

The Quantitative Study of Potential Virtual Reality Implementation on Moral Education to Overcome Misbehaviour Among Teenagers

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KEYWORDS	ABSTRACT
Virtual Reality (VR) Technology Digital New Media Misbehavior Moral Education (ME) Juvenile Crime	The number of young people in Malaysia involving in indecent and immoral acts seems to grow rapidly from year to year. As this group of citizens are going to be the ruler of tomorrow, Malaysia is in a dire need of turning its younger generations' ill behavior to a good one. As far as the researcher is concerned, one of the many ways to do so is by integrating new media technologies, such as Virtual Reality, into the current Moral Education subject. In becoming a harmonious and balanced person intellectually, spiritually, emotionally, and physically, the younger generations have to be exposed to Moral Education since primary school. Methods of integrating Virtual Reality into Moral Education subject and its importance need be studied in order to understand the needs of younger citizens and making sure of its effective implementation. As young people in this era spend most of their waking hours with technologies, the researcher believes that Virtual Reality could be the key point and has its own potential to overcome the misbehavior issue among school children especially primary school children. This project is conducted via questionnaire distributions, interviews with the experts, design development and post-test for validity of the research project. The validity of the research methodology is based on the implementation of Nvivo software for qualitative data hopes that findings from this study could be used as a guideline for other researchers who wish to continue making a change in the current Malaysia education system. Not to say the researcher wishes to change the whole education system, but to strengthen and amplify the usage of new media technologies into the system and hence benefits people of all backgrounds. Furthermore, thorough and

Received October 2022; received in revised form November 2022; accepted December 2022

detailed studies need to be done on the design development to make it more interesting and effective for students as a whole.

1.0 Introduction

In approaching New Digital Era, Malaysia has yet to tackle and overcome such issues that may drag its reputation down the drain, and one of it is the juvenile crime among school teenagers. As one might think that most of these cases happen among school dropouts, it may as well happen among teenagers who are still in school. The number of juvenile cases in Malaysia increases from year to year given that everything in the online world is easily accessible with little or even with no supervision at all. According to the statistic provided by United Nations International Children's Emergency Fund Malaysia (UNICEF), stated that a very large numbers of adolescents come into contact with the criminal justice system, as suspects or as victims or witnesses and the most The most common offences for which adolescents (10-18 years) are arrested are drug offences (consumption, possession and trafficking) and property offences (theft, burglary and robbery) – (Kirsten.A, Dr. Justice.B, Professor Dame Carolyn.H., 2018 para 43). Situation Analysis of Adolescents In Malaysia. United Nations Children’s Fund (UNICEF) Malaysia.

According to the statistic provided by Official Statistics of the Department of Social Welfare, Ministry of Women, Family & Community Development (2015, 2016 & 2017) cited in (UNICEF Malaysia, 2018 para 44) claims that Adolescents from 10 to 18 years olds show a steady of increase in numbers of total Adolescents subjected to in conflict with the law.

