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Application Of Utaut2 Model To Explain The Acceptability Of Web-Based Multimodality Learning Media

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Abstract

This research aims to determine the acceptance and use of web-based multimodality learning media with the UTAUT2 model. Web-based multimodality learning media is a media that is needed for educators as a 21st century learning innovation. UTAUT2 is a development of the UTAUT model implemented by Venkates. The variables contained in UTAUT2 are performance expectations, business expectations, social influence, facility conditions, hedonic motivation, price values, and habits. Data was collected from 100 respondents after filling out a questionnaire with 40 questions asked. The population of this research are teachers in the West Java region. In processing the data in this research, SmartPLS 3 was used to determine the quality, validity and reliability of the data collected. The results of this research show that of the seven hypotheses proposed, two hypotheses can be accepted, namely facilitating conditions and social influence on user interest (behavioral intention).

Keywords: Utaut2 Model, Web-Based Multimodality, Learning Media

1. INTRODUCTION

Learning practices after the COVID-19 pandemic have shown significant development in terms of technology. Both students and teachers have become more accustomed to using various learning applications and instructional media that utilize digital technology. In the context of 21st-century learning, technology-oriented instruction has become one of the most prominent aspects, experiencing rapid growth (Herlambang, 2021; Herlambang & Abidin, 2022; Permana et.al., 2024).

Linguistically, the term menyenangkan (pleasant or enjoyable) refers to making something enjoyable, stimulating feelings of pleasure, happiness,

satisfaction, interest, and fulfillment, among others (Language Center Dictionary Compilation Team, 2011).

Joyful learning is not merely defined by classroom activities that make students laugh out loud; rather, it emphasizes the creation of strong bonds between teachers and students within a low-pressure learning environment. The expected outcome is the establishment of harmonious communication characterized by mutual support. Essentially, joyful learning is a teaching approach in which teachers enable students to receive learning materials effectively, grounded in a calm and enjoyable emotional state (Hermansyah, 2009).

One example of such an approach is website-based learning, which requires

teachers to be more proactive in developing instructional media so that learning becomes more engaging. Enjoyable learning tends to be absorbed more quickly by students. Therefore, educators must take an active role in managing creative and enjoyable learning experiences (Yunansah et.al., 2022; Wahid et.al., 2023; Wahid & Asrina, 2024).

In general, media are understood as tools that assist in transferring information (messages) from one source to another. Media serve as intermediaries for delivering messages in the learning process. According to the National Education Association (NEA), media are forms of communication tools, either literal or audiovisual, that function as intermediaries and can be controlled, viewed, and read.

The Association for Educational Communications and Technology (AECT) defines instructional media as anything that can convey messages. Meanwhile, Gagné describes media as components that can stimulate learners to engage in learning activities. Similarly, Briggs defines media as tools that facilitate the learning process.

From these perspectives, it can be concluded that instructional media encompass all forms capable of transmitting messages that stimulate students' thoughts, feelings, attention, and motivation, thereby fostering interest in learning. Consequently, creative media are more likely to attract students and encourage deeper engagement in learning.

The internet has become a common element in the lives of elementary school students. Many schools have utilized the internet—particularly websites—to assign tasks to students. Isjoni (2007) states that the web has emerged as an alternative medium for distance learning that is powerful, interactive, economical, and democratic. Websites provide opportunities for learning and training that are learner-centered and tailored to learners' needs.

Although web-based learning in elementary schools is still relatively uncommon, it represents an innovative effort by teachers to optimize instructional

media. One type of instructional media that can be utilized is multimodal media. According to Kress and Van Leeuwen (as cited in Ramadloni, 2022), multimodality refers to communication that employs multiple modes or forms simultaneously. In the context of learning media, multimodality involves the simultaneous use of various types of media in the learning process, allowing students to select learning media that best align with their interests and learning preferences.

The UTAUT2 model is described as a framework aimed at explaining user behavior in the context of information technology adoption (Venkatesh et al., 2012). This model posits that behavioral intention and actual technology use behavior are influenced by performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and price value. These factors are further moderated by gender, age, and experience.

