

## Evaluating User Experience (UX) of Virtual Reality for Sewang Dance

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### ARTICLE INFO

### ABSTRACT

#### Keywords:

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Sewang Dance virtual reality (VR) is a virtual reality that showcases the dance traditions of the Orang Asli people. The objective of the research is to evaluate significant elements of user experience, including efficiency, stimulation, attractiveness, dependability, novelty, and perspicuity. The User Experience Questionnaire (UEQ) framework is used in this research together with the design of the survey questionnaire. The main research objectives are then developed once the data has been retrieved and examined using the User Experience Questionnaire (UEQ) Analysis framework, tool, and analysis. Data gathering from 384 respondents and the setting for the research in Selangor, Malaysia. Different design aspects and user experience (UX) concerns should be considered to boost the Sewang Dance VR in terms of efficiency, stimulation, attractiveness, dependability, novelty, and perspicuity. Future work may include such as one-on-one interviewing or focus groups, to further enhance the UX of the Sewang Dance VR.

## 1. Introduction

Virtual Reality (VR) holds promise for Indigenous communities, offering opportunities for cultural preservation, education, and immersive storytelling. Focusing on user experience (UX) is crucial in understanding the reception and impact of VR technology within these communities. VR technology enhances the sensory dimensions of dance by creating immersive environments that engage audiences in novel ways. This is achieved by motion capture, 3D modeling, and real-time rendering, which allow for dynamic interactions between dancers and virtual spaces [1].

Research on the user experience of virtual reality (VR) for cultural dance forms has emerged as a critical area of inquiry due to its potential to preserve intangible cultural heritage while enhancing educational and entertainment value [2] [3]. Over the past decade, VR applications have evolved from simple visualization tools to immersive, interactive platforms that engage users through multisensory experiences and motion capture technologies [1] [4].

This evolution reflects a growing recognition of VR's role in safeguarding cultural practices by providing accessible, engaging environments that appeal to diverse audiences, including younger generations [5] [6]. Recent studies report high user satisfaction and improved learning outcomes when VR is applied to folk dance education and cultural heritage dissemination [4] [7].

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Despite these advances, challenges remain in optimizing VR user interfaces and engagement strategies to fully capture the emotional and cultural essence of traditional dances [8] [9]. The specific problem addressed in this review is the limited understanding of how user interface design, emotional response, and engagement interact within VR experiences of cultural dances [10] [11].

Existing literature reveals a fragmented approach, with some studies emphasizing technological immersion and others focusing on cultural authenticity or educational effectiveness [12] [13] [14]. Moreover, controversies persist regarding the balance between gamification and cultural sensitivity, as well as the trade-offs between immersion and usability [15]. The consequences of these gaps include suboptimal user experiences that may hinder cultural preservation efforts and reduce the educational impact of VR applications [16].

In considering the UX of VR for Indigenous communities, it is crucial to focus on both the opportunities and challenges presented by this technology. By centering Indigenous perspectives in the design, development, and evaluation of VR technology, we can work towards creating culturally empowering and enriching VR experiences for Indigenous users. As with any technology, ongoing evaluation and community feedback are crucial to the iterative development and improvement of VR experiences for Indigenous communities.

## 2. Methodology

The User Experience Questionnaire (UEQ) framework is used in this research together with the design of the survey questionnaire. The main research objectives are then developed once the data has been retrieved and examined using the User Experience Questionnaire (UEQ) Analysis framework, tool, and analysis [17 – 19]. Data gathering from 384 respondents and the setting for the research in Selangor, Malaysia. Other studies have adapted UEQ in research to evaluate the User Experience for various applications, such as for mobile parking applications [20], and mobile game-based learning has become predominant in various research [21 - 22].

