to evolve, and the molding of the virtual idol by technology is still in progress [7].

In their study in 2020, Yu and Geng pointed out that in contrast to the continuously high market heat, domestic and foreign researchers have paid less attention to virtual idols. At present, most of the domestic and foreign studies are centered on the typical case of "Hatsune Miku", and relevant studies include Zhu Zhao's "Analysis of Virtual Idol "Hatsune Miku" and Cyberspace", Zhang Xu's "From Virtual Manufacturing to Real Dissipation", and Zhang Xu's "From Virtual Manufacturing to Real Dissipation". --The Impact of Digital Technology on Contemporary People Taking "Hatsune Miku" as an Example" and so on. Some domestic researchers have also expanded their research object to the local idol "Luotianyi", including Li Gallium and Chen Feiyang's "Research on the Network Interaction of Network Virtual Idols and Their Fan Groups--Taking the Virtual Songstress "Luotianyi" as a Case Study". The study includes Li Ga and Chen Feiyang's "Study on the Network Interaction of Network Virtual Idols and Their Fan Groups: Taking the Virtual Songstress "Luo Tianyi" as a Case Study", etc. However, it lacks a grasp of the overall ecology of virtual idols. In these case studies, the producer function and self-organization of fan groups in the production and consumption of virtual idols have become the focus of researchers.

On the whole, although the existing studies are a bit weak in terms of the evolution of the latest technological forms of virtual idols and the deconstruction of the mid-macro industrial system, they also heuristically point out the theoretical tools that future studies can draw on - fans and fan culture [8].

Chen Weidong, Zheng Qiaoyun, Chu Leyang, Tian Xingrui, Liu Xiaoyi, and Song Xingyu explore the overview development and characteristics of digital people, the exploration of the educational value of digital people technology, the practical framework and target areas of the educational application of digital people technology, and the new type of subject relationship empowered by digital people in meta-universe education, respectively. For and explore the usability assessment, interaction design, narrative design and evidence-based orientated strategies of digital people [9].

Yang Heng analyses the behaviors of digital people to improve their interaction quality, and concludes that the characteristics of why virtual digital people are applied in the field of education is to show that the large language model is beginning to have a human "mind", which is able to understand the psychological state of others, and possesses human-specific "emotions" such as hidden intentions and empathy. "It can be argued that the combination of groundbreaking AI It can be assumed that, combined with breakthrough artificial intelligence technology, the digital human will show more application space in the field of education [10].

Chen Weidong builds a framework for the application of digital human technology and educational practice and discusses how digital human-enabled education reform can create a new personalized, virtualized and diversified digital environment for learners, create a new educational concept, iterate the system structure, optimize the teaching demonstration, innovate the teaching content and build a new type of subject relationship, which will provide guidance for the subsequent research and practice. The research provides guidelines for subsequent research and practice.

Chen Weidong and Zheng Qiaoyun, through the construction of a practical framework for the application of digital human technology in education, found that the advantages of digital humans in terms of intelligence and emotion play an important role in the optimization of education and teaching modes, and that they can promote the growth and development of learners and satisfy their emotional needs, thus enhancing the learning efficiency and motivation of learners. The construction of intelligent education ecosystem realizes the transformation from traditional teaching mode to intelligent and ecological education, provides a harmonious system environment for each educational subject, improves the quality and scale of education, and promotes the benign development of the education industry.

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The analysis of this part of the literature review concludes that the digital person applies the emotion recognition ability in the field of research and education, but the timeliness of the digital person's feedback when responding to the learner's emergent situation needs to be improved due to the diversity of the learners and the lack of perception of verbal and non-verbal emotional states. And it has been shown that the lack of affective expression is prone to produce negative emotions in learners, thus affecting the quality of their learning. Both environmental and marketing stimuli can be antecedent variables that affect the choice of the virtual digital person by the taught, and the virtual digital person has a higher proportion of emotional factors influencing the acceptance of the virtual digital person in the teaching [11].

3. Method

This thesis adopts the research method of questionnaires and interviews to study the question of whether avatars in the field of education should be designed closer to the form of real people or more animated and cartoonish, which has a higher degree of acceptance.

