LEX LOCALIS-JOURNAL OF LOCAL SELF-GOVERNMENT
ISSN:1581-5374 E-ISSN:1855-363X
VOL. 23, NO. 11 (2025)

THE MIND EFFECTS OF VIRTUAL REALITY MEDIA ON POTTER'S MEDIA LITERACY

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ABSTRACT
This study explore the mind effects of virtual reality media on Potter's media literacy, virtual reality media involves the use of virtual reality (VR), augmented reality (AR) or 360-degree video technology to provide more immersive experience. In order to understand the mind effects of virtual reality media on Potter's media literacy, a quantitative experiment will be conducted to identify the specific relationships and mind effects of virtual reality on media literacy, through the comparison of pre-test and post-test in the experiment to measure the characteristics of virtual reality media that are different from traditional media, and how the subject perceives and engages with the virtual reality world.

Key word: *Virtual reality media, media literacy, mind effects*

1.1 INTRODUCTION

Emerging technologies are changing the world, providing us with entirely new mediu ms of communication and ways of interacting. This change is reflected in the converg ence of multiple media technologies and computers. The continuous advancement of media technologies is reshaping the various symbolic systems we have come to know (O'Neill, 2005). We are experiencing a shift from traditional media to digital culture, s imilar to the historical evolution from oral to written or mass media culture. The scena rios and channels of communication methods are showing unprecedented breadth and diversity (Alsaleh, 2024).

This is not only technological change, but also a renewal at the philosophical and conceptual level. As Bouabdeli (2024) points out, the development of technology has stimulated philosophical inquiry, prompting the philosophy of technology to breathe n ew life into other branches of philosophy. Technology has not only transformed peopl e's daily lives, it has also redefined cognitive standards, boundaries and meanings (Le wis, 2021). To truly understand and utilize virtual reality technology, it is much more than simply acquiring operational skills; it requires an overall increase in the level of t hought and knowledge at all levels of society (Mihelj et al., 2014).Negroponte (1995), on the other hand, emphasizes that even though we are entering the digital age, the nat ure of human perception is still analog - -Our senses such as vision and touch depend on physical entities.

Virtual reality media technology has different characteristics compared to traditi onal media. Gonzalez-Franco and Lanier (2017) state that the core of virtual reality lie s in the creation of an "illusion" through perceptual and cognitive mechanisms that m akes the user feel in a realistic environment, resulting in realistic reactions and behavi ors. When using the medium of virtual reality, the user needs to have specific knowle dge base to understand how real scenarios are simulated with the help of a virtual reali

ty system. This simulation relies on the construction of immersive narrative spaces an d the combination of hardware and software technologies that enable users to deeply i nteract with the virtual environment (Bailenson, 2018).

Therefore, in order to explore the impact of virtual reality media knowledge on media literacy, it is necessary to conduct a study that provides an in-depth understandi ng of the complex contextual relationship involved behind media literacy in the conte xt of the rise of virtual reality media (Mills, 2021). This study argues that this relation ship centers on the interactions and connections between technology, virtual reality an d media literacy.

Media literacy was initially defined as "the ability to access, analyse, evaluate and create messages across a variety of contexts" (Aufderheide, 1993; Christ and Potter, 1998). Potter (2004) puts forward his theory around the definition of media literacy, the impact of media literacy and how to cultivate media literacy, and proposed the media literacy skill model, emphasized effectively receive and interpret media messages, include analysis, evaluation, and creative use of media tools.

On the other hand, Lewis (2021) argued that media literacy has mainly focused o n developing skills for acquiring, analyzing, evaluating, and creating media informati on on traditional media, but has paid insufficient attention to the impact of advent in t echnical media and how it empowers and constraints information and media users. Thus, he proposed that mediation framework involves six different elements: technology, sociocultural, mind, body, space, and time. These relationships are not neutral, and they continue to mediate us as people perceive and engage with the world (Lewis, 2021).

Thus, this study seeks to research on the mind effects between virtual reality media and Potter's media literacy skills. This study argued that it is important to understand the impact of virtual reality media on subjects and that Potter's media literacy skills is not sufficient for users to comprehend virtual reality media. It is argued that to comprehend virtual reality media users need to have knowledge about mind effects of virtual reality media. The effects of all these will influence how subjects perceive and participate the world (Lewis, 2021).

1.2 Research Objectives

This study seeks to research on the mind effects of virtual reality media while users engage with virtual media. This allows researchers to gain better understanding of the complex interrelationships between virtual media literacy and Potter's media literacy skills. The study seeks to critically evaluate the mind effects of virtual reality media and how users choose to participate with them. Individuals are often unaware that they are being educated and structured by media culture (Kellner, 2005), and this is further compounded with the advent of virtual reality media.

Research Objectives

1. Examine the mind effects of virtual reality media on Potter's media literacy.
2. Examine the influence of knowledge about mind in virtual reality media with media literacy.

Mind in this study focus on flow and immersion experience of human subjects. Mind refers to imagination, awareness, consciousness perception and agency in virtua l reality environment (Lewis, 2021).

