

FIELDTRIP MODEL FOR CULTURAL LITERACY OF ELEMENTARY SCHOOL STUDENTS THROUGH VIRTUAL REALITY

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Abstract

Education in elementary schools is vital in shaping the basics of student understanding, including cultural literacy. However, students often have difficulty understanding the material taught due to less innovative learning. Therefore, this study aims to determine the relationship of field trips to cultural literacy through virtual reality media. The method used in this research is the correlational survey method. The study's variables were the field trip model, virtual reality (VR), and cultural literacy. This research was conducted in 20 elementary schools in six areas of Jakarta. The data collection tool used is a questionnaire. The data were processed using the path analysis and Structural Equation Model (SEM) methods. The results showed that the field trip learning model indirectly significantly influences cultural literacy through virtual reality. This is because virtual reality technology allows users or users to visit places, sites, and objects simulated by computers so that users feel they are in that environment.

Keywords: field trip, cultural literacy, virtual reality

INTRODUCTION

Education in elementary schools has a very important role in forming the basics of students' understanding of various fields of science and skills needed in everyday life. However, students often have difficulty understanding the material taught (Johnson & Keane, 2023). Therefore, using technology can be a solution to improve learning effectiveness. In the context of globalization, the life of society and culture in Indonesia is transforming, as seen in Jakarta, which is oriented toward a capitalistic economy (Gibson-Graham & Dombroski, 2020; Windiyani et al., 2023). This phenomenon has an impact on shifting the cultural paradigm of Jakarta, especially on Betawi culture in socio-cultural life.

The emergence of silver men and ondel-ondel buskers at red light stations, especially in DKI Jakarta and other peripheral areas, is a new social problem (Latifah et al., 2023; Limano et al., 2021). In the 21st era,

individuals need to have the ability to understand diversity and responsibilities as citizens in a nation. Therefore, cultural and civic literacy must be taught at the family, school, and community levels. In addition to saving and developing national culture, cultural and civic literacy can also build the identity of the Indonesian nation in a global society (Andayani et al., 2022; Shliakhovchuk, 2021).

Based on the identification results, there are several findings related to cultural literacy, including (1) the frequency of borrowing and variety of cultural and civic-themed reading materials in the library is very small, (2) students feel bored with reading texts related to culture and citizenship, (3) cultural and civic literacy is still focused on teacher books, student books, and power points, (4) students need technology integrated into the learning process, and (5) only 38% of students can answer and appreciate Betawi culture correctly and

tell their experiences related to cultural activities.

As the spearhead in implementing teaching and learning activities, teachers have an important role in the success of education. Teachers can use many learning methods to activate students in teaching and learning activities, including field trips. This learning method invites students to visit a designated place to learn, followed by observation and writing of the results of the experience (Chen et al., 2022; Setiawan et al., 2022). This process makes learning more fun and makes students active in participating in the teaching and learning process. The results of previous research show that the field trip method improves student academics and introduces students to the surrounding environment as well as TEK literacy (Traditional Ecological Knowledge) (Petersen et al., 2020) (Han, 2020). In this context, the use of Virtual Reality (VR) technology in learning in elementary schools can be an effective solution because it can provide a more interactive, interesting, and fun learning experience for students and can overcome the problem of difficulties in visualizing abstract concepts such as in science learning (Araiza-Alba et al., 2021) (Dianatfar et al., 2021) (Liagkou et al., 2019).

Studies on virtual reality have been conducted, and the use of virtual reality is proven to make it easier for teachers to deliver learning materials, and the time used is more effective, efficient, and fun in introducing culture to students (Alalwan et al., 2020) (Chang et al., 2020). Learning Framework Using virtual reality in learning has progressed rapidly. However until now, there is still a gap in the utilization of VR technology in learning in elementary schools. This is due to the lack of development of learning models that can integrate VR technology with learning materials that are in accordance with the elementary school

curriculum (Matsika & Zhou, 2021); (Coban et al., 2022) (Luo et al., 2021).

The Field Trip model through virtual reality aims to integrate VR technology into learning, inviting students to experience fun learning experiences through virtual visits to tourist attractions and cultures related to the learning theme. Field Trip with Virtual Reality (VR) technology is a concept that plans a visit through the help of applications/internet to achieve the learning process by utilizing information and communication technology (ICT). Virtual Field Trip media can improve the learning process and provide wider opportunities to make observations without being in the actual location. (Jayawardena et al., 2023).