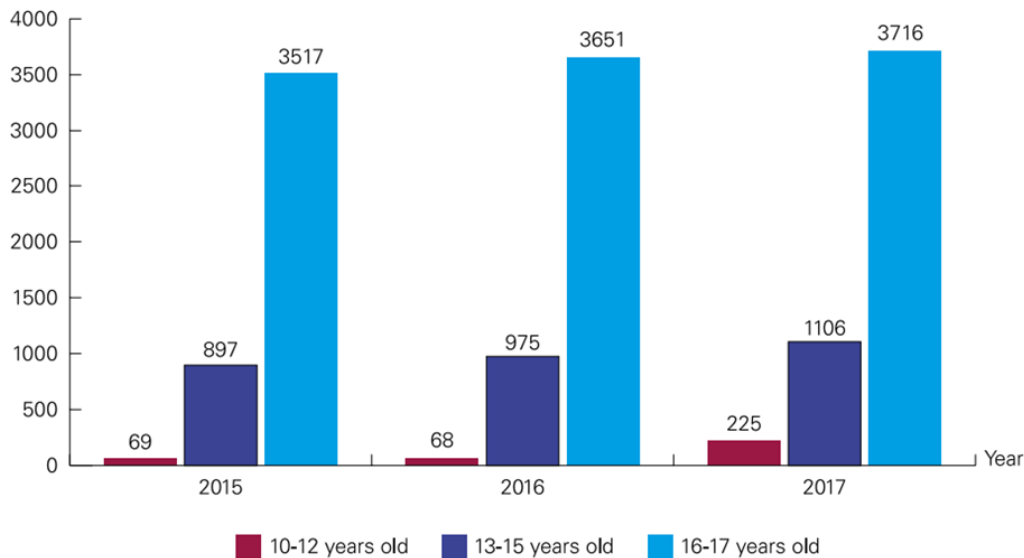


Figure 1: Adolescents (10-18 years) in conflict with the law by age and year, Official Statistics of the Department of Social Welfare, Ministry of Women, Family & Community Development (2015, 2016 & 2017), para 44. UNICEF Malaysia (2018)

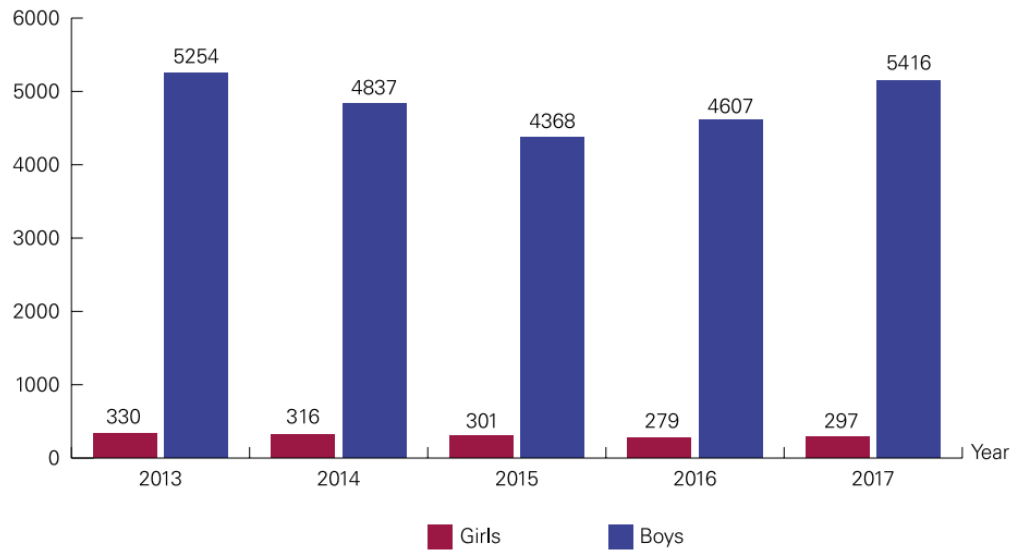


Figure 2: Adolescents (10-18 years) in conflict with the law by sex and year, Official Statistics of the Department of Social Welfare, Ministry of Women, Family & Community Development (2013-2017), para 44. UNICEF Malaysia (2018)

According to Malaysia Education Act 1996 as at 1 January 2012; an act that provides education system policy in Malaysia, the purpose of national education policy is to successfully develop the potential of individuals in a holistic and integrated manner as well as to produce intellectually, spiritually, emotionally and physically balanced individuals, based on a firm belief in and devotion to god. In addition, it aims to produce Malaysian citizens who are knowledgeable, competent in the outer world, follow high moral standards, responsible, capable of achieving a high level of personal well-being and able to provide to the betterment of the family, society and nation at large. (Law of Malaysia (2016) para. 15-16). The prerequisite of the development and formulation of ME curriculum was that it was and still made compulsory to be educated to non-Muslim students. It was ordained as such because at that time Muslim students were already learning Islamic Religious Knowledge in the school curricula. In addition, since the Islamic Religious Knowledge syllabus was an examinable subject hence the ME syllabus was made examinable too (Report of the Cabinet Committee, 1979). Below is the excerpt (para 127.1: 49) quoted from the report, chaired by the former Malaysia Prime Minister, Tun Dr. Mahathir Mohamad quote: *“To cultivate a disciplined, cultured and united society, it is proposed that whilst muslim students study islamic religious knowledge, and this includes other students who decides to follow this subject, the non-muslim students should at the same time study moral and ethics education. All students who study this must also take it in the examination. In both these subjects, respect for individual, freedom to embrace any religion in a multi-religious nation must be cultivated.”*

