

A Framework for Inclusive Digital Storytelling for Cultural Tourism in Thailand

A thesis submitted for the degree of Doctor of Philosophy



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Abstract

Thailand has been extremely successful in promoting itself as a cultural country, with tourism being the country's primary source of income. However, cultural tourism for Thai people is considered to be a niche market, and little attention has been paid to the topic, compared to mass tourism. Moreover, Thai visitors have little motivation to visit actual historical sites and read the story displayed as part of exhibitions. This research aims to create, detail and evaluate a framework for inclusive digital storytelling to increase diversity and motivation for cultural tourism in Thailand.

To broaden and increase the potential tourism market, this PhD research applies inclusive design principles as 'understanding and designing for diversity' by identifying potential Thai customers into five diverse groups (youth, older adults, disabled people, non-cultural tourists, and cultural tourists), and presents reports regarding the barriers and drivers for achieving this. To increase the motivation of Thai tourists, this PhD research adopts digital storytelling as 'the guideline for creating storytelling' to increase motivation among the five diverse groups, and illustrates how this was done in the second study. However, an issue arises if Thai people (particularly older adults and disabled people) cannot access or understand how to use this type of digital technology. These problems can in turn create opportunities for applying inclusive designs to digital technology in an effort to understand users' behavioural needs; this is presented in the third study. Finally, the fourth study evaluates the framework detailed from the previous three studies in order to answer the primary research question: "How could inclusive design and digital storytelling principles be applied to facilitate cultural tourism in Thailand?"

This PhD research can suggest and establish links between three key areas and devise and detail a new framework to increase diversity and motivation for cultural tourism for Thai visitors in Thailand which is original and interdisciplinary.

Declaration

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Publications from this PhD (2013-2017)

International journal articles

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2. Kasemsarn, K. and Nickpour, F. (2017). *Inclusive Digital Storytelling to Understand Audience's Behaviour*. *The International Journal of Visual Design* 11 (4): 35-51.

Thailand journal article

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Chapter 1: Introduction

1.1 Overview and research motivation

1.1.1 Research problems

- Lack of diversity
- Lack of motivation
- The situation of cultural tourism in Thailand

1.1.2 Research opportunities

- Increasing diversity in cultural tourism – inclusive design (ID)
- Increasing motivation in cultural tourism – digital storytelling (DST)
- Combining inclusive design and digital storytelling – a framework for inclusive digital storytelling for cultural tourism in Thailand

1.2 Research question

How could inclusive design and digital storytelling principles be applied to facilitate cultural tourism in Thailand?

1.3 Scope of this PhD research

Five groups of Thai people as main participants

Limited use in Thailand

Four groups of end users of this framework

Scope of digital storytelling in this PhD research

Scope of inclusive design in this PhD research

1.4 Aim and objectives

1.5 Thesis structure

1.1 Overview and research motivation

The term 'cultural tourism' refers to 'movements of persons for essentially cultural motivations, such as study tours, performing arts and cultural tours, travel to festivals and other cultural events and visits to sites and monuments' (UNWTO 2008). In a world troubled by conflicts based on misunderstandings, cultural tourism can help improve understanding among different groups and strengthen cultural harmony.

However, there are many issues in various areas of cultural tourism, including diversity, motivation, management and funding, marketing and branding, and personal experience.

1.1.1 Research problems

- **Lack of diversity**

Several studies state that one of the important problems is a lack of diversity among cultural tourists (Keogh, 1990; Silberberg, 1995; O'Leary, Morrison, and Alzua, 1998; Lord, 1999; McKercher, 2002; UNESCO, 2003; Martin et al., 2004; Chantachon, 2006; Nasing, Rodhetbhai and Keeratiburana, 2014). Consequently, the tourism industry has tended to focus on tourists who are already interested in cultural tourism (Silberberg, 1995; Lord, 1999; UNESCO, 2003).

This problem could lead to several issues; Firstly, if there are less cultural visitors, then the economy in the local area will not develop (Madden 2001; Stoddard et al., 2006; Kay, Wong and Polonsky, 2009; Chou, 2013; Webster and Ivanov, 2014; Mowforth and Munt, 2015). Subsequently, less tourists can lead to lower social engagement in people (Howard, 2001; Hill, 2004; Upright, 2004; Kay, Wong and Polonsky, 2009; Kim, Uysal and Sirgy, 2013; Lee, 2013). Furthermore, a lower level of visitors could result in a reduction of financial support from the government and industry (Brooks, 2003; Lewis and Brooks, 2005; Kim et al., 2007; Kay, Wong and Polonsky, 2009).

- **Lack of motivation**

At cultural sites, visitors have little motivation to read the story displayed behind the exhibitions and to visit real places (Rizvic et al., 2012). Moreover, the reason why tourists do not have the motivation to visit is that they do not understand, appreciate, entertain and enjoy stories in cultural tourism (Schouten, 1995; Timothy, 1997; Moscardo, 2000; Halewood and Hannam, 2001; NHB, 2005; Boukas, 2008).

- **The situation of cultural tourism in Thailand**

Cultural tourism is considered a significant feature of the Thai society and a major contributor to Thai economy. It could be applied to develop the local economy and to develop the identity of many cities and locations. However, currently, a lack of conservation and Thai visitors have been the main problems for cultural tourism in Thailand. Moreover, at cultural sites (i.e. temples, museums, historical places), there are a number of international tourists more than Thai tourists. This is because Thai people, especially young people consider cultural tourism as old fashioned, not interesting and not trendy. They want to spend their holiday in department stores rather than going to museums. Many studies recommend that the tourism industry and the government should attract new local visitors and motivate them to visit cultural sites (Chaisorn, 1993; Hiranyahat, 2001; Buarapa, 2006; Pakpinpet, 2008). Furthermore, to increase the number of Thai tourists and their motivation, a unique selling point for each place should be chosen, and consideration should be given to what the Thai tourists really need (Chantachon, 2006).