This VR-based learning model will also apply the concept of ethnoscience, which considers the influence of culture in the development of science. Thus, students will not only learn about science concepts in the abstract but can also understand how they relate to the culture around them. Therefore, the results of this research are expected to contribute to the development of educational technology that is more effective and efficient in improving the quality of learning in elementary schools through innovative learning models and in accordance with the needs of students in today's digital era.

RESEARCH METHOD

Research Design

The method used in this research is the correlational survey method. The study's variables were the field trip model, virtual reality (VR), and cultural literacy.

Participants

This study was conducted in 20 elementary schools in six regions of Jakarta: East Jakarta, Central Jakarta, South Jakarta, West Jakarta, Kepulauan Seribu, and North Jakarta, with a total sample size of 325 students. The sample details are shown in Table 1.

Table 1. Participant demographics

Province	Number of Primary Schools	Number of Samples
East Jakarta	5	85
Central Jakarta	3	45
West Jakarta	3	40
Thousand Islands	2	35
North Jakarta	3	45
South Jakarta	4	75

Data Collection Tools

The data collection tool used is a structured questionnaire through the Likert Scale Model to obtain data on field trip variables, virtual reality (VR), and cultural literacy. The details are shown in Table 2.

Table 2: Variable Indicators and Data Collection Tools

Variable	Indicator	Data Collection Instrument
Fieldtrip	- Preparatory stage; - Implementation stage; - Final stage	Questionnaire
Virtual Reality (VR)	- Vividness (Depth of information dan Breadth of information); dan - Interactivity (Speed of interaction, or response time, Range, dan Mapping)	Questionnaire
Cultural Literacy	- Classroom Basis such as a) Number of training on cultural and civic literacy for principals, teachers, and education personnel; b) Intensity of utilization and application of cultural and civic literacy in learning; and c) Number of cultural products owned and produced by schools; - School Cultural Base such as a) The number and variety of reading materials with cultural and civic themes; b) The frequency of borrowing books with cultural and civic themes in the library; c) The number of school activities related to culture; d) There are school policies that can develop cultural literacy and school civic values; e) There is a cultural community in the school; f) The level of student discipline towards school rules; g) The level of student tolerance towards diversity in the school; and h) The level of active student participation in school activities.	Questionnaire

Data Analysis

The data were processed using the path analysis method and the Structural Equation Model (SEM) method with the help of the Linear Structural Relations (Lisrel) version 8.80 program application.

FINDING AND DISCUSSION

Model Feasibility Test Using Initial CFA and Structural Full Model

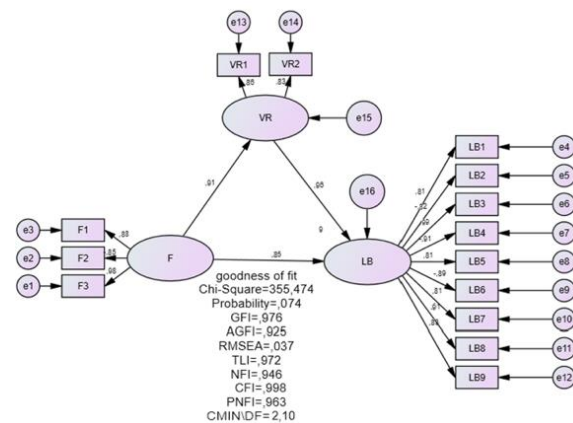


Figure 1. Full Structural Model (initial)

Table 3. GOF model test results Model cut-off value GOF test results

Goodness of Fit	Test Results Model	Cut Off Value	Description
χ^2 Chi Square	355.474	38.7	Good
Probabilitas	0.074	≥ 0.05	Good
GFI	0.976	≥ 0.90	Good
AGFI	0.925	≥ 0.90	Good
RMSEA	0.037	≤ 0.08	Good
TLI	0.972	≥ 0.95	Good
NFI	0.946	≥ 0.95	Good
CFI	0.998	≥ 0.95	Good
PNFI	0.963	≥ 0.95	Good
CMIN/DF	2.10	≤ 5	Good

Based on the table above, it is obtained that the model feasibility test using the CFA value is obtained from 10 Goodness of Fit (GoF) standards, all of which meet the threshold (Cut Off Value) with good information.