The main objective of the Moral Education subject is to make students into an individuals that have noble values and integrity, high quality of moral standards based on universal values founded on moral principles which have the ability to contribute towards the prosperity, unity and harmony of the country (Dr. Vishalache. B., New Straits Times, 2017). It is also believed that with the implementation of Moral Education (ME) in the National Education System it may produce citizens who recognize, accept as well as internalize their roles as a responsible decision-maker in the society as a whole. The revised version of Moral Education came into the picture so as to cater the globalization and changing of lifestyle in order to suit current needs. Malaysia is a unique third-world country that has three main races comprise of the Bumiputera (69.3%), the Chinese (22.8%) and the Indians (6.9%), while the other 1.0% belongs to other ethnics. In 2020,

Malaysian citizens were estimated to grow to Bumiputera (69.6%), the Chinese (22.6%) and the Indians (6.8%), while the other 1.0% belongs to other ethnics. In 2016, Malaysian citizens were estimated to grow to a total of 28.4 million persons (Current Population Estimates, Malaysia, 2020, Department of Statistics Malaysia, July 2020).

The ME subject was first introduced and implemented into Malaysia education system as a core subject in 1983. It was made compulsory to be learnt by all non-Muslim students starting at the age of seven years old (Primary One) while the Muslim students were obliged to learn morally themed subject from the Islamic education. ME was taught throughout students' schooling years until they reached seventeen years old (Form Five) and up until today, both subjects still remain to be taught to all primary and secondary school students. Previously, 16 core values and 64 sub-values were added into the first ME syllabus. Later in 2000, revision and amendments were made and towards the end the values were reduced to 36. Then in 2010, the Malaysian Government introduced Standards Primary School Curriculum (SPSC) so as the ME syllabus kept being amended until it consisted only 14 values. As the SPSC is being implemented in stages from year to year, amendments to the ME syllabus is said to be a non-stop and on-going process. It is also believed that with the implementation of ME in the national education system it may produce citizens who recognize, accept as well as internalize their roles as a responsible decision-maker in the society as a whole. In addition, the ME teaching holds a primary responsibility in building a peace and harmonious nation consisting of accountable individuals (Ministry of Education Malaysia, The Development Of Moral Education In Malaysia, 2000, p. 95). The revised version of ME came into the picture so as to cater the globalization and changing of lifestyle in order to suit current needs.

Table 1: Ministry of Education Malaysia, The Development of Moral Education In Malaysia, 2000, p. 99.

Learning Field	Related Values	Learning Field	Related Values
Self-Development	Belief in God, trustworthiness, self-esteem, responsibility, humility, tolerance, self-reliance, diligence, love, justice, rationality, and moderation.	Patriotism	Love for nation, loyalty to the King and nation, and willingness to die/sacrifice for nation.
Family	Love for the family, respect and loyalty towards family members, preservation of family traditions, and responsibility towards family.	Human Rights	Protection of children's rights, respect for women's rights, protection of labor rights, respect for rights of the disabled, and protection of consumers' rights.
Environment	Love and care for the environment, harmony between man and the environment, sustainability of the environment, and sensitivity towards environmental issue.	Democracy	Respect for rules and regulations, freedom of speech and expression, freedom of religion, participation in nation building, and open mindedness.