1.1.2 Research opportunities

These problems highlight a good opportunity to further facilitate cultural tourism by increasing visitors' diversity and motivation.

- **Increasing diversity in cultural tourism – inclusive design (ID)**

To broaden and increase the potential market, this PhD research draws upon inclusive design principles which is applied as 'understanding and designing for diversity'. Inclusive design aims to make products and services accessible to the widest range of users possible, irrespective of impairment, age, or capability. In addition, it has been used to investigate, understand, and meet the needs of the people (The British Standards Institute, 2005; Langdon, Persad and Clarkson, 2010).

- **Increasing motivation in cultural tourism – digital storytelling (DST)**

To increase tourists' motivation, this PhD research adopts digital storytelling, which is widely used to explain all types of stories, narratives, films, and novels in the design process of digital systems (Miller, 2012; Ryan, 2008; Schafer, 2008; Ohler, 2013; Cunsolo et al., 2013). In applying digital storytelling, a variety of techniques, such as plots, characters, conflict, humour, and competition are used to promote and

advertise; however, this is not hard-sell advertising (Miller, 2012; Alcantud et al., 2014; Wexler et al., 2014).

Additionally, many cultural and heritage sites around the world have been widely digitised as virtual museums or use applications with digital storytelling, making difficult stories or subjects seem more alive and connected to viewers (Tolva and Martin, 2004; Hein, 2014; Cunsolo et al., 2013).

At present, several local communities in Thailand have adopted cultural tourism to develop their own economies and increase income by attracting more visitors through storytelling (Meekaew and Srisontisuk, 2012). Thailand, in particular, has so many stories, folk tales, arts, traditions, and festivals that could be used as unique selling points to attract cultural tourists (George 2005; Meekaew and Srisontisuk 2012).

- **Combining inclusive design and digital storytelling – a framework for inclusive digital storytelling for cultural tourism in Thailand**

An initial inclusive digital storytelling (IDST) for cultural tourism (CT) framework was constructed through the literature review and analysis in Chapter 2 to identify relationships, problems, and opportunities between the following three main factors:

- 1.) Lack of diversity (ID and CT) – by researching barriers and drivers to engaging in cultural tourism among five different Thai groups.
- 2.) Lack of motivation (DST and CT) – by creating guidelines for digital storytelling to motivate five Thai groups to engage in cultural tourism.
- 3.) Lack of understanding of the user's behaviour while engaging with digital storytelling (ID and DST) – by understanding user behaviour in five Thai groups.

Subsequently, the initial IDST for CT framework was populated and further detailed through three empirical studies in Chapters 4, 5 and 6, respectively addressing items No 1, 2, and 3 above.

1.2 Research question

This chapter illustrates research problems and opportunities in cultural tourism by applying inclusive design to increase diversity, and using digital storytelling to increase motivation in cultural tourism for Thai visitors. This PhD research sets up the research question and success criteria as listed below:

- **Research question:** How could inclusive design and digital storytelling principles be applied to facilitate cultural tourism in Thailand?
- **Success criteria:** Creating an inclusive digital storytelling for cultural tourism (IDST for CT) framework supported by empirical data from four studies that provides the tourism industry and researchers with an understanding of the trends of cultural tourism and preparing them to face new challenges by applying digital storytelling and inclusive design.

1.3 Scope of this PhD research

- **Five groups of Thai people as main participants**

This PhD research focuses on five groups of people in Bangkok, Thailand as the main participants:

1.) Youth (fifteen to twenty-four years old): Many tourism industries ignore this group, since they assume that cultural tourism is only for mature people, not for the younger generation (NHB, 2005). However, The Scottish Executive also states that young tourists are a very important target group for cultural tourism, since this group will be the future adult cultural tourists. Therefore, the tourism industry, and the government, should know their demographic profiles, barriers, drivers and behaviours, in order to predict the future trends in cultural tourism (Executive, 2001).

2.) People with disabilities: Ozturk, Yayli and Yesiltas (2008) suggest that this group is significant and they are very loyal customers. They tend to come back to the places that are suitable for their accessibility. Therefore, opening up this tourism market can result in a higher income for the tourism industry (Arellano, 2003).

3.) Older adults (over sixty years old): This is because the average age of the world population is increasing, whilst people are also living longer, and are becoming healthier and wealthier (Magnus, 2009; D'Hudson and Saling, 2010). Moreover, this group has a lot of free time and money to spend on services and facilities.

4.) Established cultural tourists: The criteria to identify cultural tourists depended on how many cultural trips they make annually. If more than four trips are made per year, a tourist could be classified as cultural tourist (Mandala Research, LLC, 2013).

5.) People uninterested in cultural tourism (i.e. non-cultural tourists): Some researchers explain that non-cultural tourists are very difficult to specify, and have no criteria

by which to identify them, compared to people who are interested in cultural tourism (Bennett, 1994; Milner, et al., 2004; Kay, Wong and Polonsky, 2009). Therefore, this study includes non-cultural tourists as a potential group for cultural tourism.

- **Focus on Urban Thailand and Thai tourists (national tourism)**

Two studies (Chapter 4 – barriers and drivers, and Chapter 6 – inclusive digital storytelling to understand audiences' behaviour) were set up in the city of Bangkok in Thailand. One study (Chapter 5 – a set of digital storytelling guidelines) focused on Thai audiences only. Thus, the findings of this PhD research are mainly focused on Thai visitors and one urban area within Thailand and may not be representative or applicable to other regions.

