

# TEACHING FOR TOURISTS ON TRAVELING OVER LIE RIVER USING VIRTUAL REALITY APPLICATION

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## Abstract

Tourism is a very important economic sector of China, for it is one of the significant device source for China. To increase the role of sustainable tourism in economic growth, promoting tourism is important to attract tourists continuously and effectively. Nowadays, promotion uses many kinds of methods and media, including using mobile devices, for the fast-growing of smartphone usage globally. Virtual Reality is considered an effective medium to convey promotional messages for tourism and is essential to promote China tourism. This research consists of six phases of VR Development, such as assignment, analysis, creation, testing, implementation, and operation. During the assembly phase, the Virtual Reality is built using the Makar platform. The application is expected to increase tourism visits in China.

**Keywords:** tourism, promotion, mobile, virtual reality, teaching

## I. INTRODUCTION

The Rapid development in mobile technology has changed lifestyle today. There are information methods that apply mobile technology such as promotion, news, learning, game, etc (1). All information can be launched through mobile device. Based on data that was published by Internet World Stats, internet users in China was 2 million in 31 December 2000. The growth of using internet during 7 years was 7,063%, and China was the fifth of the top internet users in the world, with 143.26 million internet users in 31 December 2017 (2). It is an opportunity using mobile device to access tourism information through internet.

The number of mobile phone users in the world is expected to pass the five billion mark by 2019. In 2016, an estimated 62.9 percent of the

population worldwide already owned a mobile phone. The mobile phone penetration is forecasted to continue to grow, rounding up to 67 percent by 2019 (3).

## A. Tourism

Elliott (4) stated that tourism can be defined in more than one way, depending upon the basis of the study, such as geography, sociology, psychology, or economics. For example it can be defined as an industry or a series of industrial sectors such as hotels, restaurants, and transport all loosely grouped together which provide services for tourists. It can also be defined as an experience from the tourist's point of view, an experience of relaxation and pleasure. For the host communities it can be viewed as pleasurable and profitable, or as a troublesome nuisance. In 1937, the Leagues of Nations define a foreign tourist as 'any person visiting a country other than that in which he normally resides, for a period of more than 24 hours'. In 1993, the following definitions were accepted by the United Nations Statistical

Commission, following the advice of the World Tourism Organizations (WTO). The terms used are 'tourism', 'visitor', and 'tourist'. Visitor is the term normally used in tourism statistics and that includes all types of traveller engaged in tourism.

Tourism is a activity of persons travelling to and staying in places outside their usual environment for not more than one consecutive year, for leisure, business and other purposes (5). They are domestic tourism residents of a country travelling in their own country, inbound tourism who are non-residents visiting a country other than their own, and outbound tourism who residents of a country visiting other countries. Three main categories of tourism such as internal tourism that is domestic and inbound tourism, national tourism which is domestic tourism and outbound tourism, and international tourism which is inbound and outbound tourism. Visitors are persons who travel to a country other than in which they usually reside but outside their usual environment for a period not exceeding twelve months and whose main purpose of visit is other than the exercise of activity remunerated from within the place visited. They are including same-day visitors who do not spend the night in a collective or private accommodation in the country visited, and tourists who are visitors that stay in the country for at least one night.

## B. Promotion

To increase the domestic and international tourism visitors, it should have an interesting and affective promotion. Communication is the very heart of marketing, and for years companies have fashioned communication strategies based on print, radio, and TV media to broadcast their message, but times are changing. As organizations stampede to the Internet, they need a systematic way to examine opportunities and relate them to available Internet tools. In particular, they need a cohesive marketing strategy for exploiting Internet technologies. Integrated Internet Marketing (I2M) is a structured approach to combining marketing strategy with Internet technology. I2M promotes creation of a strategy that synergistically exploits the range of Internet technologies (e.g., text, audio, video, and hyper-linking) to achieve marketing goals (6).

Many ways to promote tourist attractions in China include internet technology. Internet tech-

nology strongly supports tourism promotion activities. The purpose of promotional activities is to inform and communicate to the public about the existence of the product, benefits, advantages, attributes that are owned, price, where and how to obtain it. Tourists will get a lot of information about accommodation, transportation to tourist information.