This study aims to identify the factors that influence the level of acceptance of multimodal instructional media based on websites, to determine the magnitude of the influence of each acceptance factor on the use of multimodal instructional media, and to formulate recommendations for optimizing the acceptance and use of web-based multimodal learning media.

Based on the above description, the research is entitled "The Application of the UTAUT2 Model to Explain the Acceptance of Web-Based Multimodal Learning Media." The findings of this study are expected to identify influential factors within the proposed research model in order to provide explanatory support for the use of web-based multimodal media in learning, particularly at the elementary school level, but rather the development of critical thinking skills and problem-solving abilities, while simultaneously fostering students' capacity to actively construct their own knowledge." To support the implementation of PBL, a PBL-based teaching module is designed as an interactive, systematic, and student-centered learning guide.

This study aims to analyze the usability of a PBL-based teaching module for procedural text material in elementary schools. The usability evaluation includes effectiveness, efficiency, and user satisfaction, involving both students and

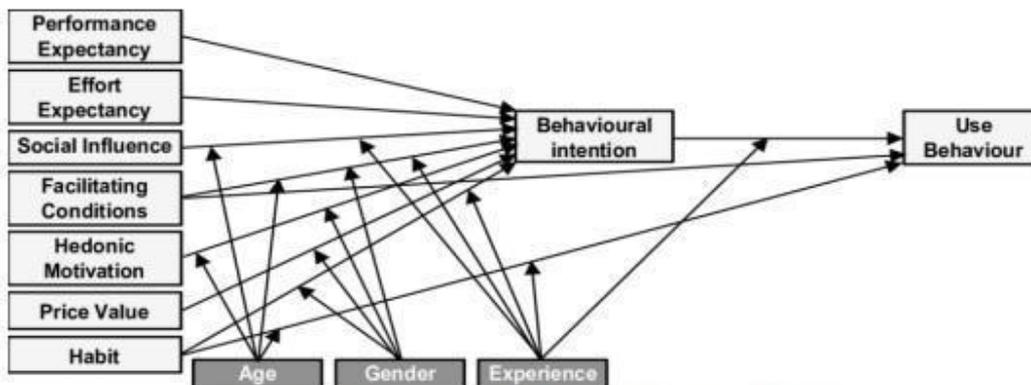
2. METHOD

This study employs a quantitative research approach using a survey method with questionnaires. Survey-based research is a familiar activity within the general public, and many researchers possess the competence to apply this research method, which has developed into a distinct research approach (Adiyanta, 2019). Although survey research using questionnaires is limited to collecting data on demographic characteristics, social conditions, community activities, as well as opinions and attitudes, it remains a widely used method (Abdullah, 2015).

teachers in using the module. The findings of this study are expected to provide insights for the development of innovative and applicable teaching modules and to support the creation of high-quality learning processes in elementary schools.

The study was conducted with 100 elementary school teachers using Google Forms distributed to teachers. Elementary school teachers were selected as research subjects because elementary education serves as the foundational stage for students in acquiring knowledge. Therefore, teachers are required to adopt instructional strategies that enhance student motivation and make learning meaningful. Along with technological advancements, elementary school teachers are expected to adapt by integrating technology-based media into their instructional practices.

Figure 1. UTAUT2 Model Thinking Framework



3. RESULT AND DISCUSSION

Result

The variables used in this study refer to Venkatesh (as cited in Andrianto, 2020), namely: Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Price Value, Hedonic Motivation, and Habit. Performance expectancy refers to the perceived benefits of using technology to support daily activities. Effort expectancy denotes the degree of ease associated with using a system or technology. Social influence is defined as the extent to which individuals perceive that important others believe they

should use a particular technology. Facilitating conditions refer to the degree to which individuals believe that organizational and technical infrastructure support the use of the system. Price value represents the cognitive trade-off between the perceived benefits of an application and the monetary cost of its use. Hedonic motivation refers to the pleasure or enjoyment derived from using technology and has been validated as an important factor influencing technology use. Habit refers to the extent to which individuals tend to use information technology automatically as a result of prior learning and experience.