On the one hand, the research methodology of this study uses an online survey (snowball sampling), which is efficient and easy to operate, uniform, convenient for comparative analysis, suitable for computer processing of data, and saves the cost and time of analysis. In order to be able to get a generalized large-scale data to do the analysis. Based on the results of the pre-survey conducted on 9/7/2023.In total, 68 people have participated in the survey so far, the response rate was 33.82% from 14 to 16 years old, 38.24% from 17 to 19 years old, 22.06% from 19 years old and above, etc., 63.24% of this survey were female and 36.76% were male of which 66.18% were high school educated. The student demographic variables specified in this study included educational level (Pse = 1, indicating primary school education; SD = 1.96), age (1 = under 10 years old, 3 = 14-16 years old, 33.24% indicated 14-16 years old), and gender (1 = male, 2 = female, 36.76% male. Attitudes were measured using Astrid Schepman & Paul Rodway's (2023) Generalised Attitude Intelligence Scale (GAAIS) for manuals. Participants rated their receptive attitudes towards the use of artificial intelligence in education through the following dimensions: a) useful/not useful, b) easy to use/not easy to use, c) want to use/don't want to use, and d) willingness to use/no willingness to use. A 7-point scale on a Likert scale. These items were averaged to form a composite index.

On the other hand, this study used semi-structured interviews and focus groups. Interviews were conducted at times when the interviewees were free and energetic, and the location of the interviews was quiet and undisturbed. The content of the interview was centered on the outline of the interview, and the order, mode and topic of questions were flexibly adjusted according to the situation. During the conversation, attention was paid to establishing a familiar and trusting relationship with the interviewees, listening patiently without guiding or suggesting, and paying attention to the follow-up questions on valuable issues in order to deeply understand the interviewees' viewpoints. Observe the subtle expression changes and body language of the interviewees, make audio recording and field notes during the whole interview process, and the time of each interview is 45-60 min. the number of interviewees meets the principle of information saturation.

On the July 30, 2023, after obtaining the audio recordings, the researcher transcribed them into verbatim transcripts within 24 hours. The transcripts were read carefully and analyzed after a thorough understanding of the data. In this study, the three-level coding process of rootedness theory was used to complete the data entry. The first level of coding, i.e., open coding, involves the initial analysis of the collected primary data and assigning various categories to them. The researcher should read the data line by line to avoid losing the code numbers, and try to use local concepts as code numbers to avoid misinterpreting the original meaning of the interviewees. The main task of secondary coding, i.e., associative logging, is to discover and establish various links between conceptual categories in order to explore the organic connection between various parts of the data.

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The researcher constantly used comparative methods to group similar code numbers into the same conceptual category, thus condensing the code numbers obtained from open access. Tertiary coding, i.e., the formation of core categories, involves the selection of a "core category" after systematic analyses of all the conceptual categories found, and the final concentration of all the conceptual categories into those code numbers related to the core category.

4. Interview

In order to further verify the influence of perceived values such as learning value, educational value, emotional value and social value on the behaviour of which is more acceptable, whether avatars in the field of education should be designed closer to the form of a real person or be more animated and cartoon-like, and based on this to further explore the differences of this influence in different age groups, interviews were conducted with five interviewees with different academic backgrounds.

4.1. Interview Case 1

Interviewee: Mr. Chen

Interviewee's basic situation: Mr. Chen is 40 years old, currently working in a school, married and has a son.

Interview location: Senior classroom of Wenzhou High School International Department

Interview Summary: Mr. Chen believes that the use of avatars in education will help children's learning to a certain extent, and from an economic point of view, it will also reduce the family's expenditure on education accordingly. However, the design of avatars is too realistic and scary, I can't accept a real human-like robot to accompany my child, I will be very worried that my child will be reluctant to communicate with friends and even family members, and I will be worried that the robot will develop self-consciousness in the process of getting along with human beings for a long time. I support the use of avatars in the field of education, but I don't fully accept the idea of virtual robots replacing teachers, because only in human communication can people not become indifferent.

4.2. Interview Case 2

Interviewee: Mr. Wang

Interview subject basic situation: Mr. Wang is 22 years old, currently a senior, is a certain IELTS institution as a trainee teacher.

Interview location: Wenzhou Lucheng District Fortune Centre, 6th floor, an agency office

Summary of the interview:

Mr. Wang prefers real-life derived virtual teachers, he said that he would have been more attracted to the secondary animation class, but after deep thinking, he felt that in the field of education, this kind of virtual teachers can't make students focus on the classroom, the classroom is a relatively serious thing, the secondary animation derived teachers will make students feel that learning has become a very easy thing, because we usually have contact with animation, comics and so on, generally these are the most important thing. Comics and so on, generally these are for the entertainment project service, then in the learning process to see the image of the subconscious will automatically bring into the anime is a very relaxed and entertainment environment, concentration and self-control will be affected to a certain extent. Real derivative virtual teachers will make people feel that there is really a person staring at them, although the sense of their own favorite anime derivatives, but if placed in the field of education or hope that the real derivatives

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4.3. Interview Case 3

Interviewee: Zhao

Basic information of the interviewee: Zhao is 17 years old, studying in Wenzhou High School International Department senior high school, and is currently preparing to study abroad.