Peace and Harmony	Living together in harmony, mutual help and cooperation, and mutual respect among nations.		
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1.1 Research Objectives

To evaluate the effectiveness of the Virtual-Reality approach and how it affects the impression towards Malaysia education system and to propose a new teaching method of using Virtual Reality and its effectiveness in dealing with the issue of misbehavior among primary school children.

The revolution of the technology has given the society a chance of new approach in the teaching learning process. One of the consecutive technologies' improvements is the Virtual Reality, which provides tridimensional virtual environment with advanced forms of engagement that can cater more persuasion to the learning process. Virtual Reality, in its own way, able to assist students in apprehending learning concepts and ideas, hence able to produce positive results of the students. "VR creates an entire digital environment, a 360-degree, immersive user experience that feels real. In a VR setting, students can interact with what they see as if they were really there. (School of Education. Online Program, 2019). The major advantage of adopting Virtual Reality into learning process is that it enhances students' attention in class with its low cost given that real simulations could be expensive at times. In certain circumstances, which are almost impossible for students to be engaged with, could be made possible with Virtual Reality. For an instance, exploring other planets in the universe, travelling inside the human body and etc.

2.0 Literature Review

"The global online learning environment involves a holistic and sustainable system that needs a paradigm shift from educators and students, namely their use of digital technology and the development of e-content. They must adapt to this new norm and familiarize themselves with the online methodology to move beyond their comfort zone."- Dr Aini A.S.A., Dr Marlia.P. (2020 November 25). Embracing Online Teaching During The Pandemic. Nation News, New Straits Times. <https://www.nst.com.my/news/nation/2020/11/644079/embracing-online-teaching-during-pandemic>.

2.1 New Media in Education

The development of new media such as websites, mobile applications, virtual worlds, multimedia, computer games, human-computer interface, computer animation, and interactive computer installations are such important and beneficial platforms as they can be used to empower the society in many ways. Living in this millennium era, the extensive usage of technology brings about power, privilege, and influence within the society considering it has become a basis to better-enhanced productivity as well as providing openings in building several identities through social media. In addition, new media technology is allowing for greater specialization of the curriculum. It is enriching the students' knowledge sector with substantial information on varied aspects. New media tools are contributing interest driven community and peer learning.(Shilpa.J, 2014, p. 9).

In every part of the world new media technology has taken the center stage and Malaysia could not afford to miss it too. According to Lim, K. (2015) the RAM head of consumer and industrial ratings, new media technology in Malaysia has become an affordable advertising platform for the young. He added, consumer habits had shifted in the last decade

considering the rapid growth in technology had made young people to view content and listen to music on demand now. Even though Malaysia is still backward in transitioning itself to the digital realm compared with its western counterparts, yet Malaysia is still catching up real good. The notion can be clearly seen as true when the RAM Ratings declared that in March 2015 the Internet usage in Malaysia has increased at a compounded annual growth rate of 4.8% for the last five years, reaching 70.4%. As cited by Wok, S. & Mohamed, S. (2017) in their research paper titled Internet and Social Media in Malaysia: Development, Challenges and Potentials, the Malaysian Government has been very serious in making Malaysia a regional and global player in information technology (IT). The utilization of new media in the teaching and learning process also provides prominent results where it increases students' attention level and the incorporation of multimedia elements into digital storytelling encourages video production and editing skills. Students can learn video editing skills to create video clips for digital storytelling activities (Barber, 2016, p. 3)

2.2 Virtual Reality Technology and Types of Virtual Reality

Virtual Reality is a combination of "virtual" and "reality". Virtual brings the meaning of "near" while reality is the real thing humans go through, and the combination of both can be defined as "Near-Reality". As per said by Steven. M. Lavalle (2019, p. vii), "Virtual reality (VR) is a powerful technology that promises to change our lives unlike any other. By artificially stimulating our senses, our bodies become tricked into accepting another version of reality. As VR revolves around computer technologies with the adoption of certain software, it has the ability to generate sounds, realistic images and many other things that imitate real surroundings. In other words, the technology takes control of user's physical presence by sanctioning the user to communicate and hence interact within the designed environment.