- **Four groups of end users of this framework**

In Chapter 7 as the evaluation stage, the fourth study was set up using online questionnaires to collect quantitative data from the potential end-users of the IDST for CT framework. This PhD research targets students and four groups of experts from both academia and industry; these are experts in the following fields: 1.) Thai cultural tourism; 2.) Thai inclusive design; 3.) Thai digital storytelling, and 4.) international inclusive design, digital storytelling and cultural tourism.

- **Scope of digital storytelling in this PhD research**

The term 'digital storytelling' is too broad. It could be applied to a range of media (i.e. computers, mobile devices, electronic kiosks), formats (websites, applications, online games), areas (education, games, museums, entertainment, journalism), and systems (interactive and non-interactive systems). Thus, this thesis focuses on **creating the non-interactive digital storytelling guidelines to motivate five groups in Thailand to engage in cultural tourism**. The key issue for such guidelines is to create good stories and content that can be created by everyone, not just professionals, and used on many technology platforms in the future.

- **Scope of inclusive design principles in this PhD research**

This PhD research adopts an *Inclusive design strategy* (Waller et al., 2015) as 'understanding diversity' to include a wide range of potential tourists in cultural tourism and 'designing for diversity' to offer guidelines and results from three empirical studies and to present the final framework to increase diversity and motivation in cultural tourism.

1.4 Aim and objectives

This PhD research aims to create, develop and evaluate a framework for inclusive digital storytelling to increase diversity and motivation for cultural tourism in Thailand. The research objectives are as follows:

1. To provide a better understanding of the current situation and relevant applications for three main areas: 1) cultural tourism, 2) inclusive design and 3) digital storytelling (Chapter 2).
2. To create an initial inclusive digital storytelling for cultural tourism framework (Chapter 2).
3. To develop and detail an initial inclusive digital storytelling for cultural tourism framework from three empirical studies (Chapters 4,5,6).
4. To evaluate the usability and desirability of the inclusive digital storytelling for cultural tourism framework that embodies the findings from three empirical studies (Chapter 7).

1.5 PhD research structure

The eight chapters in this PhD research are summarised as follows:

Chapter 1: Introduction

This chapter will illustrate the overview and motivation for this PhD research, scope of research, aims and objectives and structure.

Chapter 2: Literature analysis and synthesis

This chapter will provide a better understanding of the current situation and applications of the three main fields of study in this PhD research; 1) cultural tourism, 2) inclusive design and 3) digital storytelling. An initial framework is outlined based on identifying, reviewing and analysing these three main areas.

Chapter 3: Research methodology

This chapter will present the planned research strategies, methodology and methods that will be used throughout this PhD research. The Design Research Methodology (DRM) is presented in four stages: research clarification to identify the problems and present the research question; descriptive study 1 (DS-1) to review and analyse three factors; prescriptive study (PS) to develop and detail the initial framework by using empirical data from three studies; and descriptive study 2 (DS-2) to evaluate the final framework.

Chapter 4: Barriers and drivers in cultural tourism for five groups in Thailand

This chapter will illustrate the relationship between inclusive design and cultural tourism to broaden and increase the potential market. 500 questionnaires are designed, conducted and analysed, aiming to identify barriers and drivers in cultural tourism in Thailand, for five diverse groups of Thai people.

Chapter 5: Constructing digital storytelling: guidelines to increase motivation in cultural tourism for five groups in Thailand

This chapter will present the link between digital storytelling and cultural tourism to increase the motivation of potential visitors. 17 expert interviews are designed, conducted and analysed, aiming to create and propose digital storytelling guidelines to motivate five diverse groups of Thai people in Thailand to engage in cultural tourism.

Chapter 6: Inclusive digital storytelling to understand audiences' behaviour

This chapter will explore the link between inclusive design and digital storytelling. 50 observation sessions are designed, conducted and analysed, aiming to understand the behaviour of five diverse groups of Thai audience, in terms of reaching (accessibility and understanding) and engaging with (usefulness, usability, desire) digital storytelling on digital mobile devices.

Chapter 7: Evaluation of the inclusive digital storytelling for cultural tourism framework (IDST for CT)

In the previous chapters, three studies were carried out to detail the framework using three research methods (500 questionnaires, 17 interviews and 50 observations).

This chapter will evaluate the IDST for CT framework based on five factors: 'reaction', 'learning', 'behaviour', 'results', and 'desirability'.

Chapter 8: Conclusion and further work

This chapter will discuss and summarise the findings of this PhD research by presenting research objectives, contribution to knowledge, limitations and further work.

