Chapter 20
A Phenomenological Study of Learner’s Virtual Place Experience

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ABSTRACT
This study investigates the virtual place experience (VPE) approach, using 360° images in Google Street View (GSV), to help learners attain a sense of place. It examines their experience and attitude in the virtual setting of the place of knowledge inquiry. Interpretive phenomenological analysis (IPA) was adopted to examine learners’ cognitive learning of place identity, interpretation of place meanings, and attitudes toward the place. Findings indicate that learners developed their sense of presence in VPE through visual elements reflecting the place identity. Place attribute learning requires additional research to understand place identity. Place meanings in the virtual setting were interpreted through the sense of community and historical evidence. Positive affection towards the place was identified, leading to motivation to visit the real place. The study provides insight into how learners’ experience with the virtual place phenomenon may contribute to constructing their sense of place, which shall guide their design cognition in future design exercises.

INTRODUCTION
Place-based learning is a crucial component of architectural education, as it allows learners to understand a place’s physical, historical, philosophical, cultural, and social dimensions (Johnson, 2012; Zandvliet, 2014). According to Baker (2014), this type of learning involves establishing a connection between the learner and the place by exploring its unique qualities and expressing personal perceptions and responses.

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Nikezić and Marković (2015) emphasize the importance of place-based learning in expanding students’ spatial-cultural knowledge and promoting environmental literacy and responsibility.

Traditionally, architectural education utilizes site visits and academic trips to facilitate knowledge dissemination. Site visits involve investigating a specific location with a defined problem to provide the basis for problem-solving exercises (Yusoff, Ja’afar, & Mohammad, 2019). During these visits, learners analyse the site’s physical attributes (such as the environment and topography) and non-physical attributes (such as demographics, culture, and history), allowing them to relate their understanding to the real world.

However, physical visits to a site may be affected by various factors such as accessibility, safety, mobility, resource limitations, and environmental distractions, according to Fiorillo, Rizzi, & Achille (2021); Langran & DeWitt (2020); and Zhao et al. (2020). Due to the COVID-19 pandemic, these challenges have intensified, prompting researchers to explore alternative approaches like virtual place-based learning, as Squire (2022) and Wallgrün et al. (2022) suggested. Connolly (2020) believes that this alternative method allows educators to create significant lessons by utilizing the local context, history, culture, and environment while adapting to the current educational situation. Koh et al. (2022) argue that during the COVID-19 pandemic, the virtual learning environment has enhanced students’ problem-solving, analytical, design-thinking, and communication abilities.

A virtual place is a setting created through a computer-generated environment that represents real places using symbols (Ghani, Rafi, & Woods, 2016). Janz (2018) proposes that a virtual place is convincing enough to make users believe they exist in a computer-generated space, allowing for meaningful interaction. Šašinka et al. (2019) suggest that learning in a virtual place goes beyond the limitations of time and space. It offers an alternative to navigating geospatial learning activities when physical access to a location is difficult (Carbonell-Carrera & Saorín, 2017).

According to this research, “virtual place experience” (VPE) refers to the phenomenological attainment of interacting with a virtually simulated place. VPE is a crucial element of virtual place-based learning, allowing users to “feel” their presence or sense of being in the virtual location. Previous studies have indicated that virtual place-based learning has a positive impact on learners’ place cognition, as noted by Christofi et al. (2018), Hillstrom (2019), Fiorillo et al. (2021), Park (2019), Zhao et al. (2020). Therefore, the potential of VPE as an effective learning approach should be recognized and further investigated.