Based on the framework above, behavioral intention is influenced by performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit. Meanwhile, use behavior is influenced by facilitating conditions, habit, and behavioral intention. These seven variables are also moderated by age, gender, and length of experience.

This study uses a questionnaire based on the UTAUT2 model. The questionnaire consists of eight variables: Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Behavioral Intention, ICT Usage Habits, Perceived Learning Opportunities, and Hedonic Motivation. Each variable comprises five indicators.

The study employs a four-point Likert scale, where 1 represents strongly disagree, 2 represents disagree, 3 represents agree, and 4 represents strongly agree. Data analysis was conducted using a component-based Structural Equation Model (SEM), namely Partial Least Squares (PLS). According to Amos et al. (as cited in Budiarsi, 2020), SEM-PLS is an alternative SEM method that complements previous SEM approaches. PLS-SEM is used to assess validity and reliability, significance levels, and the overall goodness of fit of the research model.

Based on the modified UTAUT2 model used in this study, the hypotheses tested are as follows:

H0: Performance expectancy has a positive and significant effect on the behavioral intention of elementary school teachers in West Java to use web-based multimodal learning media.

H1: Performance expectancy does not have a positive and significant effect on the behavioral intention of elementary school teachers in West Java to use web-based multimodal learning media.

H0: Effort expectancy has a positive and significant effect on the behavioral intention of elementary school teachers in West Java to use web-based multimodal learning media.

H1: Effort expectancy does not have a positive and significant effect on the behavioral intention of elementary school teachers in West Java to use web-based multimodal learning media.

H0: Social influence has a positive and significant effect on the behavioral intention of elementary school teachers in West Java to use web-based multimodal learning media.

H1: Social influence does not have a positive and significant effect on the behavioral intention of elementary school teachers in West Java to use web-based multimodal learning media.

H0: Facilitating conditions have a positive and significant effect on the behavioral intention of elementary school teachers in West Java to use web-based multimodal learning media.

H1: Facilitating conditions do not have a positive and significant effect on the behavioral intention of elementary school teachers in West Java to use web-based multimodal learning media.

H0: Hedonic motivation has a positive and significant effect on the behavioral intention of elementary school teachers in West Java to use web-based multimodal learning media.

H1: Hedonic motivation does not have a positive and significant effect on the behavioral intention of elementary school teachers in West Java to use web-based multimodal learning media.

H0: Price value has a positive and significant effect on the behavioral intention of elementary school teachers in West Java to use web-based multimodal learning media.

H1: Price value does not have a positive and significant effect on the behavioral intention

of elementary school teachers in West Java to use web-based multimodal learning media.

H0: Habit has a positive and significant effect on the behavioral intention of elementary school teachers in West Java to use web-based multimodal learning media.

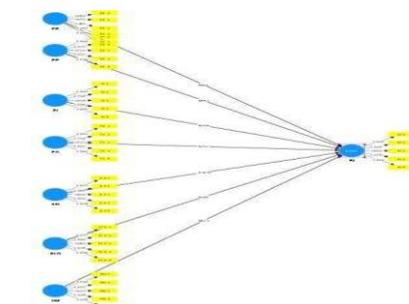
H1: Habit does not have a positive and significant effect on the behavioral intention of elementary school teachers in West Java to use web-based multimodal learning media.

The results of the development of a website-based multimodal learning medium for the Natural Science subject (Water Cycle) for fifth-grade elementary school students were developed using Google Sites. Users can access this web-based multimodal learning medium through the following link: <https://sites.google.com/view/lindaariesandi18/beranda>. The appearance of the web-based multimodal learning medium is presented in Figures 2 and 3.

Figure 2. Opening Page View



Figure 4 Diagram of the analysis results model



The validity testing process was conducted based on loading factors. The required threshold value is greater than 0.5; therefore, any item with a value below this threshold must be removed. Two types of validity testing were applied: convergent validity and discriminant validity. Loading factor values represent convergent validity, while Average Variance Extracted (AVE)

The opening page provides several selectable features. These include learning materials, quizzes, discussions, evaluations, and information about the developer of the web-based multimodal learning medium.



