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THE ADOPTION OF NEW PARADIGM: INNOVATION OF VIRTUAL REALITY (VR) MODEL LEARNING BASED ON CULTURAL HERITAGE OF BANDAR SENAPELAN TO ASSIST STUDENTS IN EDUCATION

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Abstract Some previous studies show that the impact of the Covid-19 on the tourism sector is very influential on the decline of tourists both local and international to travel between regions. Bandar Senapelan (which is now a Kampung Bandar Village) has historical objects such as Tuan Khadi, Istana Hinggap, Masjid Raya, Marhum Mosque, Pelindo Port, Pekanbaru Kilometer Zero Port (before moving to Tugu Zapin) and several other historical attractions. The concept of virtual reality (VR) can represent and provide information on the historic city of Bandar Senapelan for local and international restrictions. This virtual reality (VR) provides benefits for tourists and the wider community because it can save costs, the time to simulate an object visited. This is a reason for researchers to design a virtual reality (VR) model at the dealer of Senapelan as a historical tour that puts forward "local heritage" so that it becomes a historical tourist attraction for the wider community to travel virtual during the Pandemic Covid-19 period. The Virtual Reality (VR) model can communicate about the dealer of Senapelan to tourists and the wider community. The method used in this study is Research and Development also known as research/design and development research.

Keywords: Bandar Senapelan; cultural heritage; New Paradigm; Virtual reality

A. INTRODUCTION

Riau's vision for 2005-2025 is: "The realization of Riau as the centre of the Malay economy and culture in a religiously and spiritually prosperous society in Southeast Asia by 2020. Thus, Riau has a database of Nusantara Malay arts and culture, with complete documentation and becomes a centre of activity research and development of Malay culture-based arts both at the level of Southeast Asia in particular and in the world in general. Thinking history, on the one hand, is able to dive into the past, try to understand the context of its time (historical minded), and on the other, use that understanding to become a process of humanizing humans, so that they can act more understanding, humane, feeling, wise, wise, and of course an assessment and thinking that is more observant, thorough and critical.

Bandar Senapelan City of Pekanbaru or known as "Spice City" historically was a spice trade that had access to the Northwest region outside of Indonesia including Malacca, Sri Lanka, India, Saudi Arabia and European coastal areas such as Italy and the plains of Northern Europe in the

19th century. (Chomchalow, 1996); (Rahman, 2019). Historic objects in Bandar Senapelan such as Tuan Khadi's halfway house, Istana Hinggap, Grand mosque, graves of the Marhums, Pelindo port, Pekanbaru zero kilometer point (before moving to the Zapin monument) and several other historical tourist objects as important assets in local tourist destinations as well as for tourists, foreign tourists. Bandar Senapelan can be developed optimally so that it gives a positive side to the economy, historical knowledge, historical sources and historical information in the world of education by involving the community. (Astuti & Noor, 2016); (Suroyo, Wirata, & Kamaruddin, 2017); (Wilaela, 2018). In addition, it can also be used as a "branding" that increases the reputation of a region. (Ismagilova, Safiullin, & Gafurov, 2015).

Utilization of the center of Bandar Senapelan as historical tourism is a form of concept of eco-education, so that the preservation of heritage objects (cultural heritage) can be linked to the development of Bandar Senapelan as a source of historical information based on cultural heritage. In addition, the development of historical tourism has also become an important resource in the world of tourism, which emphasizes "local heritage" which can become a tourist attraction. (McNulty & Koff, 2014). Historical tourism has a subjective and developing value which illustrates that history has ancient relics that have their own historical value so that they must be protected and made as a heritage (cultural heritage). (Pekanbaru, 2019).

The development of history-based cultural tourism has an important element to develop the potential of an area in Senapelan. (Seyfi, Hall, & Rasoolimanesh, 2020) The historic city of Bandar Senapelan should have a concept of attraction for local and international tourists. (Suroyo, Putra, & Ibrahim, 2021a). The application of the Virtual Reality (VR) model can support Bandar Senapelan to become a historical tourism that emphasizes "local heritage" so that it can be a safe, friendly and easy tourist attraction for both local and international tourists. With the Virtual Reality (VR) model, tourists and the wider community can keep their distance and be more effective in getting historical information and understanding the history of Bandar Senapelan based on cultural heritage.