Research questions:

1. Is there significant influence of virtual reality media about mind on Potter's media literacy skills?

2. How is the influence of knowledge about mind in virtual reality media with Potter's media literacy skills?

1.3 Operational Definition

1.3.1 Virtual reality media literacy

According to Webster Dictionary, "virtual" is defined as something that exists in natu re or effect but is not real, while "reality" is defined as something that exists independ ently of ideas concerning it. "Virtual reality" refers to a medium that enables users to i nteract with an artificial environment constructed from three-dimensional visuals and other senses through computer modeling and simulation (Lowood, 2015).According t o Sherman and Craig (1995), virtual reality literacy is not just about "wearing the devi ce and experiencing the content" but more importantly the audience needs to have the ability to interpret the virtual reality environment.Jones, Dawkins, and McDougall (20 23) further explored literacy within immersive virtual reality technologies, emphasizin g the importance of empathy, embodied experience, and ethical awareness.

In this study, virtual reality media literacy is defined as the ability to interpret virtual reality media environments.

1.3.2 Mind

Lewis (2021) defines "Mind" as a collection of imagination, consciousness, perceptio n and agency. In this context, "imagination" refers to people's ability to reconstruct im ages through their mental senses, also known as "mental representation" (Sumillera, R ocio G., 2016). Imagination is the prerequisites for people to perceive and understand information in depth. In the medium of virtual reality, the viewer through imagination can experience a feeling as if he or she were actually in a specific location in the virtu al space.

"Awareness" is defined as the knowledge produced by an individual during inte raction with the environment (Gutwin et al., 2002). It helps person to perceive the info rmation around them in a virtual environment (Paul, 1992). In addition, consciousness is closely related to an individual's subjective experiential state, information from exte rnal structures is mapped and reflected in the individual's experiential structure (Chal mers & David, 1997). Thus, awareness is an individual collective knowledge of somet hing.

"Consciousness" is defined as "inner world of one's own mind", and with introspection as the mind "attending to" itself, which is expressed through introspection as the mind's attention and reflection on itself (Paul Edwards, 1967). In virtual reality environments, consciousness is primarily concerned with the changes in emotions and feelings that occur during the audience's immersion experience, including positive emotions, negative emotions, and psychological responses such as empathy (Diemer et al., 2015).

Perception of thinking experience helps viewers extract meaning and integrate p erspectives into their own worldview. This process allows them to continue to explore and discover, culminating in an experiential journey that is personalized (Stackelberg, 2011). Perception is an expression of a thinking experience that enables individuals to process and analyze existing facts, evidence, observations, and arguments in order to draw reasonable conclusions or make informed judgments (Brookfield, Stephen, 198 7).

"Agency" is defined as an individual's ability to act autonomously and make dec isions for themselves (The Sociology Dictionary). This ability transforms people from passive viewers to active participants exploring a virtual space scene (Haskins et al.,

2020). Individuals are able to autonomously give meaning to experiences due to their complete control themselves. Varela(2017) state that this ability is embodied in the w ay human consciousness regulates and processes experiences. Thus, in virtual reality environment, the mind is constantly stimulated by the environment. They are receiving and making meanings from the information available to them in the virtual environment.

Lewis (2021) proposed that the mind in any given situation will determine what is the intentions. It will direct the mind to their current state of awareness and perception. This will determine the state of their mind. The mind is making sense from what the senses are focusing on and this can stimulate their imagination.

Jary and Jary (1995) defined the mind as the mental faculties, mental experience of the human individual, involving self-consciousness, thinking process and unconscious processes. In any given event, what is being thought by the mind can only be determined by overt behaviour. In other words, it is not possible to observe the mind directly.

Mind is the mental faculties of an individual to make sense of the intention of the producer of a given virtual reality environment. This allows them to think consciously and unconsciously while they are made aware, perceive and imagine while exploring a virtual environment. Their thinking processes are guided and constructed by exposure to specific knowledge on a given subject matter. In this research, mind is defined as imagination, awareness, consciousness perception and agency in virtual reality environment.

1.3.3 Potter's media literacy skills

Potter (2008) defined media literacy skills as key components that people can acquire to help individuals effectively understand, analyse, and create media content. It includes the ability to analysis, evaluate, group, induction, deduction, synthesis, and abstraction. The Centre for Media and Information Literacy (2012) offered a slightly different definition from Potter's media literacy. CMIL states that media literacy is a framework to "access, analyse, evaluate, create and act with messages in a variety of forms." CMIL definition is endorsed by Lincoln Memorial University (2025). What is lacking in Potter's definition of media literacy is the term access. Potter argues that the skills are not necessarily limited to media literacy task. He said that the skills need to be harnessed and improved on when accessing media messages.

1. Analysis—breaking down a message into meaningful elements
2. Evaluation—judging the value of an element; the judgment is made by comparing the element to some criterion
3. Grouping—determining which elements are alike in some way; determining which elements are different in some way
4. Induction—inferring a pattern across a small set of elements, then generalizing the pattern to all elements in the set
5. Deduction—using general principles to explain particulars
6. Synthesis—assembling elements into a new structure
7. Abstracting—creating a brief, clear, and accurate description capturing the essence of a message in a smaller number of words than the message itself

Fig 1. Potter's media literacy skills(2008)

2.LITERATURE REVIEW

2.1 Media ecology

Media ecology emphasizes the universal connections between the media and the worl d, not only at the biological level, but also between the micro and the macro, human s and the universe (Ong, 1977).Postman developed the concept of "media ecology" in order to highlight its role as a system of technologies, society and cultures, and to poi nt out the centrality of humanism.