According to Mazuryk. T., &Gervautz. M. (1999, p. 5) in Virtual Reality. History, Applications, Technology And Future, "in a virtual environment system a computer generates sensory impressions that are delivered to the human senses. The type and the quality of these impressions determine the level of immersion and the feeling of presence in VR. Ideally the high-resolution, high-quality and consistent over all the displays, information should be presented to all of the user's senses [Slat94]." Known as a real-time simulation of 4D space-time, VR also has the capacity to make humans' interaction with simulated 3D environments available. Adam, L. (1994), in his writing titled Visualization & Virtual Reality, 3D Programming with Visual Basic for Windows explained that VR acts as a human computer interface whereby it assists humans to visualize, manipulate, and interact with a database. The database consists of three major parts namely as below:

1. The virtual environment
2. The virtual entities
3. The script – defined by how the environment and the entities interact with user

2.2.1 Types of Virtual Reality

VR technologies differ from one to another and the differences are defined primarily based on their levels of immersion as well as their applications and use cases. Below are the different kinds of VR as until today:

Table 2: Types of Virtual Reality, Visualization & Virtual Reality, 3D Programming with Visual Basic for Windows.

Non-Immersive system	Semi-Immersive	Fully-Immersive
<p>Non-immersive simulations are the <i>least</i> immersive implementation of virtual reality technology. In a non-immersive simulation, only a subset of the user's senses are stimulated, allowing for peripheral awareness of the reality outside the virtual reality simulation.</p>	<p>Semi-immersive simulations provide a <i>more</i> immersive experience, in which the user is partly but not fully immersed in a virtual environment. Semi-immersive simulations closely resemble and utilize many of the same technologies found in flight simulation. Semi-immersive simulations are powered by high performance graphical computing systems, which are often then coupled with large screen projector systems or multiple television projection systems to properly stimulate the user's visuals.</p>	<p>Fully-immersive simulations provide the <i>most</i> immersive implementation of virtual reality technology. In a fully-immersive simulation, hardware such as head-mounted displays and motion detecting devices are used to stimulate all of a user's senses. Fully immersive simulations are able to provide very realistic user experiences by delivering a wide field of view, high resolutions, increased update rates (also called refresh rate), and high levels of contrast into a user's head-mounted display (HMD).</p>

Table 3: Elements of Virtual Reality, Visualization & Virtual Reality, 3D Programming with Visual Basic for Windows.

Element	Description
Virtual World	A three-dimensional environment that is realized through a medium (i.e. rendering, display, etc.). It enables humans to interact with one another and create objects as part of the interaction. Visual perspectives are responsive to changes in movement and the interactions able to imitate the things humans experience in the real world.
Immersion	Humans are able to feel physically present in a non-physical world where the technology makes human brain believes that is somewhere it is really not, and is accomplished through purely mental and/or physical means. Humans can achieve the total immersion state when enough senses are activated in creating the perception of being present in a non-physical world. There are two kinds of immersion namely: <ol style="list-style-type: none"> 1. Mental Immersion – a deep mental state of engagement, with suspension of disbelief that one is in a virtual environment. 2. Physical Immersion – Exhibited physical engagement in a virtual environment, with suspension of disbelief that one is in a virtual environment.
Sensory Feedback	In the technology world of VR, sensory feedback is achieved through integrated hardware and software and with the involvement of our senses. The senses may include vision (visual), hearing (aural), touch (haptic), and many more. Instances of the hardware and software can be head mounted display (HMD), special gloves or hand accessories, and hand controls.
Interactivity	The element of interaction is crucial for virtual reality experiences to provide users with enough comfort to naturally engage with the virtual environment. If the virtual environment responds to a user's action in a natural manner, excitement and senses of immersion will remain. If the virtual environment cannot respond quickly enough, the human brain will quickly notice and the sense of immersion will diminish. Virtual environment responses to interaction can include the way a participant moves around or changes in their viewpoint; generally through movements of their head.

