International Journal of Engineering & Technology, 7 (2.28) (2017) 191-192

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET

Research paper

Building Empathy in Young Children Using Augmented Reality

N. Zamin[1]*, F. A. Khairuddin[2], D. R. A. Rambli[3], E. N. M. Ibrahim[4], M. S. A. Soobni[5]

[1]Assistant Professor, University Malaysia of Computer Science and Engineering, Putrajaya, MALAYSIA.
[2]Student, University Malaysia of Computer Science and Engineering, Putrajaya, MALAYSIA.
[3]Associate Professor, Universiti Teknologi PETRONAS, Seri Iskandar, MALAYSIA.
[4]Senior Lecturer, Universiti Teknologi MARA, Shah Alam, MALAYSIA.
[5]Founder, Haswa Creative Solution
**Corresponding author E-mail: norshuhani@unimy.edu.my*

Abstract

Empathy is the feeling that a person can step out virtually from his/her own world and enter the internal world of another person. In simple notation, empathy means the ability to 'feel with' other people, to sense what they are experiencing. Empathy is different than sympathy. It is a hard-wired capacity many of the people today is lacking. A psychological study has found that many people are suffering from Empathy Deficit Disorder (EDD). EDD gets severe by the increasingly polarized social and political culture especially in the under developed countries. Lack of empathy and social wellness can be very damaging to the families, organizations and countries. This research investigates how compassion can be trained as a coping strategy to build social wellness using augmented reality on our young generations. Smart and empathic citizens are the key to the success of Industrial Revolution (IR) 4.0.

Keywords: *Augmented Reality;Empathy;Empathy Deficit Disorder (EDD);Smart Citizens;Young Generations*

1. Introduction

There is a growing concern on the loss of empathy in today's society. A study conducted at University of Michigan [1] has found that college students today are showing less empathy than previous decades, a 40% decline in fact since 1980 with a steep drop in the last decade. That is considered as an alarming number. A lack of empathy graduates will not be successful changemakers in the industries. A research in [2] has found that there is an increase in social isolation because of the drop-in empathy. Since 1970s, Americans have become more likely to live alone and less likely to assimilate with the societies. Several other social studies also found that socially isolated community can take a toll on people's attitude towards others. They are less generous and more likely to take advantage on others. Loss of empathy effects the socio-economics of a country too. Research shows that countries and regions in which there is little trust and respect outside one's own family tend to lag in economic development and growth [3]. Lack of trusts leads to a higher poverty level and crime rate of a country. The less people trust each other, the more they need for safety measures and regulations. Violence are created from less empathetic societies because they fail to think what is right or wrong. Thus, empathy need to be fostered from home as a secured foundation [4-5].

2. Motivations

Our research is inspired by the socio-economic problems in our country – MALAYSIA. Malaysians are currently living in hardship due to weak economy. Government intervention in our economy has increased the power of political action while reducing private action. This is a moral crisis. The increased cost of living has forced our fellow Malaysians to work round the clock. According to the 2012 Vacation Deprivation Survey by Expedia, Malaysia ranks fourth to having the most dedicated workforce with 90% of employees working even when they are on vacation. On average, Malaysians clock in about 40 hours a week at work which is equivalent to eight hours a day, based on a five-day work week. Some citizens are having multiple jobs just to survive the urban living. Parents are working long hours and have less attachment and bonding with their children. Our literature studies have found several existing empathic applications using AR and are summarized in Table 1.

Table 1: Comparative studies on the existing AR applications for empathy development [6].