Postman developed the concept of "media ecology" to highlight its role as a syst em of technology, society, and culture, and to point out the centrality of humanism. H e argues that the significance of media ecology is to help us understand more deeply t he place of human beings in the communication process and their ethical practices (Po stman, 2000). Neil Postman defines media ecology as "the study of media as environ ments", a definition that marks an important stage in the development of the field as a direction of communication research. This definition marks an important stage in the development of the field as a direction of communication research.

Under the background of the rapid evolution of new technologies, with the fusio n of new media and virtual reality, and the diversification of information disseminatio n and reception channels, language has shown an obvious trend of fragmentation and deconstruction. A series of new ways of thinking, expression and creation are constantly challenging traditional rules and concepts, some of the most basic and original common-sense concepts need to be rethought (Shaleph John O'Neill, 2005).

2.2 Media literacy

Media literacy was initially defined as "the ability to access, analyse, evaluate and create messages across a variety of contexts" (Aufderheide, 1993; Christ and Potter, 1998). Potter (2004) argued that this definition is widely accepted as the subject of academic research, educational initiatives and communication policy. Livingstone (2004) argued that this media literacy framework is dynamic learning process, and analysed its components of media literacy.

Some scholars believe that media literacy is a life skill to critically analyse, understand and influence the media (Lee, 2014). Martens argues that media literacy is prerequisite for individuals to participate in society (Martens, 2010). Greenaway (199 7), on the other hand, suggests that the media subconsciously influences the individual s' cultural perceptions and values. As the media environment has become increasingly complex and deeply penetrated into people's work, life and entertainment, the importa nce of media literacy has become more and more prominent, and it has also triggered a new round of discussions on its meaning, assessment methods and cultivation paths (Hobbs, 2010).

Potter (2013) pointed out that media literacy should focus on three key topics: fi rstly, it should cover all kinds of media forms; secondly, it should be regarded as a co mbination of skills and knowledge; and thirdly, it should be closely related to people's life, and enhance the quality of life through mastering the media and its impact. At the same time, media literacy education is widely recognized as having an important role to play in cultural construction, consensus formation and the development of sense of belonging.

Potter (2008) defined media literacy skills as key components that people can acquire to help individuals effectively understand, analyse, and create media content. It includes the ability to analysis, evaluate, group, induction, deduction, synthesis, and abstraction. The Centre for Media and Information Literacy (2012) offered a slightly different definition from Potter's media literacy. CMIL states that media literacy is a

framework to “access, analyse, evaluate, create and act with messages in a variety of forms.” CMIL definition is endorsed by Lincoln Memorial University (2025). What is lacking in Potter’s definition of media literacy is the term access. Potter argues that the skills are not necessarily limited to media literacy task. He said that the skills need to be harnessed and improved on when accessing media messages.

2.3 Virtual reality media on media literacy

Virtual reality media technology refers to computer-generated virtual environments w hich enable people enter with the help of technological devices, isolated from the real environment, to carry out activities and communication in virtual space (Tsakiris, 201 0). The technology can be divided into virtual reality (VR), augmented reality (AR) a nd mixed reality (MR) (Burdea & Coiffet, 2003). Among them, Virtual Reality (VR) i s the simulation of the real environment through modeling techniques; Augmented Re ality (AR) is the superimposition of virtual images on the real scene to enhance the pe rception of reality; Mixed Reality (MR) blends the virtual and real elements to build a new interactive environment.

Virtual reality media technology relies on image recognition and voice recogniti on technology in artificial intelligence. Sensors are able to provide rapid feedback afte r acquiring input data, allowing users to gain a real sense of immersion and engageme nt, and realizing efficient human-computer interaction (Juan Qian, 2022). The technol ogy is algorithm-driven, often referred to as “attention engineering”, and aims to gene rate exclusive content based on the user's personalized needs. Data analysis is perform ed through machine learning with neural networks to build personalized digital inform ation content (Teemu Valtonen, et al., 2019).

The underlying perceptual and cognitive mechanism of virtual reality media is t o induce illusion, it enable users respond and behave as if they have entered into “realistically”(Franco&Lanier, 2017). Vanja Kljajevic proposed consensual illusions of virtual reality media in his book *Consensual Illusion: The Mind in Virtual Reality.* Explored different aspects of cognitive processing that take place in virtual environments. The ability of virtual reality media to support extensive emotions, which can bring strong emotional hallucinations and empathy to users (Kitson, 2020).

Richard S. Lewis (2021) proposed the mediation framework of media literacy and technology. It enables us to reflexively comprehend specific effects that technologies have, and evaluate the relationship of media literacy and technology, through technological, sociocultural, mind, body, time, and space, six aspects relations mediate to perceives and engages. And he argued that the scope of media literacy be expanded, previous research has limitations in media literacy that only focused on the content and presentation of information, ignoring that the medium is an import element of change our lives (Lewis, 2021).