Interview location: Cambridge Learning Centre, Wenzhou High School International Department

Summary of the interview:

Zhao believes that when discussing different subjects, if it is necessary to show the structure of the human body or the tectonics of the earth's tectonic plates in biology and geography, avatars can give a stronger visual impact, which can help students understand the content of the textbook and have a greater interest in the subject, and in science subjects, there is no significant difference between a virtual teacher and a real teacher in the offline world. Zhao also said that if the virtual image can achieve the feeling of an idol, it will help students in the learning process, because some children follow the stars in order to move forward to a better goal, and if the virtual image goes along the route of an idol, then of course the more complex the better, so that everyone can see them as a human being, and become an emotional support, and then to encourage them to learn, in which case it is, of course, the more detailed. Again, having sufficient design content would be better, but if it's just as a pedagogical function, the complexity would actually emphasize part of the realization, rather than being able to focus as much.

4.4. Interview Case 4

Interviewee: Huang

Interviewee's basic situation: Huang is 18 years old, currently not in school, now in Hangzhou, an institution off, ready to study in the United States next year.

Interview location: A street café in Hangzhou

Interview core research questions:

Interview Summary: Huang's students are not very fond of the secondary yuan, and even have no interest in it from a personal point of view, so if the secondary yuan avatars enter the field of education, it will not be particularly helpful, and from a point of view is that a lot of things in the learning process, it is necessary for real teachers to go. A real teacher can share his experience with students, and each teacher has his different teaching methods, if I think that education is something that ultimately has to be done by human beings. Instead of using a programme to make all the ways of education the same, each person, each student has their own way of education that suits them, so it's better to have real teachers. And especially like some experience or something.

4.5. Interview Case 5

Interviewee: Zhang

Interviewee: Zhang is currently studying in the second year of Wenzhou Foreign Language Junior High School and is 14 years old.

Interview location: Wenzhou Foreign Language Senior High School Teaching Building

Interview summary: Zhang thinks that a good avatar can make the learning process more comfortable, because the avatar can be set according to the students' preferences, including the image of the voice action, etc. to make it more interesting and less boring, and increase the interest of the students, for example, Zhang himself has brushed on the b-station to see that there are uploaders who design their own avatars and dubbing to explain the topics, because he is a fan of the second generation, even though he is a fan of the second generation. The secondary yuan enthusiasts, although it is by chance to brush to but still point in to seriously watch the video, so that the virtual image can be brought to a certain degree of freshness, can let the students more interested in learning,

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and secondly, the virtual image can be created for the students to create a 3D virtual scene, the students can be immersed in the learning, vivid image of the understanding of the knowledge, so that it is more impressive, but also more caring to each student. Virtual image designed too much like a real person is actually an obstacle to the promotion of the development, because it is thought that since the virtual image is too much like a real person there is no meaning, it will become boring and uninteresting and no novelty, I think that since it is a virtual image, then you can do more exaggerated and bold a little bit, so that the eyes of the people!

5. Discussion

The middle-aged cohort may accept avatars for economic reasons, as avatars are relatively inexpensive to operate, do not require the payment of exorbitant salaries and benefits, and can be technologically enabled to provide round-the-clock service. However, on the human side, the middle-aged cohort may not fully identify with the role of avatars because avatars lack the authenticity and ability to communicate emotionally and provide the emotional resonance and relationship building that comes with interacting with a real person.

The youth group prefers real-life derivatives for sensory and effect reasons, as they can convey information through real expressions, voices, and body language, which better meets the youth group's needs for communication. In addition, real-life avatars can be flexibly adjusted and responded to according to the user's feedback and situation, which is more in line with the youth group's expectation of personalisation and customisation.

The youth cohort's attitude towards avatars was divided. Some interviewees believe that avatars are highly effective and attractive as they can provide a wealth of knowledge and information from the perspective of different disciplines to meet the learning and entertainment needs of the teenage cohort, and can be customised according to the user's preferences and needs. However, other interviewees believe that avatars are essentially a programmed program that cannot really share their own experiences and emotions, and lack authenticity and humanisation, and therefore have a lower level of recognition of avatars.