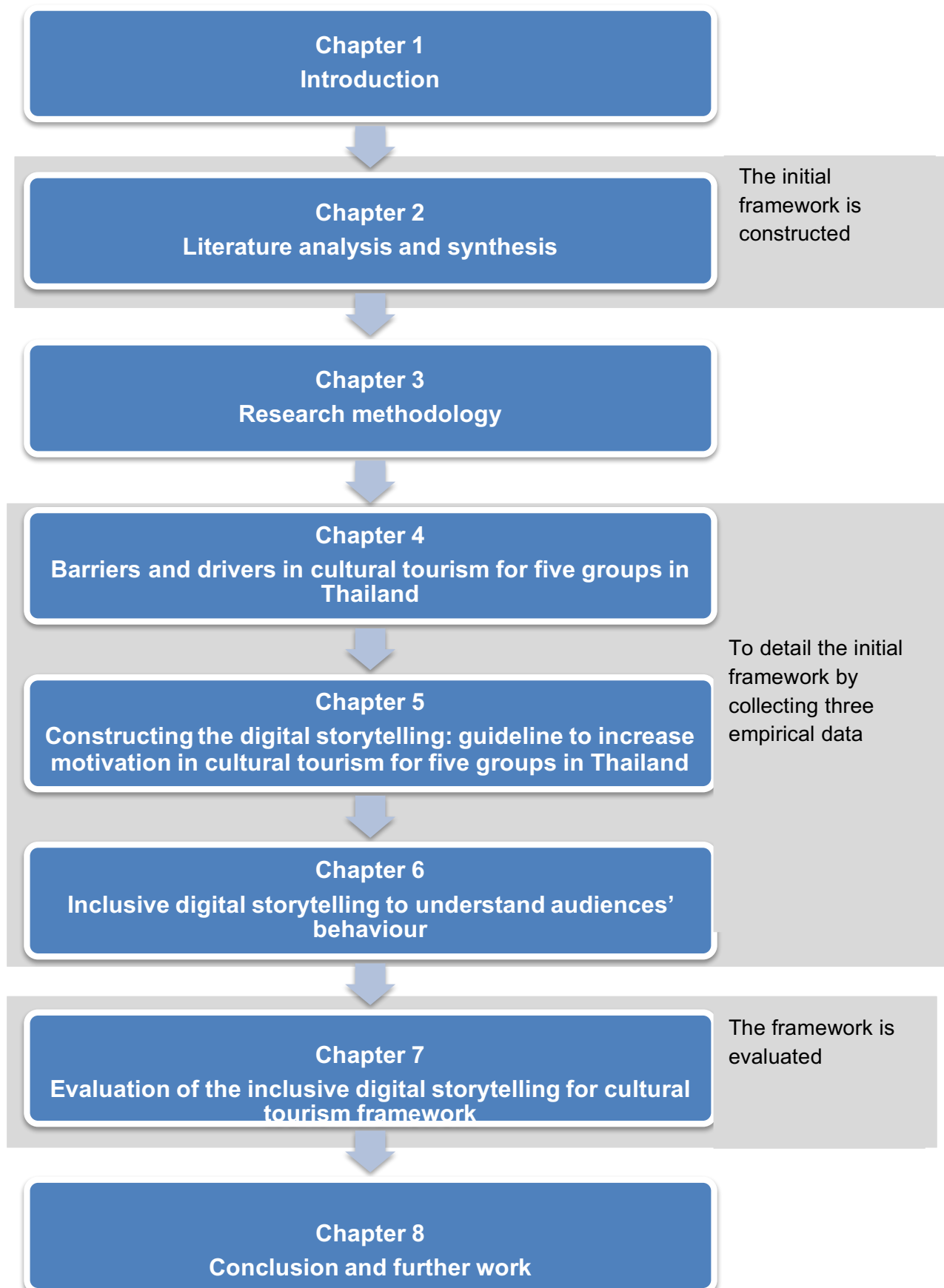


Figure 1.1: PhD research structure

Chapter 2: Literature analysis and synthesis

2.1 Introduction

2.2 Cultural Tourism

- 2.2.1 Types of tourism
- 2.2.2 The landscape of cultural tourism
- 2.2.3 The importance, relevance and applications of cultural tourism
- 2.2.4 Cultural tourism in Thailand

2.3 Challenges and opportunities in Cultural Tourism

- 2.3.1 Cultural Tourism - issues and potentials
- 2.3.2 Increasing diversity in Cultural Tourism
- 2.3.3 Why 'inclusive design' for cultural tourism?
- 2.3.4 Opportunities for inclusive design within cultural tourism
- 2.3.5 Increasing motivation in Cultural Tourism
- 2.3.6 Why digital storytelling for cultural tourism?
- 2.3.7 Opportunities for digital storytelling within cultural tourism

2.4 Inclusive design - increasing diversity:

- 2.4.1 Definition of inclusive design
- 2.4.2 History and background of inclusive design
- 2.4.3 Inclusive Design, Universal Design, and Design for All
- 2.4.4 Applications of inclusive design
- 2.4.5 Inclusive Tourism
- 2.4.6 Principles of inclusive design

2.5 Digital storytelling - increasing motivation:

- 2.5.1 Definition of digital storytelling
- 2.5.2 History and background of digital storytelling
- 2.5.3 Applications of digital storytelling
- 2.5.4 Digital storytelling in cultural tourism from 2000-2010 and 2010-2016
- 2.5.5 Trends in digital storytelling for cultural tourism from 2000-2010 and 2010-2016
- 2.5.8 Digital storytelling guidelines

2.6 Inclusive Digital Storytelling for Cultural Tourism – a first combined approach

- 2.6.1 Why digital storytelling for inclusive design
- 2.6.2 Opportunities for digital storytelling and inclusive design:
- 2.6.3 Challenges of inclusive digital storytelling in this study

2.7 Synthesis of the initial framework

2.8 Summary

2.1 Introduction

This chapter integrates the principles of cultural tourism, inclusive design, and digital storytelling. It aims to explore, illustrate, and suggest links between these factors in order to position the research question: “How could inclusive design and digital storytelling principles be applied to facilitate cultural tourism in Thailand?” The literature review, analysis, and synthesis will provide information to explore and support this question.

Initially, this chapter will review the literature in three key areas: cultural tourism, inclusive design, and digital storytelling. Next, it will present the links and possibilities of using digital storytelling applied with inclusive design to serve cultural tourism, and discuss existing situations in terms of problems, gaps, and opportunities.

The first link between inclusive design and cultural tourism advocates the increase of diversity by researching barriers and drivers in cultural tourism among different potential tourist groups. It demonstrates how the industry and government organisations may be better able to recognise the significance of neglected groups and increase accessibility and inclusivity for these people. Such new perspective requires inclusive design, conceived as understanding and designing for diversity. In addition, tourists have a wide variety of needs, including the barriers and drivers for engaging in cultural tourism. In order to design effective promotion, marketing and awareness strategies, marketers and other stakeholders involved must be aware of these barriers and aim to address them.