**ATTAINMENT OF THE SENSE OF PLACE FROM THE VIRTUAL PLACE EXPERIENCE**

The concept of “place” can be interpreted in various ways, including a physical space with a specific location or a person’s existence in a spatial setting (Champion, 2019; Krummel, 2018; Seamon, 2000; Tuan, 1975). It may be associated with the emotional aspect of place cognition (Arora & Khazanchi, 2010). “Sense of place” refers to an individual’s understanding and interpretation of their experience in a particular place, involving multiple dimensions such as cognitive, affective, and evaluative aspects that are developed through various mechanisms (Ardoin, 2006; Relph, 2007). Arora and Khazanchi (2014) describe “sense of place” as a person’s perception of how a place fulfils their functional and socio-emotional needs. It represents a person’s attachment, unique human experience, and emotional connection to a particular place, contributing to their self-identity (Ghani et al., 2016, p.1; Tuan, 2001). Existing literature suggests that “sense of place” may be classified into three categories: place identity, place meaning, and place attachment.
Place identity refers to the perception of the significance of a spatial setting, which is determined by the physical environment and the associated values of the human relationship with the place (Chen, Wang & Xu, 2017). It also involves a sense of distinctiveness that helps differentiate one place from another, with significant continuity of self-conceptualisation developed over time. Place identity knowledge may be assessed through the physical fabric of the site, such as building facades and architectural styles, historical events associated with the place, and traditional businesses and trades. History, daily activities, and shared memories also contribute to the cognitive understanding of a place’s identity (Morel-EdnieBrown, 2012).

Place meaning involves identifying the experiential, interactive and relational components of a place where one may relate to the place (Sebastien, 2020). It is derived from the living experiences that are connected to the environment and activities of a particular place setting (Relph, 2007, p.18).

Place attachment encompasses the feelings and emotions associated with a place, forming the attitude towards the place (Sebastian, 2020, p.207). It also involves the association of emotional and symbolic meanings to places in developing one’s affinity (Alasli, 2019). Personal attachments to a place result from the emotive and symbolic meanings associated with the place.

These sense of place dimensions may serve as measures to understand how one acknowledges consciousness, cognition and affect from experiencing a place. As Arora and Khazanchi (2010) allude, a virtual environment may be seen as a faithful re-creation of the natural environments, and the sense of place dimensions might be observed in a virtual place setting. The premise of this study holds that sense of place attained by learners in virtual settings of place phenomena may be studied from their personal experience.

**GOOGLE STREET VIEW (GSV)**

In virtual place-based learning, the virtual place representation is a crucial component, and simulated places can be fully immersive using Virtual Reality (VR) systems like the Cave Automatic Virtual Environment (CAVE) or partially immersive or non-immersive experiences through computers and mobile devices with or without a VR headset (Google Earth, n.d.). Google Street View (GSV) is a non-immersive VR platform that captures virtual content as images in multiple directions, which are then developed into 360° images called treks. These images are commonly used in GSV to provide a human viewing experience in a virtual environment, allowing users to rotate viewing angles in multiple directions to create a sense of “looking” at objects projected in VR. GSV is linked to Google Maps and Google Earth to provide a three-dimensional view of places, and users can navigate around to identify visual cues such as buildings and landmarks for orientation. Studies have shown that GSV is a beneficial educational tool for disseminating knowledge (Choi et al., 2018; Huh, 2020; Pham et al., 2018; Violante et al., 2019). In GSV, 360° imagery can be viewed as interactive or passive media, depending on whether users interact with the contents of the virtual simulation. Google treks may include interactive features that allow users to extract information by clicking on visual cues.

As mentioned by Carbonell-Carrera and Saorin (2017) and Sasinka et al. (2019), GSV is a valuable tool for virtual place learning even though it is commonly used for navigation. Nugroho et al. (2021) suggest that GSV has potential uses in streetscape evaluation, place visual characteristics study, and architectural conservation, thereby proving the potential of GSV for virtual place-based learning. Despite existing studies investigating the sense of place in physical and virtual environments, there is a lack of
focus on virtual place learning with GSV in architectural education. This research addresses this gap by studying the VPE approach using 360° images in GSV to help learners attain a sense of place. It also investigates their experience and attitude in the virtual setting of the place of knowledge inquiry.