Emotional experience in virtual reality refers to the emotional reactions and psy chological feelings generated by users in virtual environments, mainly including imm ersion, positive emotions, negative emotions, and empathic experiences (Diemer et a l., 2015). Immersion refers to the individual's deep involvement in the virtual space, a s if is detached from the real world (Somarathna et al., 2022); positive emotion refers to the virtual reality stimulates positive emotions such as excitement, pleasure, and ful fillment through contextual design; negative emotion triggers emotional reactions suc h as fear and sadness through such content as disaster scenarios; and empathetic exper ience refers to users through simulated scenarios or role-playing to feel the emotions o f others, thus stimulating empathy, such as the virtual presentation of social events ca n enhance the user's understanding of others and emotional connection (Kitson, 2020).

It includes situational thinking experience, deep thinking in a specific scene, suc h as the reproduction of historical scenes. The concept of "Story living" was originall y proposed by the team of Google researchers. After researching how virtual reality af fects and changes narratives, Google News Lab pointed out that traditional narrative s tructures are challenged and proposed a virtual reality narrative framework of "initiati on, exploration and understanding" (Google News Lab, 2017). Among them, the "initi ation" stage emphasizes the need for creators to provide audiences with rich and speci fic sensory information, so that they can leave imprints on the psychological and phys ical levels, thus gradually adapting to the virtual environment and integrating into the characters.

The "exploration" stage refers to allowing the audience to take themselves as th e center of the story, move freely in the virtual space, and even temporarily detach fro m the main plot to discover hidden details; while "understanding" occurs after the aud ience returns to reality, they begin to reflect on the experience and integrate the perspe ctives and feelings gained in the virtual situation into their own worldview (Wright, 2 003). Immersive narratives are centered on "creating an experience" that allows the au dience to "become a character" and truly enter the story, as Polydorou (2024) suggest ed that the key elements of immersive narratives include design, exploration, connecti on and development, through which users can explore and complete a personalized jo urney through the plot, thus creating a meaningful emotional bond between the charac ter and the audience.

2.4 Hypothesis

H1 – There is significant different between the pre-test groups on Potter's media literacy

H2 – There is significant different between the post-test groups on Potter's media literacy

H3 –There is significant influence of knowledge about mind in virtual reality media with Potter's media literacy skill before exposure

H4 –There is significant influence of knowledge about mind in virtual reality media with Potter's media literacy skill after exposure

METHODOLOGY

Experiment

In order to understand the mind effects of virtual reality media on media literacy, an experiment will be conducted. This method will allow the researcher to study the contextual relationships between virtual reality media with media literacy. The method will seek to test the relationship between virtual computer technology, virtual reality media and media literacy. Experiment will enable the researcher to test the relationship mind relations mediate, how the subject perceives and engages with the virtual world.

The reason why this study adopts the experimental method is that it can arrange participants to conduct experiments in a virtual reality environment, and then based on the experimental data of the participants, it can effectively compare the impact of the virtual environment on media literacy. Creswell& Plano-Clark (2011) defined

experiment as a procedure carried out to support or refute a hypothesis, or determine the efficacy or likelihood of something previously untried. Experiment provide insight into cause-and-effect by demonstrating what outcome occurs when a particular factor is manipulated.

Steps in conducting an experiment

3.1 Selecting respondents for this study

A group of 100 college students be recruited to participate the experimental research. They are all taking classes on media design. They are doing their bachelor's degree at College. They are taking this media production classes at their second year of study. Because of their same level of education, the selection is done randomly.

3.2 Experiment design

The second step involves creating a suitable experiment design to study the chosen phenomenon. A quantitative experiment will be conducted to identify the specific relationships and mind effects of virtual reality on media literacy, through the comparison of pre-test and post-test in the experiment to measure the mind effects of virtual reality media on Potter's media literacy.

This research uses non-equivalent control group design because of this experiment includes pre-test and post-test through quantitative questionnaires, measuring the mind effects of virtual reality on Potter's media literacy, through data analysis and produce immerse experimental report. Non-equivalent control group design compares two groups where participants are randomly assigned, using pre-tests and post-tests, it aims is to determine causality by comparing groups or time periods.