The second link between digital storytelling and cultural tourism advocates increasing motivation. In applying digital storytelling, a variety of techniques that are not hard-sell advertising, such as plots, characters, conflict, humour, and competition, are used to promote and advertise.

The third link between inclusive design and digital storytelling advocates adoption of inclusive design principles in this technological field in order to understand users’ needs, which can thereby inform the industry, designers, and researchers, and help to create a system that supports all users.

The chapter aims to achieve the following outcomes: 1) explore and offer a review of three key areas; 2) illustrate the links between the three areas in terms of problems,

gaps, and opportunities; 3) present the initial framework for inclusive digital storytelling to increase diversity and motivation for cultural tourism in Thailand.

2.2 Cultural tourism

2.2.1 Types of tourism

In general, tourism includes both mass and alternative tourism. Mass tourism is identified as large numbers of people seeking their holidays in popular resort attractions. In contrast, alternative tourism is defined as 'special interest tourism' or 'responsible tourism' and involves alternative forms of tourism, with emphasis on understanding residents' way of living and the local natural environment (Smith and Eadington, 1992).

Alternative tourism can be defined as "forms of tourism that are made to be friendly to the environment and to respect social and cultural values of the communities, and which allow both hosts and guests to enjoy positive and worthwhile interaction and shared experiences" (Wearing and Neil, 2000, p. 38). Cater et al. (1994) describe alternative tourism as comprising small scale, locally owned activities. They explain that this contrasts with mass tourism, which is often characterised by large-scale multinational concerns and repatriates the profits to offshore countries (Cater et al., 1994). The characteristics of alternative tourism include its friendly environmental and social impacts, in addition to its commitment to developing the local economy and agriculture. Finally, alternative tourism supports the involvement of local residents and sees them as central to the tourism development process (Smith and Eadington, 1992; Wearing and Neil, 2000).

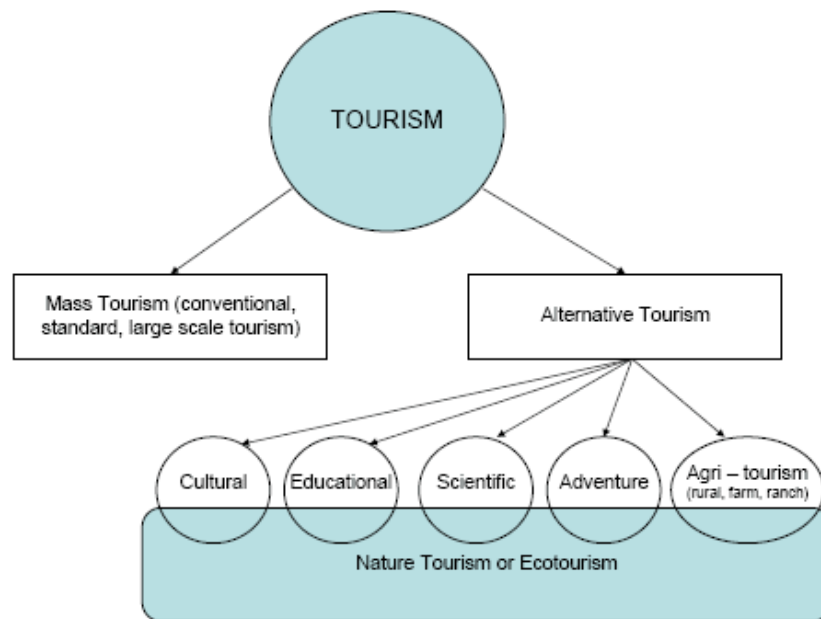


Figure 2.1 Types of tourism (Mieczkowski, 1995, p. 459)

2.2.2 The landscape of cultural tourism

The definition of cultural tourism

The definitions that were reviewed were collected from:

- **Dictionary:** 'Dictionary of Travel, Tourism and Hospitality Terms (Medilk, 2002)
- **Journal papers (more than 100 citations):** (Craik, 1995; Silberberg, 1995; Stebbins, 1996; Lord, 1999; Prentice, 2001; Smith, 2009)
- **Organisations and Institutes:** ICOMOS: International Scientific Committee on Cultural Tourism (ICOMOS, 1976); (International Scientific Committee on Cultural Tourism (ICOMOS, 1997): ATLAS Cultural Tourism Research Project (ATLAS, 2009); The United Nations World Travel Organisation (UNWTO, 2008)

Table 2.1 Definitions of cultural tourism from several sources

1.	Dictionary	<p><i>“Cultural tourism: General term referring to leisure travel motivated by one or more aspects of the culture of a particular area.”</i></p> <p>(‘Dictionary of Travel, Tourism and Hospitality Terms’, Medilk, 2002)</p>	<ul style="list-style-type: none"> - Travel - Motivated - The culture
2.	Journal papers	<p><i>“Visits by persons from outside the host community motivated wholly or in part by interest in the historical, artistic, scientific or lifestyle/heritage offerings of a community, region, group or institution” (Silberberg, 1995, p.361)</i></p>	<ul style="list-style-type: none"> - Visits by persons - Outside the host - Community - Motivated -The history
		<p><i>“Cultural tourism is a genre of special interest tourism based on the search for and participation in new and deep cultural experiences, whether aesthetic, intellectual, emotional, or psychological.” (Stebbins, 1996, p. 338)</i></p>	<ul style="list-style-type: none"> -Special interest tourism -Cultural experiences
		<p><i>“As tourism constructed, proffered and consumed explicitly or implicitly as cultural appreciation, either as experiences or schematic knowledge gaining” (Prentice, 2001, p. 8)</i></p>	<ul style="list-style-type: none"> - Cultural appreciation -Experiences or schematic knowledge gaining
		<p><i>“...tourism is a culture industry in the sense that it markets cultural products to tourists as cultural experiences” (Craik, 1995, p.87)</i></p>	<ul style="list-style-type: none"> - A culture industry - Cultural experiences”
3.	Organizations and Institutes	<p><i>“Cultural tourism is that form of tourism whose object is, among other aims, the discovery of monuments and sites. It exerts on these last a very positive effect insofar as it contributes - to satisfy its own ends - to their maintenance and protection. This form of tourism justifies in fact the efforts which said maintenance and protection demand of the human community because of the socio-cultural and economic benefits which they bestow on all the populations concerned.” (ICOMOS, 1976)</i></p>	<ul style="list-style-type: none"> -The discovery of monuments and sites -Maintenance and protection demand of the human community
		<p><i>“Cultural tourism can be defined as that activity which</i></p>	<ul style="list-style-type: none"> -Activity which enables