**RESEARCH METHODS**

This study examines how undergraduate students in an architecture program approach virtual place-based learning and how it impacts their sense of place. The study uses phenomenology to evaluate how learners personally experience the virtual environment and acquire a sense of place. Specifically, it evaluates learners’ sense of place acquisition of cognitive learning, interpretation of place meaning, and emotion and attitude towards the place, using the module “Theories of Asian Architecture” as the basis for inquiry. The research questions are addressed through the framework outlined in Figure 1:

- To what extent do learners understand place identity in a virtual place setting? (Cognitive learning of the place identity)
- What place meanings do learners interpret from the virtual place experience? (Interpretation of the place meaning)
- To what extent do they show affection towards the place? (Emotion and attitude towards the place)

Historical streets in Kuala Lumpur and Malacca were selected as the cohort’s study sites before the Covid-19 outbreak due to their historical significance, urban development, and accessibility. The selection of the two sites was also based on the amount of well-documented information available online. This provides learners with valuable learning opportunities throughout the restriction of movement. The students were assigned to observe the streets’ tangible and intangible contexts to develop their interpretations of the place. However, due to the pandemic-related restrictions, the learners in this study had to conduct virtual site visits to selected streets in Kuala Lumpur and Malacca using 360° photos in

*Figure 1. Research framework*
*Source: Authors (2022)*
GSV, as shown in Figure 2. The previous cohorts’ findings on the physical place setting could serve as a reference for examining the learners’ virtual place experience of the exact locations.

In GSV, learners may employ different methods, such as stationary viewing (observing from one point), navigation (moving along a path), or wayfinding (exploring an open environment), to identify the contexts. The duration of virtual presence in GSV varies based on the individual, the simulated environment type, and the immersion intensity. Learners were recommended to navigate in GSV for 15-40 minutes to provide for adequate cognitive building and to decrease the adverse effects of long-term virtual environment exposure as reported in existing studies (Kennedy, Stanney, & Dunlap, 2000; Smith & Burd, 2019; Yoon et al., 2021).

The contexts shown in Table 1 represent the visual cues in GSV. Interpretations of these contexts were shown in sketches and a written summary (Figure 3).

**Interpretative Phenomenological Analysis (IPA)**

The interpretive phenomenological analysis (IPA) was employed in this study to investigate the learners’ cognitive learning of place identity, their interpretation of place meanings, and their attitudes towards the place in a virtual environment. The IPA approach examines the lived experiences of individuals and the meaning they assign to these experiences in the context of a particular phenomenon (Eatough & Smith, 2008; Šašinka et al., 2019; Smith & Osborn, 2003). According to Smith and Osborn (2003, p.55), IPA is an appropriate method for exploring how individuals perceive and rationalize their personal and social worlds. Researchers agree that IPA aims to understand how individuals make sense of a phenomenon from their first-person perspective (Larkin et al., 2006, p.110; Pietkiewicz & Smith, 2012, p.367; Smith, 2019, 2011). Alase (2017) claims that IPA is the most participant-oriented qualitative research approach, which values and acknowledges the participants’ lived experiences. This approach enables the researchers to recognize “the individuals’ experiences, understandings, perceptions and accounts” as the objective truth about their lived experiences (Reid et al., 2005, as cited in Symeonides & Childs, 2015).

**Table 1. Place contexts descriptions**

<table>
<thead>
<tr>
<th>Category</th>
<th>Contexts</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>Tangible</strong></td>
<td></td>
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<tr>
<td>Religious buildings</td>
<td>Suggest the society and culture of the community residing within the street boundary</td>
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<tr>
<td>Shophouses</td>
<td>Accommodate business activities that form an essential part of a community.</td>
<td></td>
</tr>
<tr>
<td>Architecture façade and styles</td>
<td>Provide references to time and may reflect the affluence of the community.</td>
<td></td>
</tr>
<tr>
<td>Market</td>
<td>Reflects the community lifestyle through the groceries and merchandise sold</td>
<td></td>
</tr>
<tr>
<td><strong>Intangible</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditional trades/businesses</td>
<td>Reflect the community lifestyle and form part of the social memories</td>
<td></td>
</tr>
<tr>
<td>Historical events/ festivals</td>
<td>Reflect collective social memories of the community</td>
<td></td>
</tr>
<tr>
<td>Local/ traditional cuisines</td>
<td>Reflect the food traditions and culture of the community</td>
<td></td>
</tr>
<tr>
<td>Social institutions</td>
<td>Provide references to the social groups who witnessed the development of the community, e.g., clan associations.</td>
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</tr>
</tbody>
</table>

Source: Authors (2022)


Figure 2. Google Street View showing views of Jalan Tun H.S. Lee, Kuala Lumpur (top left); Lorong Pangung, Kuala Lumpur (bottom left); Jalan Tokong, Malacca (top right) and Jalan Kampung Kuli, Malacca (bottom right)
Source: Google Earth (n.d.)