## C. Virtual Reality

Virtual reality (VR) is a computer-generated technology that immerses users in a three-dimensional, interactive, and simulated environment, often through the use of specialized hardware and software. VR aims to create a sensory experience that can include visual, auditory, and sometimes haptic (touch-related) feedback, enabling users to feel as though they are physically present within the virtual world. This technology typically involves the use of VR headsets or goggles that display computer-generated images or videos in 360 degrees, allowing users to look around and interact with the virtual environment by tracking their head and body movements. VR has applications in various fields, including gaming, education, healthcare, architecture, military training, and more, offering a unique and immersive way to explore and interact with digital content. (7)

Virtual reality (VR) has become an increasingly popular tool for tourist promotion and marketing. Here are some ways in which VR is used in this context:

1. **Virtual Tours:** VR allows potential tourists to take virtual tours of destinations they are interested in. Through VR headsets or even VR-enabled apps on smartphones, users can explore popular tourist spots, landmarks, hotels, and even local experiences as if they were physically there. This immersive experience can help travelers get a better sense of what to expect and may influence their travel decisions.
2. **360-Degree Videos and Photos:** Tourism agencies and businesses often create 360-degree videos and photos that can be viewed in VR. These provide a more immersive and engaging way to showcase a destination's natural beauty, cultural attractions, and recreational activities.
3. **Virtual Reality Travel Agencies:** Some companies are specializing in VR travel experiences. They offer VR-enabled kiosks in

malls or travel agencies where potential tourists can “visit” multiple destinations virtually before making a decision. These experiences can also be offered online.

4. **Hotel and Accommodation Previews:** Hotels and resorts can create VR experiences that allow potential guests to explore their rooms, amenities, and facilities before booking. This can help travelers make more informed choices and reduce the likelihood of disappointment upon arrival.
5. **Cultural and Historical Immersion:** VR can be used to transport users to historical or cultural sites. Museums, for instance, can offer virtual tours that provide detailed information about artifacts and artworks. This can enhance the educational value of a visit and attract more visitors.
6. **Adventure and Extreme Sports Promotion:** For destinations known for adventure activities like skiing, scuba diving, or zip-lining, VR can offer a taste of the experience. Potential tourists can feel the rush of these activities through immersive VR simulations.
7. **Travel Planning Tools:** VR can also be integrated into travel planning tools and apps. Users can virtually explore different routes, accommodations, and activities to help them plan their trips more effectively.
8. **Trade Shows and Exhibitions:** In the travel industry, VR is used at trade shows and exhibitions to attract potential customers. Booths with VR experiences can offer a glimpse into what a particular destination or travel service has to offer.

By leveraging the immersive and interactive nature of VR, tourist promotion can become more engaging and persuasive. It can provide potential travelers with a more realistic and emotionally compelling preview of what they can expect from their trip, ultimately encouraging them to choose and plan their vacations more confidently. In addition it supports tour guide who accompanying tourist,

There was a previous study related to this research, such as a research conducted by (8), A., Weuster, L. and Nouri-Fritsche, N in their paper entitled “Making Heritage Accessible: Usage and Benefits of Web-based Applications in Cultural Tourism”. This paper examines the usage and benefits of web-based applications in cultur-

al tourism for making cultural heritage accessible. [6]

When information technology is used to support students with new teaching methods, it can enhance the meaning of content to be understood. Students can find information, use virtual reality applications as well as 3D models to convey what they have learned. The development of mobile devices is good in implemented on online learning (9). Mobile devices such as smartphones are used increasingly by people everywhere including schools and homes, which makes educational information can be delivered increasingly.

This study describes developing virtual reality applications, that contain about Great Walls, what they look like, where they live, and what they eat. Students are worth learning the unique animal in the world. Komodo island one of the New 7 Wonders of Nature, that designated as one of the wonders of the world by the New7Wonders organization (10). The other six wonders are Halong Bay in Vietnam, Amazon in Latin America, Jeju Island in South Korea, Table Mountain in South Africa, Iguazu Falls in Latin America, and Puerto Princesa Underground River in Philippines. China’s Guilin was declared nice tourist destination.

Social science learning in elementary school needs study tours to some important locations showing history, industry, geography, biology, and other topics including a unique animal Guilin. The activities could not be done since the beginning of the COVID-19 pandemic, there must be a learning model to substitute it. Ahied at al. (11) said that students’ scientific literacy can be improved well through distance learning with virtual reality-based multimedia in the COVID-19 pandemic..

## II. RESEARCH METHOD

Developing a VR method is a multidisciplinary process that often involves collaboration between programmers, designers, artists, and storytellers (12). It requires attention to detail, creativity, and a commitment to delivering an immersive and enjoyable VR experience for users, with several phases:

### 1. Assignment phase

In this phase, Define the purpose and goals of your VR experience. What do you want to achieve with VR? It identifies the target audience

and their preferences. In addition, outline the content and story you want to convey within the VR environment.. Set a budget and timeline for development..