<p><i>enables people to experience the different ways of life of other people, thereby gaining at first hand <u>an understanding of their customs, traditions, the physical environment, the intellectual ideas and those places of architectural, historic, archaeological or other cultural significance which remain from earlier times. Cultural tourism differs from recreational tourism in that it seeks to gain an understanding or <u>appreciation of the nature of the place being visited.</u></u></i> (ICOMOS Charter for Cultural Tourism, 1997).</p>	<p>people to experience the different ways of life -An understanding of their custom -Appreciation of the nature of the place being visited.”</p>
<p>Conceptual Definition</p> <ul style="list-style-type: none"> • <i>“<u>The movement of persons to cultural attractions away from their normal place of residence, with the intention to gather <u>new information and experiences to satisfy their cultural needs.</u></u></i> <p>Technical Definition</p> <ul style="list-style-type: none"> • <i>“<u>All movements of persons to specific cultural attractions, such as heritage sites, artistic and cultural manifestations, arts and drama outside their normal place of residence.</u>” (ATLAS, 2009)</i> 	<p>-The movement of persons -Cultural attractions -New information and experiences to satisfy their cultural needs -All movements of persons - Cultural attractions</p>
<p>(Broad definition)</p> <ul style="list-style-type: none"> • <i>“<u>All movements of persons might be included in the definition because they satisfy the human need for diversity, tending to <u>raise the cultural level of the individual and giving rise to new knowledge, experience and encounters.</u></u></i> <p>(Narrow definition)</p> <ul style="list-style-type: none"> • <i>“<u>Movements of persons for essentially cultural motivations such as study tours, performing arts and cultural tours, travel to festivals and other cultural events, visits to sites and monuments.</u>” (UNWTO: The United Nations World Travel Organization”, 2008)</i> 	<p>-All movements of persons -To raise the cultural level -New knowledge, experience and encounters. - Movements of persons -Cultural motivations</p>

The similarities between all presented cultural tourism definitions could be grouped. A few commonalities are listed on the table 2.2.

Table 2.2 Keywords in cultural tourism with similarities from many sources

1. Movement of persons	<ul style="list-style-type: none"> • Movements of persons (Narrow definition) (UNWTO, 2008) • All movements of persons (Broad definition) (UNWTO, 2008) • The movement of persons (ATLAS, 2009) • Visits by persons (Silberberg, 1995, p.361)
2. Motivation	<ul style="list-style-type: none"> • Motivated ('Dictionary of Travel, Tourism and Hospitality Terms', Medilk, 2002) • Motivated (Silberberg, 1995, p.361) • Cultural motivation (UNWTO, 2008)
3. Culture	<ul style="list-style-type: none"> • The culture ('Dictionary of Travel, Tourism and Hospitality Terms', Medilk, 2002) • Cultural appreciation (Prentice, 2001, p. 8) • To raise the cultural level (UNWTO, 2008)
4. Experience	<ul style="list-style-type: none"> • Cultural experience (Stebbins, 1996, p. 338) • Experiences or schematic knowledge gaining (Prentice, 2001, p. 8) • Cultural experience (Craik, 1995, p.87) • Activity which enables people to experience the different ways of life (ICOMOS Charter for Cultural Tourism, 1997). • -New knowledge, experience and encounters (UNWTO, 2008) • -New information and experiences to satisfy their cultural needs (ATLAS, 2009)
5. Understanding	<ul style="list-style-type: none"> • An understanding of their custom (ICOMOS Charter for Cultural Tourism, 1997)
6. Cultural destinations	<ul style="list-style-type: none"> • Cultural attractions (ATLAS, 2009) • The discovery of monuments and sites (ICOMOS, 1976) • The historical (Silberberg, 1995, p.361)

After reviewing a wide range of definitions from many sources and grouping keywords with similarities, this study has selected the following definition that covers all keywords (culture, experience, persons or people, motivation, history, movement):

“Movements of persons for essentially cultural motivations such as study tours, performing arts and cultural tours, travel to festivals and other cultural events, visits to sites and monuments” (UNWTO, 2008).

2.2.3 The importance, relevance and applications of cultural tourism

A number of studies illustrate that cultural tourism is important for various reasons. To clarify this statement, several general and current trends influencing the market for cultural tourism and its future are presented below. This section aims to identify the positive effects and importance of cultural tourism that may be applied to inclusive design and digital storytelling areas with similar contexts. Table 2.3 illustrates the importance of cultural tourism both generally and currently. In addition, the key insights demonstrated below present several gaps, problems, and opportunities in cultural tourism.