Figure 3. Project outcomes
Source: Authors (2022)

Data Collection

The study used purposive homogenous sampling to obtain a closely defined group of 11 architecture undergraduate learners for a focus group interview, as the research question was experiential in nature.
Semi-structured interviews were conducted to collect data, which allowed participants to voice their opinions and produced rich data. The small sample size was deemed acceptable for IPA, which involves an intensive and in-depth analysis of each participant’s account. Before the interview, the researchers established the key topics, including learners’ cognitive learning of place identity, interpretation of place meanings, and attitude towards the place. The researchers moderated the focus group interview, and participants were encouraged to express their thoughts in their own words. The session was conducted using Microsoft Teams online video meeting and recorded with participants’ knowledge and permission to ensure all subjects discussed were captured for future transcription (Abdullah, 2013; Cooper et al., 2012; Hefferon & Gil-Rodriguez, 2011; Larkin et al., 2006; Smith & Osborn, 2003).

Data Analysis

Coding the Collected Data

The research employed a coding procedure to identify patterns of participant response and categorise them after transcribing the data (Alase, 2017). This approach involved reading and listening to the interview transcript multiple times, distilling and coding information to gain a general understanding of the data (Abdullah, 2013; Alase, 2017; Smith & Osborn, 2003). To analyse the data, the researchers were able to recall and immerse themselves in the interview environment (Pietkiewicz & Smith, 2012). The coded transcript was then organised into a spreadsheet based on the sense of place dimensions for subsequent data analysis.

The Analysis Processes

The researchers used a cycle inquiry approach that includes analysing well-structured coded transcripts to acquire insight into participants’ personal experiences in the virtual environment (Smith & Osborn, 2003; Abdullah, 2013). The exploratory comments and remarks made on the coded transcripts helped the researchers identify key phrases, repetitive elements, and explanations, which were used to capture emergent themes (Cooper et al., 2012; Symeonides & Childs, 2015). The researchers interpreted the data and selected themes based on the participants’ descriptive, linguistic, and conceptual comments (Cooper et al., 2012). Through this process, six major themes were identified.

Table 2. Interview questions

<table>
<thead>
<tr>
<th>Learners’ Cognitive Learning of Place Identity</th>
<th>Learners’ Interpretation of Place Meanings</th>
<th>Learners’ Attitude Towards the Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you feel like ‘being there’ at the street?</td>
<td>What does the street mean to you?</td>
<td>Did you like or dislike the place?</td>
</tr>
<tr>
<td>Were you able to identify the tangible attributes that made up the identity of the street?</td>
<td>Which contexts help you to generate your interpretation of the place meanings?</td>
<td>Which context you like/dislike the most?</td>
</tr>
<tr>
<td>How did you learn about the intangible attributes that construct the identity of the street?</td>
<td>How did you develop a sense of place during your virtual visit?</td>
<td>Would you like to visit the actual place?</td>
</tr>
<tr>
<td>What attribute do you think best represents the identity of your selected studied street?</td>
<td>How do the place attributes represent the sense of place?</td>
<td>Would you feel or experience the same way by physically visiting the place?</td>
</tr>
</tbody>
</table>

Source: Authors (2022)
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FINDINGS

Upon analysing the interview transcripts of participants, six significant themes were identified concerning learners’ attitudes and experiences towards the virtual place setting in GSV. These themes include the association of the virtual place with real places, difficulties in comprehending intangible place attributes, the ability to understand physical contexts, a strong sense of community in VPE, positive attachment to the place, and the motivation to visit the real place. Table 3 illustrates the correlation of these themes with the dimensions of a sense of place.