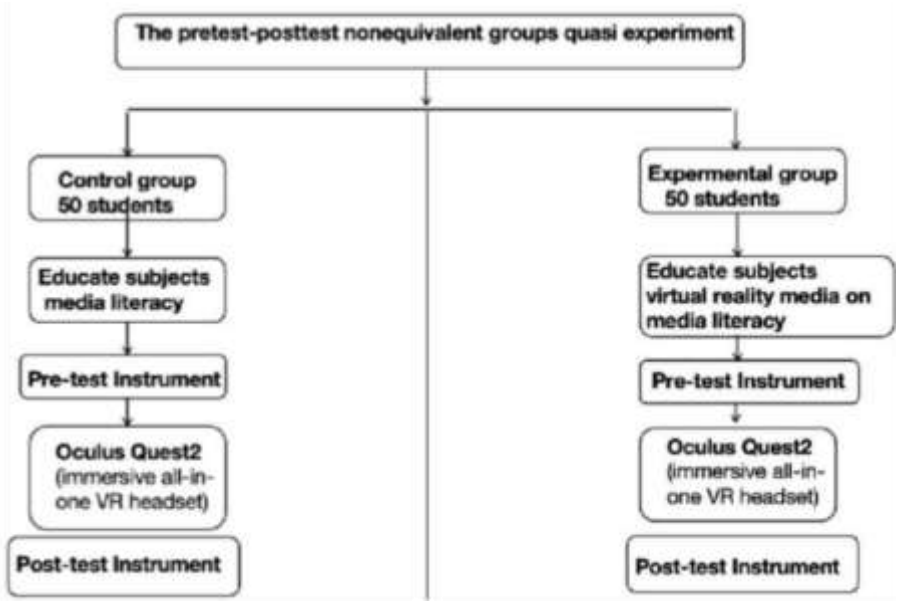


Fig 2. The pre-test-post-test non-equivalent groups quasi experiment design

3.3 Tools for experiment

Experimental tools and platforms are Oculus Quest2 (immersive all-in-one VR headset). The VR headset is shown in Diagram 3. Oculus Quest 2 is a VR all-in-one headset officially released by Facebook in September 2020. In addition to providing virtual experiences, Oculus Quest 2 allows users to enjoy many experiences including fitness applications and entertainment, it break the limitations of physical distance and redefine the working mode. Oculus Quest 2 is a relatively complete virtual reality device. In this experiment, virtual video have ten minutes long.

The time schedule of the experiment: Three hours for the experimental group and three hours for the control group, each group has five virtual reality devices and 50 participants, each participant has 10 minutes of experimental time, and the participants have 10 minutes to answer the questionnaire. This time schedule does not include time for education subjects of media literacy and virtual reality media literacy.

Fig 3. Oculus Quest2

This experiment selected the virtual reality media videos from Oculous quest2: 《Mission ISS》, with total viewing time of ten minutes.

In Mission ISS, participates get to visit the International Space Station, float around in zero gravity, go out into space on a walk, and help perform certain tasks on the ISS. it's the educational tool to show how those on the ISS live and go about their daily lives. The thing to maintain a stable physical condition with this experience is that due to the zero gravity nature of the game. It describes the virtual experience is a narrated tour as well as the ability to just explore and look around. It helps people to really bring International Space Station to life in a totally new way.

Fig 4. 《Mission ISS》

3.4 Program to educate subjects on components of virtual reality media literacy

This course is designed for participates of experiment group. It consists of three sectio ns. The first section include basic concepts, key technologies and different types, help s students build a comprehensive understanding of virtual reality media; The second s

ection introduce the application and development of virtual reality technology, as well as the latest advances in virtual reality technology; The third section will use case of Oculous quest to explain the mind elements of virtual reality media literacy.

3.5 Program to educate subjects on media literacy skills

The control group will be educated only on media literacy.

This course is designed for all students who participate in this experiment. It consists of three sections. The first section introduce the basic concepts and history of media li teracy to builds awareness of media literacy; The second section introduce the importa nt role and effect of media literacy to increases understanding of the importance of me dia literacy; The third section explains from the content of Potter's media literacy skill s and cultivates the ability to use media literacy. Through case analysis, students can l earn and explore from courses, conducts practical skills training through case study *Social Media Content Analysis:Study on Brand posts of Electronics Companies* to help students practice relevant skills, and uses cases to help students understand.

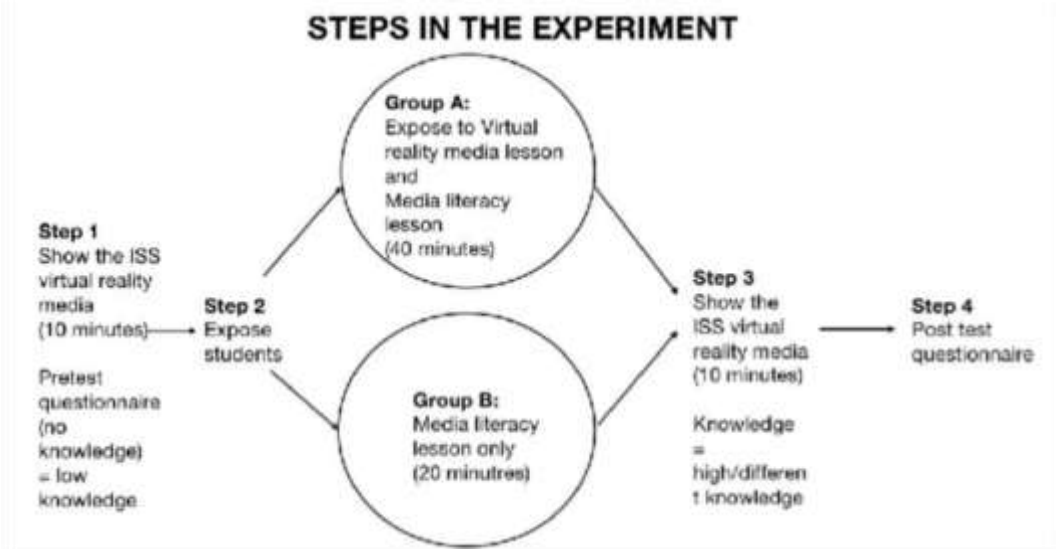


Fig 5. Steps in the experiment

3.6 Pre-test and post-test

Evaluating mind effects of virtual reality media on Potter's media literacy through questionnaire, to calculate the impact of mind relationship on Potter's media literacy.

Research Instrument (Questionnaire)

In order to systematically analyze the various relationships involved in the research an d assess the mind effects of these relationships on the user experience, the following i s a breakdown of the relationships according to four broad categories, with 8-10 speci fic relationships listed in each category, along with a rating scale that can be used in a questionnaire (cf. Richard S. Lewis, 2021). Students should identify at least two or three important influences in each group to start thinking about different relationships and specific relationships. Come up with 8-10 relationships for each major group, 3=Heavy influence, 2=Moderate influence, 1=Light influence, 0= No discernable influence.