Table 2.3 The positive effects and importance of cultural tourism

Economic development or regeneration (Bianchini 1990; Herrero et al., 2006; Myerscough, 1988; Richards, 2007).	Changing trend from escapism to enrichment (Lord, 1999; OECD, 2009)
Economic and social impact to increase local production and employment (UNESCO, 2003)	Intensification of terrorist attacks: decreased tourisms in mass events (Smeral, 2003) Higher levels of education (Berki, 2004)
Establishment and reinforcement of an identity (UNESCO, 2003)	Increasing in ageing population (Lord, 1999; Silberberg, 1995; UNESCO, 2003)
Preservation of the cultural and historical heritage (UNESCO, 2003)	Increasing economic role of women (Lord, 1999; UNESCO, 2003)
Increased quality of tourism (Holcomb, 1999; Kapodini-Dimitradi, 1999)	Increasing numbers of gen-x tourists (Lord, 1999; UNESCO, 2003) Increasing use of the internet and technology (Buhalis and Licata, 2002; Buhalis and Zoge, 2007; Hall and Williams, 2008; Hjalager, 2002; Lord, 1999; Longhi, 2009; UNESCO, 2003)

The 'Baltic Cultural Tourism Policy' study (UNESCO, 2003) states that currently, the world is troubled by conflicts based on misunderstandings, but cultural tourism can create more in-depth understanding among people and promote cultural harmony. This implies that cultural tourism does not only serve to promote tourism, preserve cultural and historical heritage, and reinforce a city's identity, but also to promote communication and integration worldwide. Hence, cultural tourism should be combined with digital storytelling and adapted with inclusive design to extend itself to as many target groups as possible.

However, the results of low-tourist visits in cultural destinations could lead to several issues. Firstly, cultural places are significant for the local economy. If there are less cultural tourists, then the economy in the local area will not develop (Madden, 2001; Stoddard, et al., 2006; Kay, Wong and Polonsky, 2009; Chou, 2013; Webster and Ivanov, 2014; Mowforth and Munt, 2015). Secondly, heritage and cultural attractions can enhance community engagement in each area. Lower visitor numbers can lead to less social engagement of people (Howard, 2001; Hill, 2004; Upright, 2004; Kay, Wong and Polonsky, 2009; Kim, Uysal and Sirgy, 2013; Lee, 2013). Thirdly, most cultural places are funded by the government to provide value for the widest range of visitors. Low visitor numbers could result in a reduction of the budget or financial support from the public (Brooks, 2003; Lewis and Brooks, 2005; Kim, *et al.*, 2007; Kay, Wong and Polonsky, 2009).

In summary, cultural tourism can bring economic development or regeneration (Bianchini, 1990; Herrero et al., 2005; Myerscough, 1988; Richards, 2007), generate economic and social impact (UNESCO, 2003), establish and reinforce an identity (UNESCO, 2003), preserve cultural and historical heritage (UNESCO, 2003), and increase the quality of tourism (Holcomb, 1999; Kapodini-Dimitradi, 1999). Cultural tourism is more in line with current trends, given the intensification of terrorist attacks (Smeral, 2003), the increase in the education level (Berki, 2004) and ageing population (Lord, 1999; Silberberg, 1995), the growing economic role of women and gen-X tourists (Lord, 1999), and the increasing use of the internet and technology (Buhalis and Licata, 2002; Buhalis and Zoge, 2007; Hall and Williams, 2008; Hjalager, 2002; Longhi, 2009; Lord, 1999). These factors provide new opportunities

for the tourism industry and for research that applies digital storytelling and inclusive design.

Applications of cultural tourism

Following the globalisation trend, the applications of both conventional tourism and cultural tourism will shape and influence various areas (UNESCO, 2003). Table 2.4 summarises the applications of cultural tourism from various studies in six areas, including innovation and technology, economics, politics, environment, demographics, and society.

Table 2.4 Applications of cultural tourism

1. Innovation and technology	<ul style="list-style-type: none"> - Three-dimensional (3D) virtual tours (Cho and Fesenmaier, 2001) - 3D interactive websites (Fiore, Kim and Lee, 2005) - Digital maps (Raggam and Almer, 2005) - Virtual characters in real time for tourists (Abad, Sorzabal and Linaza, 2005) - Telepresence (Steuer, 1992) - Ambient Intelligence (AI; Manes, 2003) - Information and communication technologies (Buhalis, 2003) - Transportation (Stern, 2006)
2. Economics	<ul style="list-style-type: none"> - Globalisation (Third World Network, 2001) - Rising income (Crouch, 1994) - Deregulation/liberalisation (Dwyer et al., 2008) - Rising trade and investment (Dwyer et al., 2008) - Diffusion of information technology (Dwyer et al., 2008)
3. Politics	<ul style="list-style-type: none"> - International power (NIC, 2004) - Security (NIC, 2004) - Peace, safety, security, and political stability (Cavlek, 2002; Dwyer et al., 2008) - Regional and ethnic conflicts (Dwyer et al., 2008; NIC, 2004). - Networks (Chamber of Regions, 2009) - To stimulate investment by private individuals (Chamber of Regions, 2009) - Support ICTs (Chamber of Regions, 2009)
4. Environment	<ul style="list-style-type: none"> - Climate change (Dwyer et al., 2008) - Natural resource depletion (Dwyer et al., 2008) - Fossil fuel-based energy sources (Dwyer et al., 2008) - Loss of biodiversity (UNEP, 2003)
5. Demographics	<ul style="list-style-type: none"> - Population and ageing (Cetron, 2001) - Urbanisation (United Nations, 2005; UNWTO, 2002) - Changing social structures (Gerkovich, 2005) - Health (Cetron, 2001; Pollock and Williams, 2000) - Changing work patterns (Gerkovich, 2005) - Gender (Iida, 2005)
6. Society	<ul style="list-style-type: none"> - Money rich – time poor (Willmott and Graham, 2001)

- Individualism (Alford, 2005; Education Commission of the United States, 1999)
- Seeking a variety of experiences (Elliot and Johns, 1993)
- Learning (UNWTO, 2002).
- Seeking value for money (Nordin, 2005)
- Safety conscious (Lepp and Gibson, 2003)

Although the possible applications of cultural tourism are linked to many areas as listed above, this study focuses only on innovation and technology related to digital storytelling, and the demographic aspect related to inclusive design.