Associations With Real Places

This theme indicates how learners associate virtual settings with real places with similar contexts. Learners may identify similarities between the settings in GSV and places they are familiar with or have previously visited. Drawing on prior experiences of different real places with similar contexts, learners may construct their understanding of place identity in the virtual setting, as exemplified by the following excerpt from the interview transcript.

*It reminds me of Penang. The place is quite similar, so I can quite relate. It’s kind of close in terms of the contexts. Yeah, I haven’t been there, but there is quite a lot of information to obtain. The virtual visit allows you to be more focused and more detail oriented. (Learner 1)*

Learner 1 connected her childhood experiences in George Town, Penang, and her virtual visit to Jalan Tukang Besi in Malacca. She noticed that both cities share similar historical development, which helped her to identify similar contexts between the two places. Although she had not visited Jalan Tukang Besi in person, she learned about the place through a virtual visit and by researching information online. Learner 1 expressed that the virtual visit provided a concentrated way of exploring and learning about the place.

*I have been to the location before. The first time I visited the site, the experience of the five senses created a map in my mind. When I went to Google Street View to study the site, it was just overlaying these details onto this map that I created of the space. For the sense of being there, I wouldn’t say Google Street View would be able to give you that. I feel that the sense of being related to this map you created of the experience can only be found when you’re in the space. But in terms of completing the assignment, I think it did help to add to this map that I had. (Learner 6)*

Learner 6 had previously visited the selected place when he was younger. He tries to connect his previous experience with the VPE by referring to the “five senses map” he created during his first visit. He believes the VPE creates an additional sense of presence that supplements his perception of the place.

Challenges in Understanding Intangible Place Attributes

The analysis has revealed a theme related to learners’ cognitive learning of intangible place attributes, specifically those related to social activities. The findings indicate that learners had a limited understanding of these intangible attributes and needed further research to enhance their cognitive understanding.
During the virtual visit in Google Street View, I couldn’t see any blacksmith shops because they appeared to be closed, and I can’t really identify them. The place is very hidden, and sometimes the view in Google Street View is a bit distorted, so I can’t really identify the blacksmith shops. The only way I was able to find out was I had to search really hard, and then I eventually visited a Chinese website which provides such information. (Learner 1)

Learner 1 studied Jalan Tukang Besi in Malacca, which has a significant historical context related to blacksmiths. However, this intangible context was not visible in the GSV as the view was limited. Therefore, the learner had to use external sources such as websites to understand the intangible context of the place.

We can’t interview the locals. We don’t really know about the history of the place and what happened before. All of that can only be gathered from online information. (Learner 9)

Learner 9 emphasised the difficulty in understanding the intangible place contexts, particularly the historical and societal aspects of VPE. This was attributed to the lack of human interaction in the virtual setting, which precludes the possibility of conducting interviews with community members.

**Ability to Grasp an Understanding of Physical Contexts**

This theme demonstrates learners’ experiences understanding physical place contexts such as building facades, architectural styles, building typologies, and marketplaces. The findings reveal that general tangible attributes may be identified to a limited extent as there were constraints in obtaining detailed information.

If you only look through Google Street View, you can’t really find the information that you want; you can only find the general information. You can only see the building exteriors; you can’t really see what’s inside, like the intangible contexts in specific. (Learner 4)

I saw a very old shop during my virtual site visit. I know that they sell either gold or silver or something, but I don’t really know exactly. The name of the shop was not even visible. I think we need to go to the site to understand what they do over there. There’s a bit of limitation to learning about the tangible contexts; it’s even more challenging if online information about the place is limited. I remember when I was searching for the wooden bucket craftsman using Google Street View; there were some limitations of view angles in the navigation. The location of the subject that I intended to identify might be somewhere not visible. (Learner 11)

Learner 4 claims that the general understanding of tangible contexts is achievable through VPE. Learner 11 affirms this by highlighting the challenges in identifying the physical contexts due to constraints of view angle in virtual navigation. Human activities were not clearly shown in GSV, making it more challenging to understand the relevant, tangible contexts.
Strong Sense of Community in VPE

This theme relates to learners’ interpretation of place meanings. It exemplifies learners’ perception through the sense of community and historical evidence reflecting the place’s origin, evolution, development, and transformation over time. Traditional trades and cultural activities contribute to giving meaning to a place.