3.7 Analysis of instrument

The answers from the research questionnaire will be statistically analyze to test the

formulated hypothesis in this research. The answers will be coded into SPSS and statistically tested to test for significance. It is proposed that multivariate analysis will be done.

3.8 Interpretation and Conclusion

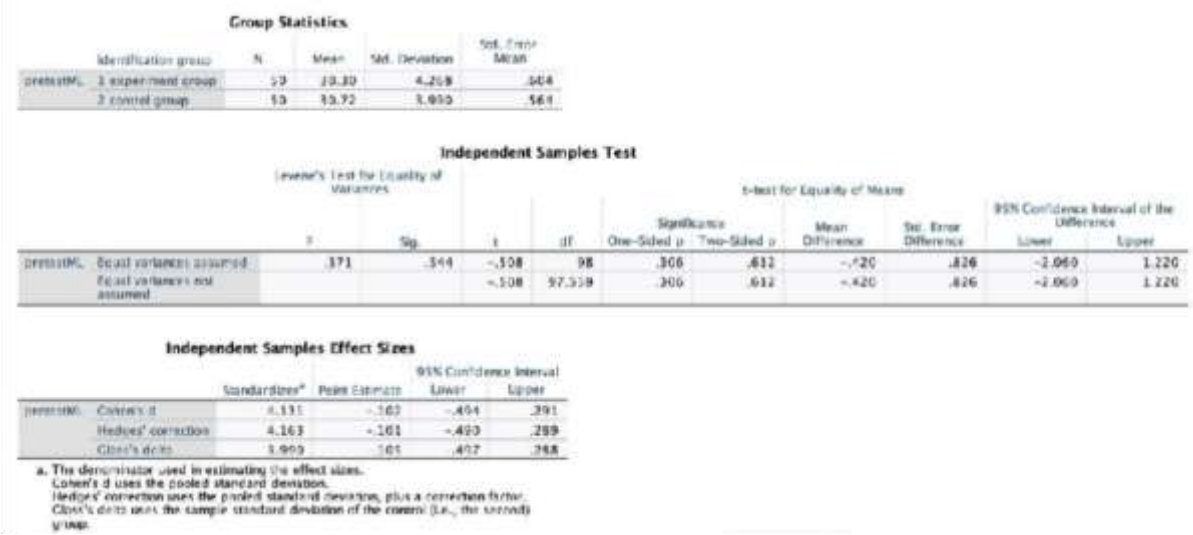
The findings will be synthesized to draw conclusions. It includes the experimental methods analysis, and comparative analysis. This section will discuss the significance of conveying meaning, engaging the audience, and contributing to the overall virtual reality on media literacy theory. In addition, the structural arrangement of the data col lection, the questionnaire design process and the way the questions were pre-set for se quencing will be explained.

4. RESULIT: Data Analysis

H1 – There is significant different between the pre-test groups on Potter's media literacy

To test this hypothesis, two groups were chosen. Two groups were assigned as pretest. In each group there are 50 students who participated in the experiment for this research. The null hypothesis tested is that there is no significant difference between the pre-test groups on Potter's media literacy. The independent samples t-test was used with level of significant is set at 0.05.

An independent T-test was conducted to assess whether there are significant differences of media literacy between the two groups in pre-test among participate of college students (N = 100).



Group Statistics

	Identification group	N	Mean	Std. Deviation	Std. Error Mean
pretestML	1 experiment group	50	30.30	4.268	.604
	2 control group	50	30.72	3.990	.564

Independent Samples Test

		Levene's Test for Equality of Variances: F	Sig.	t-test for Equality of Means: t	df	Significance One-Sided p	Significance Two-Sided p	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference: Lower	Upper
pretestML	Equal variances assumed	.371	.544	-.508	98	.306	.612	-.420	.826	-2.060	1.220
	Equal variances not assumed			-.508	97.559	.306	.612	-.420	.826	-2.060	1.220

Independent Samples Effect Sizes

		Standardizer[a]	Point Estimate	95% Confidence Interval: Lower	Upper
pretestML	Cohen's d	4.131	-.102	-.494	.291
	Hedges' correction	4.163	-.101	-.493	.289
	Glass's delta	3.990	-.105	-.497	.288

a. The denominator used in estimating the effect sizes.
Cohen's d uses the pooled standard deviation.
Hedges' correction uses the pooled standard deviation, plus a correction factor.
Glass's delta uses the sample standard deviation of the control (i.e., the second) group.