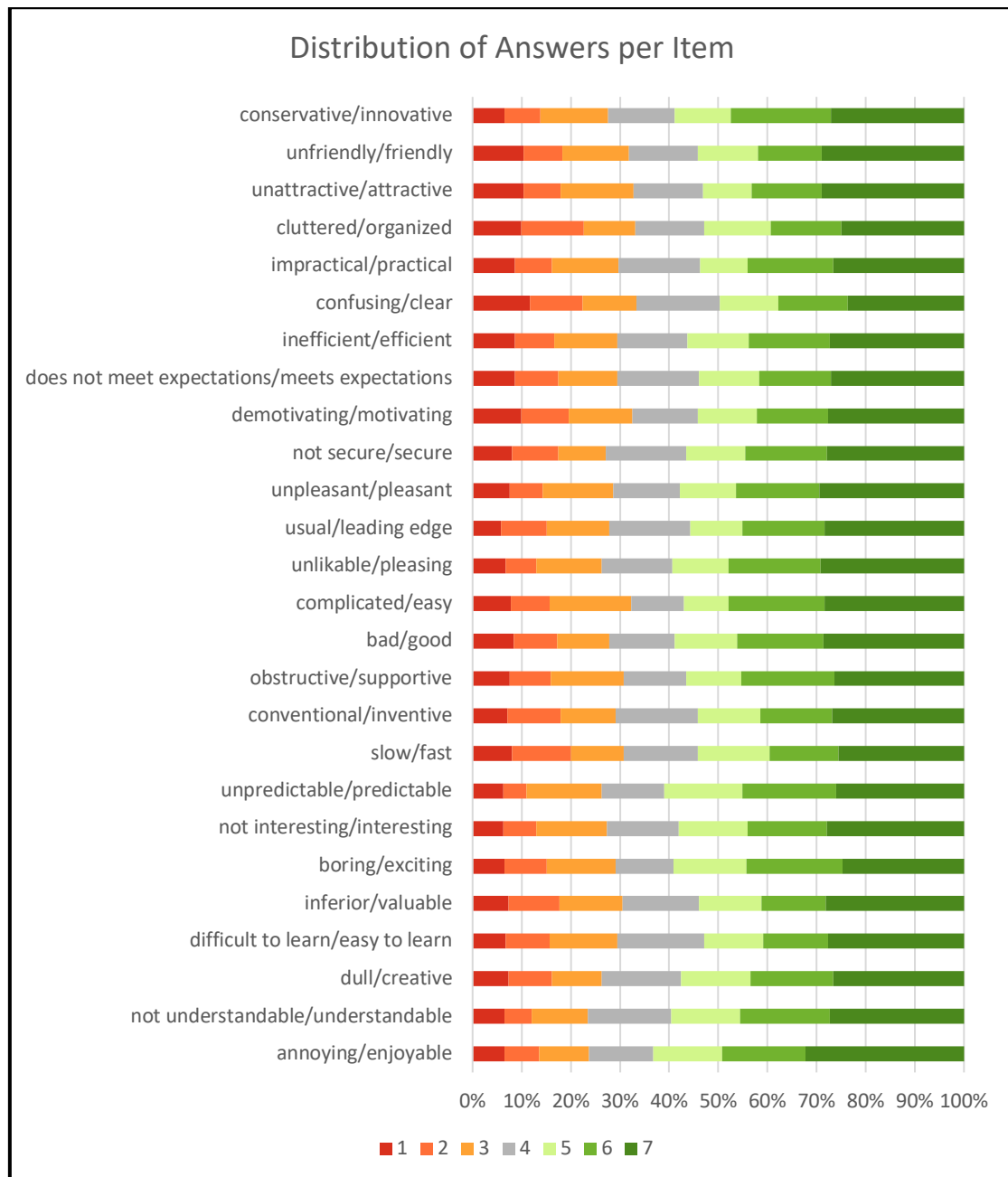
## 3. Results and Analysis

For the survey analysis, this part presented the distribution of responses for each question. The purpose of this section is to provide a deeper knowledge of various user-experienced features of the Sewang Dance VR. The survey that was conducted measures the essential user experience (UX) elements of the Sewang Dance VR. According to the User Experience Questionnaire (UEQ) structure, the final product included 26 elements divided into six user experience (UX) elements. Figure 1 displays user replies to 26 survey questions on their preferences for or against the Sewang Dance VR's user experience (UX).