For me, it is the mixture of historical contexts and traditional trades. The place used to have many blacksmiths back in the past along Blacksmith Street as the major traditional trade, thus forming the meaning of the place. (Learner 10)

For Jalan Tun Tan Cheng Lock, it was a street where the elite Baba and Nyonya communities resided. So, for me, I think this street is very important to us. It shows the history of Baba Nyonya, like where they originated and how their traditions have evolved and how they assimilate into our local culture. I think an important feature of this street is also the architecture… it’s mainly about the architecture and the history of the street, it’s very important as the identity of the place, it’s crucial for the future generation to remember the history of Baba and Nyonya. (Learner 7)

Learner 10’s understanding of the place meanings was based on the history and traditional trade of the blacksmiths in Jalan Tukang Besi, Malacca. Learner 7’s interpretation of Jalan Tun Tan Cheng Lock, Malacca, was based on historical evidence of community and architecture.

Positive Attachment to the Place

This theme refers to learners’ attitudes towards the place they visited with GSV. The analysis reveals that learners’ positive emotional attachment to the place was identified.

I think like the street even more than I did before because before this, even like going to the place physically, I didn’t know about its interesting contexts. It’s the little quirks that make it interesting. After knowing all this information, I think the street appears more interesting to me. (Learner 3)

I went to the street just for food previously. After going through the virtual experience using Google Street View, I notice seeing things differently, particularly the architectural contexts. It’s not just about food… I like the place for its culture like how the religious buildings of different faiths are placed along the street. (Learner 8)

I really like the place. I wouldn’t have liked it that much if I haven’t done the virtual visit. After understanding all the things about the street, it is really that interesting. Particularly the blacksmiths carry a lot of sentimental emotions and feelings from the past till now, as well as the old shophouses. I remember there is a dim sum shop that has been operating for decades. I also like the religious buildings of different faiths coexisting in one place. If I ever go to Malacca, that would be the first place I will visit because it really carries various attributes which make that place so meaningful. (Learner 1)
Most learners exhibited a positive attitude towards the places they studied using VPE, as they discovered place attributes that interested them. Learners with previous experience with the place could develop new perspectives and interpretations of the place’s meanings.

**Motivation to Visit the Real Place**

This theme demonstrates that most learners are motivated to visit the real place compared to their virtual experience.

*I expect to have the same feeling as my virtual visit, and I want to verify it because the place seems interesting.* (Learner 5)

*I would want to go to the real place to experience it and then have my own opinion about the place.* (Learner 9)

*I think Google Street View cars might not capture conditions at different times on the street. So, you might not see the real condition virtually. I’d like to go there to see if it’s really like what I feel in the virtual setting.* (Learner 11)

*I would absolutely love to go there. The first thing I would do is check out the abandoned mansion because we couldn’t get much information about it on the Internet, so I could see it myself and ask the locals about its history.* (Learner 7)

The learners in the study expressed a desire to visit the places they had studied using VPE, citing various motivations. Some, such as Learner 5, Learner 9, and Learner 11, wish to confirm their understanding of the place in person as they believe VPE may not provide a complete representation of the place at different times of the day. Others, like Learner 7, are intrigued by discoveries made in the VPE, such as an abandoned mansion, and are motivated to learn more about the place by conducting further research and interviews in a real-world setting.

**DISCUSSIONS**

**Cognitive Learning of Place Identity**

Montello, Waller, Hegarty, & Richardson (2004) explain that place learning may be achieved through direct and indirect sources. Direct sources involve experiencing the environment through sensorimotor capabilities, while indirect sources refer to simulated environments that use external representation. In a physical environment, one may experience stimuli and receive spatial information through sensory methods, including vestibular and kinesthesis, alongside sight, sound, smell, taste, and touch. However, in virtual settings, the stimuli experience may be limited, and navigation methods may involve little or no vestibular and kinaesthetic senses.