Table 1: Pre-test of media literacy with two groups

The results of the analysis presented as follows:

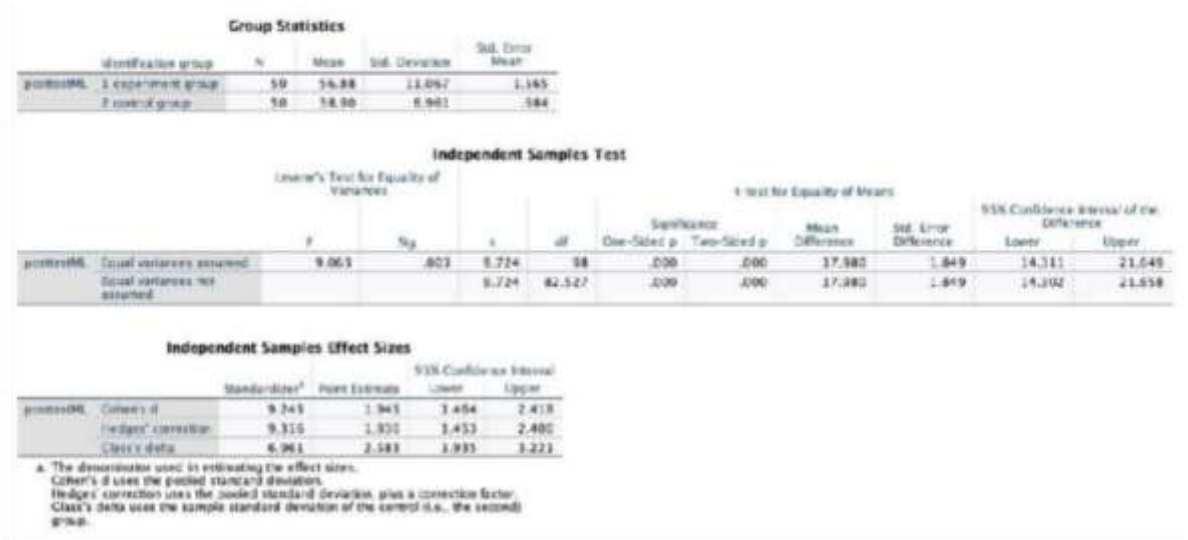
An independent-samples t-test was conducted to compare the pretestML between experiment group and control group. There was not significant difference in scores for experiment group (M = 30.30, SD = 4.268) and control group (M = 30.72, SD =3.990);p=.306(one-sided),p=.612(two-sided). The value is above .05, there is no significant difference between the two groups. In other words, the two groups are the same, since both were not exposed to the experiment material.

H2 – There is significant different between the post-test groups on Potter's media

literacy

To test this hypothesis, two groups were chosen. Two groups were assigned as post-test. In each group there are 50 students who participated in the experiment for this research. The null hypothesis tested is that there is no significant difference between the post-test groups on Potter's media literacy. The independent samples t-test was used with level of significant is set at 0.05.

An independent T-test was conducted to assess whether there are significant differences of media literacy between the two groups in post-test among participate of college students (N = 100).



Group Statistics

	identification group	N	Mean	Std. Deviation	Std. Error Mean
posttestML	1 experiment group	50	56.88	11.067	1.565
	2 control group	50	38.90	6.961	.984

Independent Samples Test

		Levene's Test for Equality of Variances: F	Sig.	t-test for Equality of Means: t	df	Significance One-Sided p	Significance Two-Sided p	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference: Lower	Upper
posttestML	Equal variances assumed	9.063	.003	9.724	98	.000	.000	17.980	1.849	14.311	21.649
	Equal variances not assumed			9.724	82.527	.000	.000	17.980	1.849	14.302	21.658

Independent Samples Effect Sizes

		Standardizer[a]	Point Estimate	95% Confidence Interval: Lower	Upper
posttestML	Cohen's d	9.765	1.965	1.454	2.418
	Hedges' correction	9.316	1.931	1.453	2.400
	Glass's delta	6.961	2.583	1.935	3.221

a. The denominator used in estimating the effect sizes.
Cohen's d uses the pooled standard deviation.
Hedges' correction uses the pooled standard deviation, plus a correction factor.
Glass's delta uses the sample standard deviation of the control (i.e., the second) group.

Table 2: Post-test of media literacy with two groups

The results of the analysis presented as follows:

An independent-samples t-test was conducted to compare the posttestML between experiment group and control group. There was significant difference in scores for experiment group (M = 56.88, SD = 11.067) and control group (M = 38.90, SD =6.961); $p < .001$. There is significant difference between the two groups. Members of the experiment group who are exposed to the virtual reality education material scored higher than the control group. In other words, virtual reality education enhances the experiment group knowledge of media literacy.

H3 –There is significant influence of knowledge about mind in virtual reality media with Potter's media literacy skill before exposure

A multiple regression test was conducted to assess whether mind of virtual reality media contribute to media literacy scores among participates of college students (N = 100). Two groups were chosen. In each group there are 50 students who participated in the experiment for this research. The null hypothesis states that there is no significant influence of knowledge about mind in virtual reality media with Potter's media literacy skill before exposure.