3.0 Research Methodology

Conceptual frameworks follow the step based on Rita C. Richey, James D. Klein and Wayne A. Nelson (2007, p. 41). Developmental Research: Studies of Instructional Design and Development, Wayne State University & Arizona State University, Routledge Taylor & Francis.

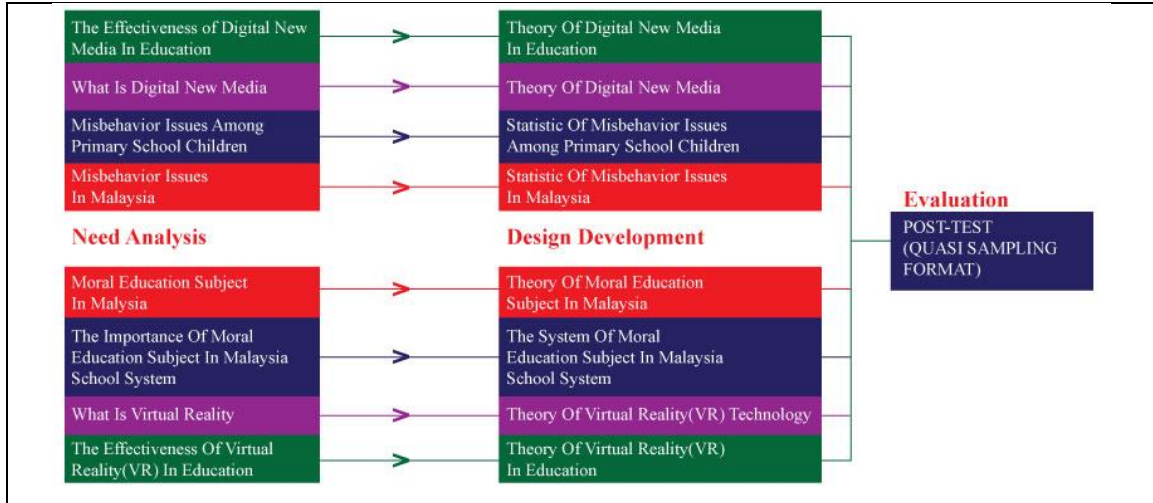


Figure 3: Conceptual frameworks follow the step based on Rita C. Richey, James D. Klein and Wayne A. Nelson (2007)

3.1. Data Finding and Analysis

First of all, qualitative data collection is not simply doing an interview session to collect the data in fact it is more than that. According to John W. Creswell (2014), Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research, Fourth Edition, Edinburgh Gate, Pearson Educational Limited said that "Qualitative data collection is more than simply deciding on whether you will observe or interview people.

The qualitative go through five experts in different fields which are Dr. Hushinaidi bin Abdul Hamid (PhD, Lecturer, Multimedia University-MMU), Professor Suleiman bin Mohd Salleh (Malaysia Design Development Centre-DDEC Panel), DSP Chinniah A/L Vallasamy (Malaysia Crime Prevention Foundation-MCPF / Royal Malaysia Police-PDRM), Mdm Nurul Ashikin Binti Masaat (Secondary School Teacher) and Mr. Mohd Firdaus Awang (Senior 3D Designer).

3.1.1 Nvivo Qualitative Data Report and Analysis

Table 4: Summary of the Nvivo Qualitative Data Report

No.	Question
1	Do you know about the definition of misbehavior from your own perspective?
2	What do you think about the issue of misbehavior among teenagers?
3	What do you think the causes of the issue of misbehavior among teenagers?
4	In your opinion, do you think we should monitor teenagers from their early age?
5	In your view, what do you think the most effective ways of dealing with this issue?
6	Do you think teaching Moral Education to students should be an enforcement / obligation in order to overcome the issue of misbehavior among teenagers?