Eliza Netscher (1825-1880), a Dutch Secretary General in Batavia (1848) and had served as Resident of the Riau Region (1861-1870), in his book "De Nederlander in Djohor En Siak (1602-1865)", states that in the twentieth century The 16 names of Senapelan have been known to Melaka and Johor as "Chinapalla" or "Sungai Pelam". (Cheris et al., n.d.). Even long before the arrival of Sultan Abdul Jalil Alamuddin Syah (Marhum Bukit), the King of Siak, Kampung Bandar had been the center of free trade for the people of Melaka with the Company through the Siak River and its tributaries as stated in the agreement between Johor and the Netherlands on August 19, 1713. Senapelan was made the capital, so trade became more and more crowded. The Sultan established a new week at the end of 1762 AD, which was known as Bandar Pekan. Finally Bandar Pekan is better known as Pekanbaru until now. (Suroyo, Putra, & Ibrahim, 2021b). W.H.M Schadee in his book *Geschiedenis Van Sumatra's Oostkust* (Central Museum Library B.735) said that the trade route from Fifty Cities (inland areas of West Sumatra) to the East Coast and Singapore has been going on since ancient times through the Siak River.

Based on some of the statements above, it can be concluded that Bandar Senapelan can remind again that in its time it had achieved its glory and with positive views and thoughts, upholding the dignity, dignity, and identity of the nation itself through the local history of Senapalan City. On the banks of the Siak River, Bandar Senapelan is a witness to history, symbols and historical civilization as evidence of its past glory.

Meanwhile, cultural heritage can be an important component of regional economic development as well as tourism promotion (Fernandez, Cerro, and Mogollon 2019). Cultural heritage objects are considered as a medium for transferring local wisdom from generation to generation as well as spreading memory and cultural values to different communities. (Siregar, 2018).

Law of the Republic of Indonesia Number 11 of 2010 concerning Cultural Conservation The criteria for cultural conservation are (1) 50 (fifty) years of age or more; (2). Represents the minimum age of 50 (fifty) years; (3) Has a special meaning for history, science, education, religion, and/or culture; (4). Having cultural values for strengthening the nation's personality.

In this study, cultural heritage is a location that meets the criteria for cultural heritage according to the Law of the Republic of Indonesia Number 11 of 2010 whose existence needs to be preserved because these criteria have important values for history, science, education, religion, and/or culture is in the Bandar Senapelan area.

Previous research in the form of an Android-based virtual tour provided developments in the tourism sector that required media that contained a collection of natural tourism information. (Gonzalez-Franco & Lanier, 2017). Other research relevant to the application of Virtual reality (VR) technology can have a positive impact on increasing tourists and the reasons for visiting the place and the decision to travel. (Sobarna & Kunci, 2021); (Fernández de Gamarra-Oca et al., 2021); (Kang, 2020), (Pankaj Vishwakarma, Srabanti Mukherjee, 2020); (Yong-Hyun Cho, 2002).

Virtual reality (VR) is an environment that allows users to experience a different natural environment by utilizing 3D simulation. (Guttentag, 2010). VR system is a sophisticated multimedia facility where the computer system facility is equipped with a special type of device, which allows the user to interact with real and artificial objects that exist in the interaction environment. (Barker, 1993).

With this research, it can provide benefits for increasing tourism sector income and help the sector recover from the Covid-19 pandemic. In addition, the results of this study help the tourism sector to utilize VR tourism more effectively.

B. METHODS

The method used in this research is research and development (Sugiyono, 2014) or also known as design and development (Rusdi, 2018). Design and development research is a research method that aims to design a model or product in the field of virtual models at Bandar Senapelan and then test the effectiveness and efficiency of using the model or product. This method is in accordance with the purpose of this study, namely researching and developing VIRTUAL REALITY (VR) at Bandar Senapelan based on cultural heritage. The design and development research procedure applied in this study was adapted from Sugiyono. This research procedure was limited to a VIRTUAL REALITY (VR) trial with tourists and the general public.

1. Location and Time of Research

This research was conducted in Bandar Senapelan, Pekanbaru. The time of this research is 9 months starting from March to November 2022. Meanwhile, the time of data collection or testing of the Virtual Reality model at Bandar Senapelan based on cultural heritage is planned for the end of the 2022 school year.

2. Research Objects and Subjects

The object of this research is VIRTUAL REALITY (VR) at Bandar Senapelan based on cultural heritage. To test the validity of the heritage-based Bandar Senapelan model developed, the subject of this research is an expert or expert in the field of virtual media. While the subjects for the VIRTUAL REALITY (VR) trial at Bandar Senapelan were based on cultural heritage, namely students who are enrolled in history department in Riau University

3. Types and Sources of Data

The types of data used in this study are primary data. Primary data were obtained from the results of the validity of VIRTUAL REALITY (VR) at Bandar Senapelan based on cultural heritage by media experts, as well as the results of trials with tourists and the public in Bandar Senapelan Pekanbaru. So that the data sources used in this study are 1) Responses of experts to the cultural heritage-based VIRTUAL REALITY (VR) of Bandar Senapelan that was developed, 2) The results of discussions between tourists and the community during the implementation of VIRTUAL REALITY

(VR) at Bandar Senapelan based on cultural heritage based on cultural heritage. developed, and 3) Results of work and interviews.