Hypothesis Test

Table 4. Hypothesis Test

	Estimate	S.E.	C.R.	P	Description
Virtual Reality <--- Fieldtrip	.912	.045	5.154	***	Significant
Cultural Literacy <--- Virtual Reality	.966	.085	4.445	***	Significant
Cultural Literacy <--- Fieldtrip	.852	.033	2.138	.063	Not Significant

Direct Effect

The direct effect test is seen from the one-line coefficient and the indirect effect that arises from the intermediate variable. Direct influence by looking at the path coefficient (estimate) and standard error (SE).

Hypothesis 1

Based on the data in the table above, the direct effect given by the Fieldtrip variable on the virtual reality variable with an estimated value of 0.912 and a probability value of $0.000 < 0.05$, so it can be concluded that H1 is accepted, which indicates that there is a significant effect given by the Fieldtrip variable on the virtual reality variable.

Hypothesis 2

Still referring to the same table, the direct effect given by the virtual reality variable on Cultural Literacy with an estimated value of 0.966 and a probability value of $0.000 < 0.05$, so it can be concluded that H1 is accepted, which indicates that the virtual reality variable on Cultural Literacy gives a significant effect.

Hypothesis 3

Furthermore, for the direct effect of the field trip variable on Cultural Literacy with an estimated value of 0.852 and a probability value of $0.063 < 0.05$, it can be concluded that H1 is rejected, which indicates that the field

trip variable on Cultural Literacy has no significant effect.

Indirect Influence

The indirect effect multiplies the path coefficient (estimate) between variables first and then is calculated using the Z Sobel formula. If the Sobel Z value ≥ 1.96 , then the intermediate variable can mediate the independent variable with the dependent, otherwise the Sobel Z value ≤ 1.96 , then the intermediate variable cannot mediate the independent variable with the dependent.

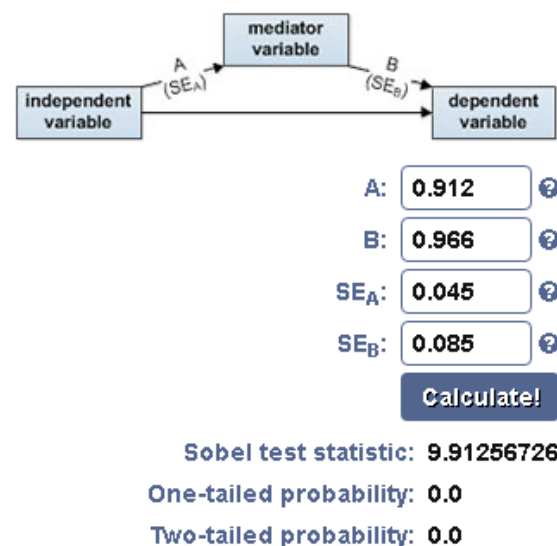


Figure 2. Sobel Test Results

Based on the picture of the sobel test results above, the Sobel test statistic value is 9.91256726. The one-tailed probability value is 0.0, and the two-tailed probability is 0.0.

Table 5. Indirect Effect of Sobel Test Results

Indirect Effect	Result	Sobel Test Results
X -> Z -> Y	$0.912 * 0.966 = 0.880992$	9,91256726

Hypothesis 4

Based on the table above, the result of $0.912 * 0.966$ is 0.880992. The Sobel test results obtained a value of $9.91256726 \geq 1.96$, so the intermediate variable can mediate the

independent variable with the dependent. Thus it can be concluded that H1 is accepted, which indicates that Virtual Reality can mediate between field trips on cultural literacy.

CONCLUSION

The field trip learning model indirectly significantly influences cultural literacy through virtual reality. This is because virtual reality technology allows users to visit places, sites, and objects simulated by computers so that users feel they are in that environment. This can be an advantage in cutting transportation costs to conduct real field trips. As long as the school facilities are adequate, the field trip learning model, with the help of virtual reality technology, can visit cultural sites in Indonesia without having to visit physically. Thus the field trip learning model through virtual reality can be an alternative to improving cultural literacy, especially for elementary school students.

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