As shown in Figure 1, to the right or left of the neutral bar is a percentage of respondents indicating whether they agree or disagree with each statement. The proportion of responses that are evenly split between agreeing and disagreeing is displayed in a neutral colour. According to the proportion, the items on the y-axis are organised, with the highest and lowest items having, respectively, the most and least agreement.

Item annoying/enjoyable has the greatest favourable review (63.28%) based on Figure 1 and Table 1, demonstrating that the user is hugely impressed with the Sewang Dance VR. Additionally, the survey analysis reveals a significant neutral evaluation for item difficulty to learn/ easy to learn, with 17.71% while the lowest neutral evaluation is for item cluttered/ organized, with 10.68%. As a summary, positive appraisal is more polarised than neutral and negative reviews. This shows that the overall survey analysis of the Sewang Dance VR obtained an overall favourable evaluation for each

of the 26 item scales.



**Fig. 1.** Answer distribution by item

**Table 1**

Answer distribution by Item in detail

Scale	Item	Negative (%)	Neutral (%)	Positive (%)
Attractiveness	Unfriendly/ friendly	31.77	14.06	54.17
	Unattractive/ attractive	32.81	14.06	53.13
	Unpleasant/ pleasant	28.65	13.54	57.81
	Unlikeable/ pleasing	26.30	14.32	59.38
	Bad/ good	27.86	13.28	58.85
	Annoying/ enjoyable	23.70	13.02	63.28
Perspicuity	Confusing/ clear	33.33	16.93	49.74
	Complicated/ easy	32.29	10.68	57.03
	Difficulty to learn/ easy to learn	29.43	17.71	52.86
	Not understandable/ understandable	23.44	16.93	59.64
Efficiency	Cluttered/ organized	33.07	10.68	52.86
	Impractical/ practical	29.69	16.67	53.65
	Inefficient/ efficient	29.43	14.32	56.25
	Slow/ fast	30.73	15.10	54.17
Dependability	Does not meet expectations/ meets expectations	29.43	16.67	53.91
	Not secure/ secure	27.08	16.41	56.51
	Obstructive/ supportive	30.73	12.76	56.51
	Unpredictable/ predictable	26.30	12.76	60.94
Stimulation	Demotivating/ motivating	32.55	13.28	54.17
	Not interesting/ interesting	27.34	14.58	58.07
	Boring/ exciting	29.17	11.72	59.11
	Inferior/ valuable	30.47	15.63	53.91
Novelty	Conservative/ innovative	27.60	13.54	58.85
	Usual/ leading edge	27.86	16.41	55.73
	Conventional/ inventive	29.17	16.67	54.17
	Dull/creative	26.30	16.15	57.55

### 3.1 Objective: To Identify the Significant User Experience (UX) Elements of the Sewang Dance VR in Terms of Efficiency, Stimulation, Attractiveness, Dependability, Novelty, and Perspicuity

The primary objective of this research, which was to identify the significant user experience (UX) elements of the Sewang Dance VR, is covered in this section. Following the average value of all question items according to the groupings of efficiency, stimulation, attractiveness, dependability, novelty, and perspicuity, the findings are shown in Table 2. The User Experience Questionnaire (UEQ) Analysis Tool is used to enter and process the data from the online survey.

**Table 2**

UEQ analysis for user experience elements in sewang dance vr

UEQ Scales	Mean
Attractiveness	0.81
Perspicuity	0.70
Efficiency	0.64
Dependability	0.76
Stimulation	0.73
Novelty	0.78

The major user experience (UX) of the Sewang Dance VR, which is used to produce the graph, is represented by the mean of its six scales in Table 2. Any scale that falls between -0.8 and 0.8 is therefore classified as neutral. Finally, a scale with a value of -0.8 or below is regarded as a negative evaluation. Any scale with a value higher than 0.8 is regarded as a good evaluation.