It is important to highlight that experience in a virtual environment may be influenced by the memory of previous places, as demonstrated by the findings where learners’ experience in the virtual setting
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Table 3. Summary of findings

<table>
<thead>
<tr>
<th>Sense of Place Dimension</th>
<th>Themes</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners’ cognitive learning of place identity</td>
<td>Association with real places</td>
<td>Learners relate VPE with real places of similar contexts</td>
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<tr>
<td></td>
<td>Challenges in understanding</td>
<td>Understanding intangible attributes were limited and required additional</td>
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<td></td>
<td>intangible place attributes</td>
<td>research to construct learners’ cognitive understanding.</td>
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<tr>
<td></td>
<td>Ability to grasp an</td>
<td>General tangible attributes may be identified to a limited extent as there</td>
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<td></td>
<td>understanding of physical</td>
<td>were constraints in obtaining detailed information.</td>
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<tr>
<td></td>
<td>contexts</td>
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<tr>
<td>Learners’ interpretation of place meanings</td>
<td>Strong sense of community in</td>
<td>Interpretation of place meanings was generated through the sense of</td>
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<tr>
<td></td>
<td>VPE</td>
<td>community and historical evidence reflecting the place’s origin,</td>
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<td></td>
<td></td>
<td>evolution, development, and transformation over time. Traditional trades</td>
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<td></td>
<td></td>
<td>and cultural activities contribute to giving meaning to a place.</td>
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<tr>
<td>Learners’ attitude towards the place</td>
<td>Positive attachment to the</td>
<td>Positive emotional attachment to place was identified.</td>
</tr>
<tr>
<td></td>
<td>place</td>
<td></td>
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<tr>
<td></td>
<td>Motivation to visit the real</td>
<td>Most learners are motivated to visit the real place to compare it with their</td>
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<td></td>
<td>place</td>
<td>virtual experience.</td>
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Source: Authors (2022)

reminded them of a real place with similar contexts. This factor is unimportant; rather, it emphasises the importance of place memory in shaping learners’ VPE. The sense of presence in a virtual place may be influenced by familiarity with a similar real place, as it affects learners’ behaviour and interaction in the virtual environment (Saunders, Rutkowski, Genuchten van, Vogel, & Orrego, 2011). This familiarity may influence how learners navigate and seek information, just as they would in a physical environment. However, the limitations of virtual representation in GSV may result in limited identification of tangible attributes (Montello et al., 2004). In addition, the lack of human interaction and the use of human sensory perception in virtual environments may limit the sense of presence (Saunders et al., 2004).

The use of GSV for navigation is restricted to a certain area of street or place. While GSV provides some visual cues for intangible aspects, it may not be sufficient in communicating comprehensive information to users. Due to its limitations, GSV does not adequately depict the actual context of a place, and learners need to conduct additional research to develop their cognitive understanding.

Learners’ Interpretation of Place Meanings

According to Hashem, Abbas, Akbar, & Nazgol, (2013), a person’s perceived meaning of a place is influenced by the activities and interactions that take place within it. These interactions may take two forms: the individual’s correspondence with the place through movement and exploration, and communication with others in the place through social activities. However, real-time computer-simulated environments achieve a similar effect by responding to the user’s locomotion and movement control (Montello et al., 2004, p. 256). Avatars are used for social engagement in this environment, allowing for real-time communication between users (Ghani et al., 2016).

This study is concerned with how learners derive meanings of place through the activities and interactions associated with it in VPE. However, GSV’s interaction with the place is limited to movement control and changes of views, providing learners with only an observational view of the depicted activities. Furthermore, social interaction within the setting is absent, as human figures featured in GSV are static images. Despite these limitations, learners still gained a sense of community by observing the street’s
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history, culture, and architecture. The findings show that community living forms the place meaning through learners’ interpretation of traditional trades and social and cultural activities. They understood how the streets show history layers that inform the place’s origin, evolution, and development. Learners are aware of misinterpretation of place meanings due to inaccurate representation in social media. This reflects their level of critical thinking in the learning process. The interpretation of place meanings was developed and influenced by learners’ prior knowledge and experience. Past experiences and memories of similar places may help learners relate better in a virtual environment to derive place meanings (Ghani et al., 2016, p.4).