7	In your opinion, should there be any improvements / betterments to be made in teaching Moral Education? Do you have any suggestion for such improvements?
8	What do you think of implementing Virtual Reality technologies in teaching Moral Education subject?
9	Do you have any experience of using Virtual Reality technologies? How does it operate? What can we learn from it / that?
10	The implementation of Virtual Reality technologies in teaching Moral Education subject should be made available in order to overcome the misbehavior issue among teenagers. Do you agree with this notion? Why?

Based on the table 5 shows that Set 2, Set 3, Set 4 and Set 5 have 22 references and above 99.32% of coverage while only Set 1 have 21 references with 99.37% coverage.

Table 5: Summary of the Nvivo References Coverage Percentage

References Coverage Percentage						
Number of Question		Set 1 (Respondent 1)	Set 2 (Respondent 2)	Set 3 (Respondent 3)	Set 4 (Respondent 4)	Set 5 (Respondent 5)
Q1	References	1-3	1-3	-	-	-
	Coverage	7.59%	6.25%	-	-	-
Q2	References	4-5	4-5	4-5	4-5	4-5
	Coverage	6.72%	8.28%	7.62%	9.27%	5.66%
Q3	References	6-7	6-7	6-7	6-7	6-7
	Coverage	11.92%	11.76%	8.66%	3.43%	6.66%
Q4	References	8-9	8-11	8-11	8-9	8-9
	Coverage	6.02%	19.56%	27.21%	4.35%	5.86%
Q5	References	10-11	-	-	10-16	10-11
	Coverage	7.27%	-	-	38.96	7.70%
Q6	References	12-15	12-16	12-16	-	12-16
	Coverage	19.27%	23.39%	22.41%	-	26.27%
Q7	References	-	-	-	-	-
	Coverage	-	-	-	-	-
Q8	References	16-17	17-20	17-18	17-18	17-18
	Coverage	16.91%	17.04%	10.16%	13.43%	11.43%
Q9	References	18-19	-	19-20	19-20	19-20
	Coverage	8.93%	-	6.06%	11.11%	9.95%
Q10	References	20-21	21-22	21-22	21-22	21-22
	Coverage	14.75%	13.42%	10.98%	12.54	18.97

Based on the explanation from the experts it shown that all of them are well aware about the misbehavior issue among primary and secondary school children that are currently escalating year by year. Apart from that, they also believed that action should be taken in a proper manner and arrangement. Other than that, they also mentioned that early action should be taken especially since primary school. After that, the respondents being asked about the potential of Moral Education (ME) could be the key to overcome misbehavior issue. Above all, the experts also agree that Virtual Reality (VR) could make it more effective to overcome the issue of misbehavior among school children.

4.0 Conclusion and Recommendation

This study provides insights on the use of virtual reality technologies in the Malaysia current education system especially in teaching and learning moral education subject. The current teaching and learning approach is more of a traditional one compared to the western countries

and students are being taught solely based on papers and ink. From the findings, it is safe to say that virtual reality technologies has the potential to be integrated into Malaysia education system as this study gained positive response in terms of the results in interviews and surveys. Interviews and surveys were done among school children, primary school students to be precise, as well as among the experts and professionals. Virtual reality is not just a tool to enhance the teaching process of moral education subject but also it can boost students' motivation and interest in learning the subject too. With the fruitful findings, the researcher hopes that more studies on the use of new media technologies will be done in the near future in making Malaysia one of the countries that make full use of technology in the education system. Living in the 21st century era, the researcher believes that negative behavior disposed by the younger generations can be tackled by using new media technologies as they are very familiar with its usage.

Acknowledgement

Assalamualaikum W.B.T to all Muslims and peace to all non-Muslims. First of all, I would like to thank Allah S.W.T for His blessings to me with Islam and hidayah, health, patience, financial and knowledge to complete this dissertation and I would like to send my regards to our Prophet, Muhammad SAW with dua' that Allah S.W.T will grant our Prophet with Al-Wasilah (a high and special place in Jannah) and Al-Fadheelah (a rank above the rest of creation) which Allah have promised him. By Allah, without His will this dissertation would not be completed.

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