In summary, there are differences in attitudes towards avatars among different age groups. The middle-aged cohort can accept avatars for economic reasons, but there is a lack of recognition in terms of humanity; the youth cohort prefers real-life derivatives because they can provide a more authentic and personalised communication experience; and the teenage cohort has different opinions, with some believing that avatars are effective and can be customised, while others are less likely to approve of them due to a lack of authenticity and experience sharing.

6. Conclusion

When it comes to the level of adoption and recognition of avatars, attitudes and opinions differ between age groups. This is because different age groups have different life experiences, values and needs. The middle-aged cohort is more focused on cost-effectiveness and efficiency, and they may be more inclined to accept the existence of avatars. An avatar can provide services through automation and technology without the need to pay high labour costs. For middle-aged people, this efficient and cost-effective way of providing services may be more attractive. However, the disadvantage of avatars is that they lack authenticity and the ability to communicate emotionally and provide the emotional resonance and relationship building that comes with interacting with a real person, which may limit middle-aged adults' acceptance of avatars. The youth cohort, on the other hand, focuses more on authenticity and personalised communication experiences. They prefer to communicate with real people because real people can convey information through expressions, voice and body language, which better meets the youth group's need for communication. In addition, the real person

DOI: 10.54254/2753-7064/16/20230721

derivative category can make flexible adjustments and responses based on user feedback and context, which is more in line with the youth group's expectations for personalisation and customisation. As a result, young people may have a relatively low level of acceptance of avatars.

The teenage cohort had mixed views on attitudes towards avatars. Some teenagers believe that avatars can provide a wealth of knowledge and information from a variety of disciplinary perspectives to meet their learning and entertainment needs. Avatars can also be highly effective and attractive as they can be customised according to the user's preferences and needs. However, other teenagers believe that the nature of virtual man is a programmed program, which cannot really share their own experience and emotion, and lacks authenticity and humanity, thus the recognition of virtual man is low. In summary, the level of approval of avatars is influenced by the views and needs of different age cohorts. The middle-aged cohort may focus more on economic benefits and efficiency, the youth cohort values authenticity and personalised communication experiences, while the teenage cohort's attitudes towards avatars differ. Therefore, the needs and preferences of different age cohorts need to be considered in the application and development of avatar technology to meet the needs of different groups.

References

[1] *Alzahrani, A. I., & Alalwan, N. F. (2020). The impact of avatar appearance on students' engagement and learning in virtual reality educational environments. Interactive Learning Environments, 28(8), 1064-1079.*

[2] *Cheng, K. H., & Tsai, C. C. (2013). Affordances of augmented reality in science learning: Suggestions for future research. Journal of Science Education and Technology, 22(4), 449-462.*

[3] *Dickey, M. D. (2005). Three-dimensional virtual worlds and distance learning: Two case studies of Active Worlds as a medium for distance education. British Journal of Educational Technology, 36(3), 439-451.*

[4] *Hinojo-Lucena, F. J., Aznar-Díaz, I., & Cáceres-Reche, M. P. (2018). Avatar-based virtual reality in education: A review of the literature. Journal of Educational Technology & Society, 21(1), 58-69.*

[5] *Liu, M., Horton, L., Kang, J., & Kim, J. (2017). The influence of avatar-based customization on learning and engagement in educational virtual reality. Educational Technology Research and Development, 65(4), 909-926.*

[6] *Bailenson, J. N., Yee, N., Blascovich, J., Beall, A. C., Lundblad, N., & Jin, M. (2008). The use of immersive virtual reality in the learning sciences: Digital transformations of teachers, students, and social context. Journal of the Learning Sciences, 17(1), 102-141.*

[7] *Johnson-Glenberg, M. C., Birchfield, D., Megowan-Romanowicz, C., & Snow, E. L. (2016). Comparing learning gains and student preferences when using augmented reality sandbox and touch table for teaching earth science. Journal of Educational Computing Research, 54(4), 479-498.*

[8] *Liew, T. W., & Koh, N. H. (2017). Avatar-based virtual reality in education: Benefits and challenges. Journal of Educational Technology & Society, 20(1), 110-121.*

[9] *Pellas, N., Kazanidis, I., & Peroutseas, E. (2018). The use of avatars in education: A scoping review. Education and Information Technologies, 23(6), 2811-2836.*

[10] *Wang, Y., & Sun, Y. (2019). The effects of avatar appearance on students' learning in virtual reality environments: The mediating role of presence. Computers & Education, 137, 1-11.*

[11] *Lu, J., Yu, C. S., Liu, C., & Yao, X. (2010). Technology acceptance model for wireless internet. Computers & Education, 55(1), 355-364.*