Learners’ Attitude Towards the Place

Learners’ emotional connection with the place in VPE is closely related to their attitude towards the place. This emotional correspondence results from establishing symbolic relationships and meanings with the place, which increases their place awareness and positive affection towards it (Hashem et al., 2013, p.112). Physical factors, social factors, cultural factors, personal factors, memories and experiences, place satisfaction, interaction and activity features, and time factor are all significant determinants of place attachment. (Hashem et al., 2013, p.113). Although not all of these factors fully explain learners’ experiences in this study, they provide helpful insights into understanding their attitude towards the place.

Findings indicate that physical place attributes such as architecture and space settings allow the discovery of significant contexts that may foster a favourable attitude towards the place. One participant highlighted how discovering an abandoned old mansion motivated her to explore the area further.

Physical and social factors may elicit learners’ memories and experiences of similar places and contribute to their emotional attachment to the virtual place. Learners may relate the virtual place to their hometown or other places they have visited based on shared architectural styles, physical environment, traditional trades, and cultural activities.

Personal factors refer to how an individual aligns with the place setting to develop specific attitudes and opinions. The expectation gap may affect attitude towards the place when one’s anticipation about the place experience is not aligned with the experience. It depends on their place expectation developed from previous experience and cognitive processes, which influence place satisfaction (Hashem et al., 2013, p.114). This is observed in learners without prior knowledge or experience of the studied place. Each expresses different feelings and opinions about their experience in GSV, reflecting how individuality affects their attitude towards the space.

Interaction and activities are essential elements in place experience of both real and virtual settings. Interaction in a simulated environment enhances the experience of users (Mahdjoubi, Koh & Moobela, 2014). However, the static navigation and absence of interactions in GSV may not be sufficient to evoke learners’ emotions towards the place. Using multimedia tools such as videos to showcase the place attributes, positive attitudes may be strengthened.

FUTURE RESEARCH DIRECTIONS

The study’s limitations primarily relate to the sample of data, which only consisted of students from one school within a single institution. Architecture students from other institutions may have different experiences with virtual learning, resulting in different responses. Further investigation with a differ-
ent sample from various institutions may be done to discover and assess architecture students’ virtual learning experiences in greater depth.

CONCLUSION

Findings indicate that learners’ sense of place in a virtual setting can be attained but requires further research or assistive tools to improve cognitive learning of the place attributes. Learners establish positive affection towards the place. They also develop the motivation to visit the real place. The study provides insight into how learners’ experience with the virtual place phenomenon may contribute to constructing their sense of place, which will guide their cognitive design in future design exercises. It also offers references in guiding the virtual place-based education pedagogical design. However, the research identifies the need to address GSV’s lack of interaction and activities. Users’ experience in a virtual simulation may be enhanced by social presence, where interactions happen (Mahdjoubi et al., 2014, p.34). As such, a VPE system designed with interaction and activity capabilities may positively affect learners’ attitudes and behaviour in the virtual place phenomenon. This feature may also contribute to engaging learners and improving their cognitive learning. Future research to evaluate potential enhancing functions such as videos, real-time chat, interactive games, avatars, etc., may be required to improve VPE as a virtual place-based learning approach.

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ADDITIONAL READING


KEY TERMS AND DEFINITIONS

**Cognitive**: The process of being conscious of intellectual activity such as thinking, reasoning, remembering, etc.

**Genius Loci**: It refers to the essence of a place.

**Geolocation**: The process of determining the actual geographical location of electronic devices.

**Kinesthesia**: The experiences that happen during movement from sensory organs.

**Phenomenology**: A philosophical inquiry into human beings’ existence and lived experience.

**Place-based learning**: A learning approach that engages learners in the place through the physical environment, local culture, history, and society.

**Sensorimotor**: It refers to an ability to process external information through our senses and to respond to it.

**Vestibular**: It relates to the experience of body position and movement.