4. Data Collection Techniques

The following are some of the data collection techniques used in this study.

a. Questionnaire

To test the validity of VIRTUAL REALITY (VR) at Bandar Senapelan based on cultural heritage, a questionnaire was used. The questionnaire used consisted of a validity questionnaire given to the validator, namely to obtain information about the quality of VIRTUAL REALITY (VR) at Bandar Senapelan which was developed and a cultural heritage questionnaire. Experts were asked to assess the implementation plan of the VIRTUAL REALITY (VR) model and the questionnaire used.

b. Interviews

Interviews were conducted with tourists and the public about their attitudes and beliefs about Bandar Senapelan and cultural heritage after using VIRTUAL REALITY (VR). Interviews were also conducted to find out historical knowledge and deeper understanding of tourists and the public on VIRTUAL REALITY (VR) at Bandar Senapelan. Interviews were conducted in a semi-structured manner, i.e. several questions were prepared, but during the interview they could develop based on the answers of the tourists and the community.

c. Observation

Observation sheets and field notes are used when observing tourist and community activities using VIRTUAL REALITY (VR) at Bandar Senapelan based on cultural heritage. VIRTUAL REALITY (VR) activities at Bandar Senapelan based on cultural heritage were recorded with a video camera. In this case, 2 video cameras are used where 1 video camera is static, namely the tourists and the community as a whole in using VIRTUAL REALITY (VR) in the history of Bandar Senapelan

5. Data Analysis

Techniques In this study, quantitative and qualitative data analysis techniques were used. This data analysis technique was chosen because the data were obtained from various sources. Quantitative data analysis was carried out by describing and describing the data collected from the VIRTUAL REALITY (VR) validity questionnaire.

C. RESULTS AND DISCUSSIONS

Data were collected from 400 students who are enrolled in history education in Pekanbaru, with each student being asked to complete a VR MODEL LEARNING question. There were 20 questions total, with each question worth 5 points. If a student properly answers all of the questions, he or she will receive a score of 100. There are 140 students in Semester 6, 139 in Semester 4, and 140 in Semester 2. The lowest possible score is 55, and the greatest possible score is 95. The average score for semester 6 students is 74.55. The average Semester 4 student score is 75.39. The average score for students in the Semester 2 is 74.57. The average grade point average of 11 is lower than the average grade point average of 10 grades. However, the average score of Semester 2 students is greater than the average score of Semester 6 students. The significant value is 0.618, which is more than 0.05 (5 percent significance), indicating that the hypothesis is rejected. Despite this, there is no difference between 10th, 11th, and Semester 2s in terms of learning loss that impacts academic performance (Table 1)

Table 1 Analysis One Varian of VR MODEL LEARNING Results

Grades	Students	Mean	Significant
Semester 6	140	74.55	0.618
Semester 4	139	75.39	
Semester 2	140	72.57	
Total	400	74.88	

After evaluating the assumptions, the writer performed the previously mentioned F test. The SPSS 17.0 statistical tool is used to calculate the necessary tests and conduct hypothesis testing. If the value of F arithmetic is greater than the value of F table, then H₀ is rejected and H_a is accepted. If the arithmetic F value (0.618) exceeds the F table value (0.549), the hypothesis is accepted. That is, there is a gap between the level of student academic performance prior to school closures due to COVID-19 and the results of VR MODEL LEARNING scores during the COVID-19 pandemic. The effect of learning loss, on the other hand, is clearly obvious in the outcomes examined

Table 2 : the comparison of GPA result before school closures and VR MODEL LEARNING results

GPA Score Average (after giving VR)	Survey Results Average (After VR model learning)	Graded
81.93	74.55	Semester 2
81.34	75.39	Semester 4
85.75	74.57	Semester 6

In Indonesia, each school has its own GPA criteria. The required GPA range is 66-75. The authors created a range of results depending on students' VR MODEL LEARNING scores. The score range is broken into three groups. Low (55-65°F), Average (66-80°F), and High (81-95°F). The overall results of VR MODEL LEARNING for students are in the Average category. Before the lockdown, the participant's GPA was in the High range. More specifically, the difference score for each grade ranges from 10.00 to 13.50. (Table 3)

Table 3 : categorize of results

Categories	Result
Low	55 – 65
Average	66 – 80
High	81 – 95

When COVID-19 spread quickly in the spring, school districts were understandably overwhelmed and unprepared to respond. From technical investments in school-level broadband internet and gadgets to curriculum design and teacher training, the education ecosystem in the United States is oriented on the in-class experience (Dorn, Hancock, Sarakatsannis, & Viruleg, 2020). Schools can act as a hub for services such as school meals, mental-health counselling, and childcare in many locations. Many students' homes, especially those of low-income families, lack internet connection, gadgets, and a designated, tranquil study room. Social effects, on the other hand, have had a significant impact on children's academic performance. Children live with their parents and interact with their classmates and instructors; all of these elements have an effect on a child's level of thinking and comprehension.