## 2. Analysis phase

The output of the assignment phase now needs to be analyzed to get the foundation to build the whole application. It must be conducted especially carefully, because minor faults in this phase will steer the direction of progress off course. This phase begins with a detailed scenario. This phase should be done in consultation with the customer, and it involves stating all the tasks, actions, and story that drives the virtual world.

## 3. Creation phase

This phase consists of creating the assets of the virtual environment - the small bricks that build the whole virtual world. The requirements for some assets can be clear from earlier phases of the analyses or even from the scenario draft. During the creation phase, the customer should be involved in the process and participate in regular reviews and consultations. This is an extreme programming-like approach. All the assets should be tested as soon as possible and documentation should be made accordingly. There are many kinds of assets, scripts, texts, graphics, animations, sounds, and hardware. The form of the assets is highly influenced by the target group and level of immersion stated in the assignment phase.

## 4. Testing phase

This phase is done thoroughly during the whole project. Everything should be tested as soon as possible. Not only the scripts should be tested, but also all the assets together. The tests should focus not only on errors and unhandled exceptions in the code but also on the overall feel of the virtual environment.

## 5. Implementation phase

This phase primarily involves deploying the software application with the hardware and calibrating it for light and acoustic conditions. Calibration is crucial for stereoscopic projection and haptic interaction - the user must see the touch in the actual position. Final testing is of course

conducted after deployment.

## 6. Operation phase

The project is open after implementation. The developers should have the opportunity to monitor the implemented virtual environment and collect data for further debugging or modifications. A completed project brings with it a wealth of experience. It should also be stated whether the assets can be used for other projects in the future.

## III. RESULTS AND DISCUSSION

In making this Virtual Reality application, we introduced the Guilin tourist attraction in Yangshuo. Still, in developing this Virtual Reality application, other tourist objects can also be used. Virtual Reality allows users to see the entire tourist attraction through 360-degree photos. In this Virtual Reality, we presented in-depth information about the meaning of historical places in the Taman Ayun tourist attraction. Virtual Reality applications can make users interact and feel as if they were directly in that place. In addition, the development of this application was website-based, as an information medium that was easily accessible to everyone.

At this Creation phase, a collection of materials were carried out to be used. The material consists of 360-degree panoramic images from each predetermined location or spot. The tools to capture these images involve a tripod equipped with a 360-degree camera. Some of the results of taking these pictures can be seen in Figure 1.



Figure 3 Results of taking 360-degree Guilin photos

At this stage, it was continued by combining all the media content that had been prepared. At this stage, it added navigation (hotspots) that function so that users could go from one place to the next and display information about tourist attractions. Hotspot and information displays are shown in Figures 4.



Figure 4 Hotspot Display in Virtual Reality

### Testing phase

User testing of a Virtual Reality (VR) application is a critical step in its development process, aimed at ensuring that the application meets user expectations, functions correctly, and provides an immersive and enjoyable experience

Table 2. Virtual Reality Testing Results

Virtual Reality Testing	Results
The Virtual Reality Link is now accessible	Good
Hotspots in Virtual Reality can be seen clearly	Good
Internet connection over Lie river	Very Good
Internet connection in Guilin and Yangshuo	Very Good
Hotspots in Virtual Reality can work well so user can move from one point to another.	Good
Hotspots in Virtual Reality can already display a appropriate information.	Good
Virtual Reality can be zoomed in and out.	Good

## IV. CONCLUSION

From This section has provided a brief review about how the online teaching and learning under the COVID-19 pandemic are different from physical teaching and learning during the normal days.

Based on the interviews, the main findings of the study were: 1) Students did not receive lesson. Moreover, some of them are away from school. 2) Students don't have facilitate for learning, especially in rural area. 3) Learning Less through Distance Education. Students frequently studied fewer topics or less content through distance learning. 4) Digital Divide: Limited Access to Technologies. The absence of access to radios, television, computers, the internet, and data has left numerous students unable to participate in remote learning. 5) The pandemic worsened the already precarious living conditions experienced

by a substantial portion of her students. 6) Mental Health Consequences. Many students shared feelings of stress, anxiety, isolation, and depression, which they linked to the lack of contact with their school community. 7) Education need cost and some parent cannot provide it.

The findings also suggest that the government in Afrika should make more policies and regulations to prepare for the future.

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