Figure 3. Page View

The results of the questionnaire administered to 100 elementary school teachers were analyzed using a statistical application based on a component- or variance-based Structural Equation Model (SEM), namely Partial Least Squares (PLS). SEM-PLS was employed to assess validity, reliability, and the factors influencing elementary school teachers' acceptance of the web-based multimodal learning medium. Using the SmartPLS 4 application, which refers to a modified research model based on the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), and processing the collected questionnaire data, the following diagram presents the numerical results of the outer model testing

values indicate discriminant validity. The AVE value must be greater than the correlation values involving other independent variables (Fatihanisya & Purnamasari, 2021).

Konvergen Test

| | BI | EE | FC | HM | IUH | PE | PLO | SI |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| BI 1 | 0.847 | | | | | | | |
| BI 2 | 0.816 | | | | | | | |
| BI 3 | 0.800 | | | | | | | |
| BI 4 | 0.908 | | | | | | | |
| BI 5 | 0.892 | | | | | | | |
| EE 1 | | 0.844 | | | | | | |
| EE 2 | | 0.832 | | | | | | |
| EE 3 | | 0.731 | | | | | | |
| EE 4 | | 0.837 | | | | | | |
| EE 5 | | 0.748 | | | | | | |
| FC 1 | | | 0.813 | | | | | |
| FC 2 | | | 0.738 | | | | | |
| FC 3 | | | 0.733 | | | | | |
| FC 4 | | | 0.892 | | | | | |
| FC 5 | | | 0.864 | | | | | |
| HM 1 | | | | 0.798 | | | | |
| HM 2 | | | | 0.911 | | | | |
| HM 3 | | | | 0.901 | | | | |
| HM 4 | | | | 0.945 | | | | |
| HM 5 | | | | 0.945 | | | | |
| IUH 1 | | | | | 0.833 | | | |
| IUH 2 | | | | | 0.895 | | | |
| IUH 3 | | | | | 0.829 | | | |
| IUH 4 | | | | | 0.811 | | | |
| IUH 5 | | | | | 0.945 | | | |
| PE 1 | | | | | | 0.854 | | |
| PE 2 | | | | | | 0.902 | | |
| PE 3 | | | | | | 0.899 | | |
| PE 4 | | | | | | 0.857 | | |
| PE 5 | | | | | | 0.908 | | |
| PLO 1 | | | | | | | 0.907 | |
| PLO 2 | | | | | | | 0.894 | |
| PLO 3 | | | | | | | 0.954 | |
| PLO 4 | | | | | | | 0.905 | |
| PLO 5 | | | | | | | 0.849 | |
| SI 1 | | | | | | | | 0.844 |
| SI 2 | | | | | | | | 0.788 |
| SI 3 | | | | | | | | 0.836 |
| SI 4 | | | | | | | | 0.898 |
| SI 5 | | | | | | | | 0.891 |

As shown in Table 1, all values for each variable are highlighted in green and exceed 0.5. This indicates that all variables in this study can be considered valid. Each item of the independent variables was well understood by the respondents and interpreted consistently in accordance with the researcher's expectations.

Validitas Diskriminan Test

| | BI | EE | FC | HM | IUH | PE | PLO | SI |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|
| BI | 0.853 | | | | | | | |
| EE | 0.730 | 0.800 | | | | | | |
| FC | 0.812 | 0.681 | 0.811 | | | | | |
| HM | 0.803 | 0.700 | 0.691 | 0.901 | | | | |
| IUH | 0.591 | 0.622 | 0.686 | 0.516 | 0.837 | | | |
| PE | 0.766 | 0.651 | 0.672 | 0.811 | 0.429 | 0.882 | | |
| PLO | 0.800 | 0.644 | 0.733 | 0.861 | 0.521 | 0.800 | 0.901 | |
| SI | 0.775 | 0.667 | 0.740 | 0.649 | 0.598 | 0.674 | 0.603 | 0.846 |

Based on Table 2, the discriminant validity test meets the established criteria. This

is evidenced by the AVE values, which are higher than the correlation values involving the respective independent variables. In other words, the items within each independent variable were not confused by respondents with items from other variables when answering the questionnaire.