According to Table 2, there is one scale that receives favourable ratings, with the attractiveness scale (0.81), which indicates that the user has a favourable opinion of the Sewang Dance VR. The user can use the Sewang Dance VR to perform the intended set of tasks inside it, according to the efficiency scale (0.64), which is followed by the perspicuity (0.70), then the stimulation scale (0.73), which measures how motivated users are to use the product. The novelty scale (0.78), which users consider the Sewang Dance VR, is neutrally creative or original. The dependability scale (0.76) comes next, when users have a sense of neutral control while using the Sewang Dance VR. The UEQ scales can also be seen as a group, which consists of hedonic quality (stimulation and novelty), which demonstrates non-task-related quality features, and pragmatic quality (perspicuity, efficiency, and dependability), which demonstrates task-related quality elements of the Sewang Dance VR. The average of the Sewang Dance VR's attractiveness, pragmatics, and hedonic is shown in Table 3.

**Table 3**

UEQ Analysis for user experience significant elements in sewang dance vr

UEQ scales by Group	Mean
Attractiveness	0.81
Pragmatic Quality	0.73
Hedonic Quality	0.75

According to Table 3, the hedonic (0.75) and the pragmatic (0.73) qualities are evaluated neutrally, while the attractiveness scale (0.81) characteristics are rated favourably. This shows that respondents think the Sewang Dance VR provides them with a good user experience (UX) and is free of major issues when performing its intended duties. In conclusion, the analysis's results made it possible to pinpoint the Sewang Dance VR's significant user experience (UX) elements. Despite positive ratings on each of the six categories separately, attractiveness obtains the highest rating of 0.81. This proves that the attractiveness scale is a significant user experience (UX) element to consider when evaluating the Sewang Dance VR.

### 3.2 Recommendation for User Experience (UX) Improvement for the Sewang Dance VR

Different design aspects and user experience (UX) concerns should be considered to boost the Sewang Dance VR in terms of efficiency, stimulation, attractiveness, dependability, novelty, and perspicuity as follows:

- i. Efficiency  
Adapt the start button in milliseconds or without a glitch to improve the speed when users use the Sewang Dance VR.
- ii. Stimulation  
Sewang Dance VR might include interesting and difficult tasks and activities that engage the user and maintain their attention to boost stimulation. Numerous VR features, including riddles and interactive aspects, can be used to accomplish this.

- iii. **Attractiveness**  
Adding visually appealing visuals, animations, and sound effects of the Sewang Dance instrument that immerse the user in the Sewang Dance VR is one method to improve the appeal of a user experience.
- iv. **Dependability**  
Sewang Dance VR needs to have numerous interfaces with clearly defined user actions so that Sewang Dance VR is easy for users to navigate.
- v. **Novelty**  
It is especially important to keep adding new features and material to the Sewang Dance VR to keep users interested. This may entail including new instruments besides only Bamboo and more outfits from different levels, such as *Tok Ketua* (Head), and children.
- vi. **Perspicuity**  
Sewang Dance VR needs to include more controls to suit user use cases, VR to improve the movement achievability and understandability, as VR is an advanced technology for the current environment.

The user experience of the Sewang Dance VR of the indigenous Semai culture may be improved by considering these UX elements and making design choices that reflect their significance.

#### 4. Conclusions

The Sewang Dance Virtual Reality (VR) project offers a digital insight into the dance traditions of the Orang Asli people. This research aims to scrutinize significant facets of user experience within this VR context, concentrating on elements such as efficiency, stimulation, attractiveness, dependability, novelty, and perspicuity. Utilizing the comprehensive User Experience Questionnaire (UEQ) framework, this study employs a meticulously designed survey to accumulate pertinent data. This research, conducted in Selangor, Malaysia, gathered responses from 384 participants, providing a robust dataset for analysis within the UEQ framework. The evaluation underscores the paramount importance of diverse design aspects and user experience concerns, emphasizing the need for their consideration to enhance the Sewang Dance VR across multiple dimensions. This study lays the groundwork for future research endeavors, suggesting the implementation of methodologies such as one-on-one interviews or focus group discussions to further amplify and refine the user experience of the Sewang Dance VR platform.

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