App Name	Description	Price	Reviews	Aged
AR Freedom Stories	Highlights seldom told African Canadian histories from the era of the Canada/US Underground Railroad including Harriet Tubman's efforts to bring American slaves to freedom in Canada.	Free	3/5	12+
School of Games AR: Preschool	This is an AR preschool game where it has an endless learning experience including listening to moral stories and reading comprehensions.	$4.99/ month	N/A	3 to 5
The Tortoise and the Hare	An interactive storybook app that uses augmented reality to incorporate kids' coloring into the 3D story. The story includes a moral at the end.	$2.99/ month	3/5	5+

Copyright © 2016 Authors. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

3. Proposed Approach

This research investigates the pedagogy of virtue teaching and learning for early childhood education and to develop the framework for virtue development using Augmented Reality (AR). The idea to integrate the use of digital technologies in the development of emotions and positive character traits is inspired by the advancement of technology that gives the greatest influence on how the children think. Research has found that digital applications such as video games can improve visual-spatial capabilities, cognitive skills and increase attentional ability and reaction times [7]. On the other hand, there are many violent video games are found to effect on empathy aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, empathy/desensitization, and prosocial behavior [8].

We are developing 2D empathetic games in simulated virtual reality environment that presents some situations that need the young users to respond with empathy. This serves as a role-play but in virtual environment. At this stage, we have developed three scenes according to the Malaysia's preschool curriculum on virtue learning in Malay language. Few empathy scenarios which will be implemented in the AR application. Each scenario will highlight a moral value so that the player will acknowledge and learn the prosocial values. the program will ask the player to choose a selection of answers to identify their empathy level. After that, the program will explain the situation and tell the correct to make things right in that scene. A printed AR book with object's marker will be provided to initiate the AR application. Figure 1 and 2 shows an example of a scene to teach the value of honesty when a child is caught for a trouble he/she has made. The app will prompt the player to select the right response related to the scenario. All scenes created were illustrated using simply PowerPoint software. Next, the young player needs to select a button as a response towards the played empathy scenario. Each button will play different scenario to show to player the impact of the button that they have chosen.



Fig. 1: An empathy scene



Fig. 2: The response buttons

4. Conclusion

Empathy at the individual level can make real equality possible at the societal level. Our propose Empathic AR application is different than the existing applications where it is tie with our local culture, language and current curriculum. We are currently in the testing phase of our prototype at selected public schools in Malaysia. The effectiveness of teaching and learning empathy via AR apps will be compared with the traditional methods through series of interviews and observations with the young children, teachers and parents. The results will be presented in future publications. There is a potential commercialization to introduce digital emphatic technology as a teaching and learning aid for special schools in Malaysia. The available empathy teaching and learning in Malaysian schools are undeniably lacking and unable to impart the understanding of the common senses in daily life due to lack of comprehension from many parties – educators, learner, parents, country's policy makers, etc. This phenomenon, in many scenarios can result in permanent serious socioeconomic problems that will totally shroud the children's future.

References

[1] Empathy: College students don't have as much as they used to. D. Swanbrow in Michigan News, University of Michigan. Published online May 27, 2010.
[2] Changes in Dispositional Empathy in American College Students over Time: A Meta-Analysis. S. Konrath, E. O'Brien and C. Hsing in Personality and Social Psychology Review. Published online August 5, 2010.
[3] Tabellini, Guido. "Culture and institutions: economic development in the regions of Europe." Journal of the European Economic Association 8, no. 4 (2010): 677-716.
[4] Gordon, Mary. "Roots of empathy: Responsive parenting, caring societies." The Keio journal of medicine 52, no. 4 (2003): 236-243.
[5] Flight, Jillian I., and Adelle E. Forth. "Instrumentally violent youths: The roles of psychopathic traits, empathy, and attachment." Criminal Justice and Behavior 34, no. 6 (2007): 739-751.
[6] C. Beyerle. "Augmented Reality for ED: Check out some of these Educational AR apps" Retrieved 18 February 2018, from https://www.smore.com/u00w-augmented-reality-for-ed
[7] Boot, Walter R., Daniel P. Blakely, and Daniel J. Simons. "Do action video games improve perception and cognition?" Frontiers in psychology 2 (2011).
[8] Anderson, Craig A., Akiko Shibuya, Nobuko Ihori, Edward L. Swing, Brad J. Bushman, Akira Sakamoto, Hannah R. Rothstein, and Muniba Saleem. "Violent video game effects on aggression, empathy, and prosocial behavior in eastern and western countries: a meta-analytic review." (2010): 151.