Descriptive Statistics

	Mean	Std. Deviation	N
pretestML	30.51	4.116	100
pretestMind	17.96	5.211	100

Correlations

		pretestML	pretestMind
Pearson Correlation	pretestML	1.000	.011
	pretestMind	.011	1.000
Sig. (1-tailed)	pretestML	.	.457
	pretestMind	.457	.
N	pretestML	100	100
	pretestMind	100	100

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	pretestMind[b]	.	Enter

a. Dependent Variable: pretestML
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.011[a]	.000	-.010	4.136

a. Predictors: (Constant), pretestMind
b. Dependent Variable: pretestML

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.197	1	.197	.012	.915[b]
	Residual	1676.793	98	17.110		
	Total	1676.990	99			

a. Dependent Variable: pretestML
b. Predictors: (Constant), pretestMind

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	30.356	1.491		20.353	.000	27.396	33.316					
	pretestMind	.009	.080	.011	.107	.915	-.150	.167	.011	.011	.011	1.000	1.000

a. Dependent Variable: pretestML

Table 3: Multiple regression test before exposure

Preliminary analysis was carried out to ensure that there was no violation of the assumptions of multicollinearity, normality, linearity and extreme values. Regression tests were conducted using the 'Enter' method. The test results show that There is not significant influence of knowledge about mind in virtual reality media with Potter's media literacy skill before exposure, F = .012, p = .915

The results of the analysis have shown that the independent variables mind is (Beta

= .011, p=.915). In other words, before exposure to knowledge about mind on virtual media literacy have not significant influence on Potter's media literacy.

H4 –There is significant influence of knowledge about mind in virtual reality media with Potter's media literacy skill after exposure

A multiple regression test was conducted to assess whether mind of virtual reality media contribute to media literacy scores among participates of college students (N = 100). Two groups were chosen. In each group there are 50 students who participated in the experiment for this research. The null hypothesis states that there is no significant influence of knowledge about mind and body in virtual reality media with Potter's media literacy skill after exposure.

Descriptive Statistics

	Mean	Std. Deviation	N
posttestML	47.89	12.893	100
posttestMind	23.40	7.270	100

Correlations

		posttestML	posttestMind
Pearson Correlation	posttestML	1.000	.654
	posttestMind	.654	1.000
Sig. (1-tailed)	posttestML	.	.000
	posttestMind	.000	.
N	posttestML	100	100
	posttestMind	100	100

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	posttestMind[b]	.	Enter

a. Dependent Variable: posttestML
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.654[a]	.428	.422	9.804

a. Predictors: (Constant), posttestMind
b. Dependent Variable: posttestML

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7038.509	1	7038.509	73.230	.000[b]
	Residual	9419.281	98	96.115		
	Total	16457.790	99			

a. Dependent Variable: posttestML
b. Predictors: (Constant), posttestMind

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Correlations Zero-order	Correlations Partial	Correlations Part	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	20.749	3.320		6.250	.000	14.161	27.337					
	posttestMind	1.160	.136	.654	8.557	.000	.891	1.429	.654	.654	.654	1.000	1.000

a. Dependent Variable: posttestML

Table 4: Multiple regression test after exposure

Preliminary analysis was carried out to ensure that there was no violation of the assumptions of multicollinearity, normality, linearity and extreme values. Regression tests were conducted using the 'Enter' method. The test results show that the mind contribute significantly to the media literacy score, $F = 73.23$, $p < .001$

The results of the analysis have shown that the mind independent variables contribute uniquely to media literacy where is the strong predictor (Beta = .65, $p < .001$). In other words, there is a significant influence of knowledge about mind in virtual reality media with Potter's media literacy skill after exposure.

5. Discussion and Conclusion

Conclusion

This study proposed four hypotheses:
H1 – There is significant different between the pre-test groups on Potter's media literacy; H2 – There is significant different between the post-test groups on Potter's media literacy; H3 – There is significant influence of knowledge about mind in virtual reality media with Potter's media literacy skill before exposure; H4 – There is significant influence of knowledge about mind in virtual reality media with Potter's media literacy skill after exposure.

The present research investigated the mind effects of virtual reality media on Potter's media literacy. The results are presented in the tables (table1, table2, table3, table4). We undertook Independent t-test and multiple regression to check the resulted from the experiment in this study.

In the data analysis that followed, it presented quantitative data which serves to understanding of the answers to the research questions. By using data analysis, it able to gather on a deeply personal level from participants. The results of the experiment in the test of for all the estimations presented in Table 1, Table 2Table 3 and Table 4. We found that the findings with H1 shows there was not significant difference in scores for two groups with pre-test of media literacy, and the findings with H2 shows there is significant difference between the two groups with post-test of media literacy. It means that the two groups are the same before exposed to the experiment material. After exposed the experiment, the experiment group who are exposed to the virtual reality education material scored higher than the control group. In other words, virtual reality media education enhances the experiment group knowledge of media literacy.

Furthermore, in Table 3 and Table 4, we found that the findings with H3 shows before exposure to knowledge about mind on virtual media literacy have not significant influence on media literacy. The findings with H4 shows after exposure, there is significant influence of knowledge about mind in virtual reality media with Potter's media literacy skill. It means that the two groupsare the same before exposed to the experiment material. After exposed the experiment shows that the experimental group has significant effects. It supports that mind of virtual reality media education enhances media literacy of the experiment group.

Discussion

In the experiment data analysis of this study, the experimental group changed significantly. For control group, The changes in media literacy are relatively minor. This experiment data analysis shows that in the virtual reality environment, merely providing media literacy education is not sufficient. Conducting virtual reality literacy education has significant impact on the level of media literacy.

According to the explanations of previous scholars, virtual reality media literacy refers to the ability to interpret the virtual reality environment. Previous research scholar have proposed concept of virtual reality media literacy, but no people developed a complete education content. Based on Levis' intermediary structure, develop the content of the virtual reality media literacy course. Virtual reality media education can effectively supplement and enhance the level of media literacy.

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