Children's brains develop in a socio-cultural context rather than via interactions with physical things, as stated by Piaget. As a result, it is recommended that psychologists integrate social and cultural backgrounds in academic performance studies. Cultural abilities such as number systems and language have a substantial impact on academic performance (Babakr, Mohamedamin, &

Kakamad, 2019). Cognitive talents are critical in determining educational and career performance, socioeconomic attainment, health, and longevity. Decreases in cognitive abilities are linked to deficiencies in daily tasks in older people, albeit individuals range in their rates of cognitive decline throughout maturity and old age. As a result, identifying qualities that protect against reduced late-life cognition is critical for society (Lövdén, Fratiglioni, Glymour, Lindenberger, & Tucker-Drob, 2020). Individuals' years of formal education completed are positively associated with their cognitive performance throughout adulthood, implying a lower risk of dementia later in life.

Students in grades 1–12 who are affected by the closures should expect to earn 3% less during their lifetime (Hanushek & Woessmann, 2020). Poorer long-term growth linked with such losses may result in a 1.5 percent worse GPA score for nations for the rest of the century. If schools do not return as quickly as feasible, the economic losses would escalate. It is reasonable to place a high focus on the mechanics and logistics of safe re-opening when schools begin to re-establish their programs despite the ongoing pandemic (Stenson et al., 2021). However, the long-term economic consequences must be carefully evaluated, as the losses already sustained need more than the best of currently contemplated re-opening possibilities. As schools continue to re-establish their curricula despite the ongoing epidemic, it is reasonable to place a high focus on the mechanics and logistics of safe re-opening (Dove, Wong, Gustafson, & Corneil, 2020).

The long-term economic ramifications, however, must be carefully studied, as the losses already sustained need more than the best of the already discussed re-opening possibilities. COVID-19 research, which aims to expand understanding of the impact of epidemics and pandemics on children's mental health and development, can help lead steps to prevent harm to children's growth and stimulate good development (Araújo, Veloso, Souza, Azevedo, & Tarro, 2021). Closures of schools and day cares have a significant negative long-term impact on the human capital and welfare of the children impacted (Palazón-Herrera & Soria-Vílchez, 2021), particularly those from low-income families (Fuchs-schündeln et al., 2021). There is also a strong link between malnutrition and academic performance in children (Nácher, Badenes-Ribera, Torrijos, Ballesteros, & Cebadera, 2021). Diet, for example, can impact brain development at several levels in a child's early years.

This decline in human capital accumulation is likely to impair nations' long-run economic prospects (Ali et al., 2020), particularly those with highly human capital-intensive economies like the United States and Europe (Borkowski et al., 2021). The issue of learning loss during a pandemic has an impact on human lives, which are also linked to academic performance. Learning loss has an influence on kids' academic performance (Bortes, Landstedt, & Strandh, 2021) during the school year. It may also have an impact on a student's academic and achievement performance (Pekpazar, Kaya Aydın, Aydın, Beyhan, & Arı, 2021). Unfortunately, marginalized and disabled kids are also affected by this issue. Finding additional variable and phenomena for future study might provide innovation of fresh research.

D. CONCLUSION

The impact of a lockdown during a pandemic forces schools to close for an extended length of time; the result of school closures is learning loss, which lowers students' academic and achievement performance. An online class is another option for increasing a student's enthusiasm to learn new abilities. Unfortunately, concerns such as technology (devices and the internet), marginalization, and socioeconomic status are the key topics that are associated with learning loss. Lockdown is one of the most severe problems caused by COVID-19, which has an influence on education. Underprivileged students may be one step behind, which is connected to learning loss. Education, on the other hand, is one of the most important things that children should have for their future. Certain students from upper-class families with educated parents may benefit from online training. Many nations are attempting to conduct an online class that replaces face-to-face classes, with the goal of addressing the impact of learning loss on students.

Although the potential for learning loss and academic performance necessitates that the findings presented in this study be interpreted with caution, the findings suggest that in school-based interventions, learning activities of an intensity that increases academic performance should be emphasized when authors seek to increase adolescents' academic performance. Because school-

based learning interventions in general sometimes consist of numerous distinct components, it is often unclear whether one single component or a mixture of several is required for the observed benefits. Future study should concentrate on specific components and intensities of learning, which may assist minimize intervention academic performance and achievement while also providing more nuanced understanding of how school closures effect academic achievement.

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