Reabilitas Test

| | Cronbach's alpha | Composite reliability (rho_c) | Composite reliability (rho_o) | Average variance extracted (AVE) |
|-----|------------------|-------------------------------|-------------------------------|----------------------------------|
| BI | 0.906 | 0.913 | 0.930 | 0.728 |
| EE | 0.867 | 0.902 | 0.898 | 0.640 |
| FC | 0.870 | 0.892 | 0.905 | 0.657 |
| HM | 0.941 | 0.942 | 0.956 | 0.813 |
| IUH | 0.893 | 0.901 | 0.921 | 0.700 |
| PE | 0.928 | 0.933 | 0.946 | 0.778 |
| PLO | 0.941 | 0.943 | 0.955 | 0.811 |
| SI | 0.901 | 0.913 | 0.926 | 0.715 |

Tabel 3. Reliabilitas Test

In this study, reliability testing was conducted to measure the consistency of the questionnaire. This aimed to ensure that the collected data were reliable and capable of producing trustworthy information and conclusions. Reliability was assessed using two measures: Cronbach's alpha and composite reliability. The specified criteria require Cronbach's alpha values to be greater than 0.60 and composite reliability values to exceed 0.70. In addition, the Average Variance Extracted (AVE) value must reach at least 0.50.

Uji R Square

| R-square - Overview | | |
|---------------------|----------|-------------------|
| | R-square | R-square adjusted |
| BI | 0.818 | 0.804 |

Tabel 4. R Square Test

Hasil yang diperoleh dari nilai adjusted R square terhadap behavioral intention adalah sebesar 0,804. Dari data tersebut dapat diinterpretasikan bahwa kontribusi dari variabel performance expectancy, effort expectancy, social influencer, facilitating condition, Hedonic motivation, price value, serta Habit memiliki pengaruh sebesar 80% terhadap behavioral intention penggunaan media pembelajaran berbasis web pada guru di Jawa Barat. Adapun siswanya sebesar 20% dipengaruhi oleh variabel atau faktor lain yang tidak ada dalam variabel penelitian ini.

F Square Test

The results obtained from the adjusted R-square value for behavioral intention are 0.804. This finding indicates that the variables of

performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit collectively contribute 80% to behavioral intention in the use of web-based learning media among teachers in West Java. The remaining 20% is influenced by other variables or factors that are not included in this research model.

| | BI | EE | FC | HM | IUH | PE | PLO | SI |
|-----|-------|----|----|----|-----|----|-----|----|
| BI | | | | | | | | |
| EE | 0.026 | | | | | | | |
| FC | 0.102 | | | | | | | |
| HM | 0.032 | | | | | | | |
| IUH | 0.002 | | | | | | | |
| PE | 0.004 | | | | | | | |
| PLO | 0.046 | | | | | | | |
| SI | 0.121 | | | | | | | |

The diagram presents a conceptual model illustrating the relationships among various variables. At the center of the diagram is a main variable that appears to be the primary focus, represented by a larger blue circle. Other variables are connected to this central variable through linking lines.

The variables in the diagram are grouped into several categories, including User Self-Control (KDP), User Activity (AP), Cooperative/Collaborative Learning (PKK), Goal Orientation (OT), Implementation (PEN), Added Value (NT), Motivation (MOT),

4. CONCLUSION

H0: Performance expectancy is expected to have a positive and significant effect on teachers' behavioral intention to use website-based learning media in West Java.

H1: Performance expectancy is not expected to have a positive and significant effect on teachers' behavioral intention to use website-based learning media in West Java.

The statistical testing was conducted on 100 respondents. The results indicate that the performance expectancy (PE) variable has an original sample (O) value of 0.055, which is categorized as positive, indicating a positive relationship with behavioral

Tabel 5. Uji F Square

The F-square test is conducted to determine the magnitude of the effect exerted by the independent variables on the dependent variable. *size* lemah. Adapun *Performre Expectancy* (PE) memiliki nilai 0,004 memiliki *effect size*

| | Original sample (O) | Sample mean (M) | Standard deviation (STDEV) | T statistics ((O-STDEV) | P values |
|----------|---------------------|-----------------|----------------------------|-------------------------|----------|
| EE > BI | 0.113 | 0.111 | 0.095 | 1.191 | 0.234 |
| FC > BI | 0.262 | 0.295 | 0.132 | 1.984 | 0.047 |
| HM > BI | 0.173 | 0.163 | 0.121 | 1.425 | 0.154 |
| IUH > BI | -0.029 | -0.029 | 0.071 | 0.409 | 0.683 |
| PE > BI | 0.055 | 0.043 | 0.103 | 0.537 | 0.591 |
| PLO > BI | 0.206 | 0.208 | 0.123 | 1.682 | 0.093 |
| SI > BI | 0.250 | 0.240 | 0.112 | 2.231 | 0.028 |

Tabel 6. Hasil Uji Hipotesis

Prior Knowledge Value (PTPS), Flexibility (FLE), Feedback (UB), and Usability (USA).

Each variable is assigned a numerical value or weight, which appears to represent its level of importance or contribution to the Usability (USA) variable. From the diagram, it can be observed that the highest values are associated with user activity related to the learning device in the form of a teaching module, as evaluated by 100 respondents. The four variables with the highest scores are Feedback, Cooperative and Collaborative Learning, Evaluation of Prior Knowledge, and Implementation

intention. However, the T-value is 0.537 and the P-value is 0.591, which do not meet the predetermined criteria (P-value < 0.05 and T-value > 1.96). Therefore, it can be concluded that performance expectancy does not have a significant effect on behavioral intention. In other words, H0 is rejected and H1 is accepted.

H0: Effort expectancy has a positive and significant effect on teachers' behavioral intention to use website-based learning media in West Java.

H1: Effort expectancy does not have a positive and significant effect on teachers' behavioral intention to use website-based learning media in West Java.

The effort expectancy (EE) variable has an original sample (O) value of 0.113, which is positive, indicating a positive relationship with behavioral intention. However, the T-value is 1.191 and the P-value is 0.234, which do not meet the established criteria (P-value < 0.05 and T-value > 1.96). Thus, it can be concluded that effort expectancy does not have a significant effect on behavioral intention. Accordingly, H0 is rejected and H1 is accepted.

H0: Social influence has a positive and significant effect on teachers' behavioral intention to use website-based learning media in West Java.

5. ACKNOWLEDGE

The bar chart presents usability values for several variables. Feedback is one of the variables used to evaluate validity in the measurement model analysis. A higher Feedback value indicates that this variable is able to explain a greater proportion of variance in its indicators.

In the chart, the Feedback (UB) variable shows the highest value, at approximately 0.646 (64.6%). This indicates that the Feedback variable is able to explain about 64% of the variance in its indicators. In contrast, the User Self-Control (KDP) variable has the lowest value, at approximately 0.114.

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H1: Social influence does not have a positive and significant effect on teachers' behavioral intention to use website-based learning media in West Java.

The social influence (SI) variable has an original sample (O) value of 0.250, which is positive, indicating a positive relationship with behavioral intention. The T-value is 2.231 and the P-value is 0.026, both of which meet the established criteria (P-value < 0.05 and T-value > 1.96). Therefore, it can be concluded that social influence has a significant effect on behavioral intention. Thus, H0 is accepted and H1 is rejected.

This suggests that this variable explains only about 11% of the variance in its indicators.

Overall, the chart provides an overview of how well each variable or construct explains the variance of its indicators. A high Feedback value indicates good convergent validity, whereas lower values suggest the need for improvement or further development of the corresponding variables. This information is useful for researchers and practitioners seeking to understand the measurement quality of learning devices or teaching modules in achieving relevant usability.

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