- **Innovation and technology**

Innovation, the internet, multimedia, and technology have been applied by many tourism companies and are focused on the tourists. The results provide insights for tourism managers, and the tourism business has changed to include customer-oriented technologies (Aldebert, Dang and Longhi, 2011). This technology has changed the structure of the tourism industry and developed a range of opportunities and threats. Technology not only helps tourists to purchase tourism services and products, but also assists globalisation by providing applications for companies to develop, manage, and distribute their tourism services and products worldwide (Aldebert, Dang and Longhi, 2011; Buhalis and Law, 2008). Additionally, the latest innovations offer challenges and opportunities for digital storytelling to apply new technology, multimedia, websites, and interactive media to promote and present cultural tourism.

- **Demographics**

Cetron (2001) and Smeral (2003) articulate the trend 'population and ageing' (i.e. that senior tourists are a new segment of tourists) will have a significant impact on the worldwide tourism market, as these older adults have more time and money to spend on their travel. Moreover, after 2010 the baby boomers will reach retirement age, going from baby boomers to senior boomers (Cetron, 2001; Smeral, 2003). In order to compete in the predicted future 350 billion-sized senior market, tourism will have to offer more four-day journeys. Leisure tourism and/or short time tourism has a positive future and chances for growth (Opaschowski, 2001). This is surely an opportunity for inclusive design. From a textbook '*Design Meets Disability*', Pullin (2009) predicts the future of inclusive design in 'age meets business'. This trend

means that there will be a number of opportunities for older customers of products and services that meet their needs.

Moreover, there are many aspects including Urbanisation (include key references), Changing Social Structures (Gerkovich, 2005), Health (Pollock and Williams, 2000; Cetron, 2001), Changing work patterns (Gerkovich, 2005) and Gender (Lida, 2005) in terms of demographics. These are further detailed in Appendix C1.

2.2.4 Cultural tourism in Thailand

Cultural tourism is considered a significant feature of the Thai economy and society. It could be applied to develop the local economy and increase the identity of many cities. At present, several local communities in Thailand have adopted cultural tourism to develop their own economies and increase income by attracting more visitors through storytelling (Meekaew and Srisontisuk, 2012). Thailand, in particular, has so many stories, folk tales, arts, traditions, and festivals that could be used as unique selling points to attract cultural tourists (George, 2005; Meekaew and Srisontisuk, 2012). Moreover, Thailand is very successful in promoting itself as a cultural country, as illustrated by the number of tourists who visit the country (George, 2005; Meekaew and Srisontisuk, 2012; Nasing, Rodhetbhai, and Keeratiburana, 2014).

However, currently, the lack of conservation and visitors has been the main problem in cultural tourism in Thailand. Furthermore, the architecture, buildings, and environment at historical sites have been abandoned by local communities (Laomee, 2009; Nasing, Rodhetbhai, and Keeratiburana, 2014). Moreover, at cultural sites (i.e. temples, museums, historical places), there are a number of international tourists more than Thai tourists. This is because Thai people, especially young people consider cultural tourism as old fashioned, not interesting and not trendy. Many studies recommend that the tourism industry and the government should attract new visitors and motivate them to visit cultural sites. Moreover, they should increase the accessibility and improve the environment and conveniences for tourists (Chaisorn, 1993; Hiranyahat, 2001; Buarapa, 2006; Pakpinpet, 2008). Furthermore, to increase the number of tourists and their motivations, a unique selling point for each place should be chosen, and consideration should be given to what the tourists really need

(Chantachon, 2006). Nasing, Rodhetbhai, and Keeratiburana (2014) point out that the strength of cultural sites in Thailand is their attractiveness, but the weaknesses are information services and public conveniences.

Although cultural tourism is the main source of income for Thailand, the study of cultural tourism from the tourist's perspective has not been given much attention. Oftentimes, research studies in this area are not directly related to cultural tourism. Thus, this study focuses primarily on cultural tourism and investigates the barriers and drivers in cultural tourism for five diverse groups.

2.3 Challenges and opportunities in Cultural Tourism

2.3.1 Cultural Tourism - issues and potentials

There are a number of issues in various areas of cultural tourism, including diversity, motivation, management and funding, marketing and branding, and personal experience, as shown in Table 2.5. Several studies state that one of the important problems is a lack of diversity among cultural tourists. This means that there are just a few groups of tourists who are already interested in cultural tourism (Keogh, 1990; Silberberg, 1995; Aluza, O'Leary and Morrison, 1998; Lord, 1999; McKercher, 2002; UNESCO, 2003; Martin et al., 2004; Chantachon, 2006; Nasing, Rodhetbhai and Keeratiburana, 2014). Moreover, this issue can lead to further problems. If there are few customers, the government is less likely to fund and invest money to redevelop and maintain cultural sites, and tourism industries will not spend money to advertise or set up programmes to attract more tourists. If there is no advertising, marketing, and support from the government and industries, tourists will have little motivation to visit historical sites. However, some areas (i.e. management or branding) are not the main focus in design research area. This thesis focuses mainly on two problems in cultural tourism: lack of diversity and lack of motivation.

Table 2.5 Main problems in cultural tourism

Diversity	<ul style="list-style-type: none"> • Cultural tourism is currently a niche market, receiving little attention compared to mass tourism (UNESCO, 2003). • The tourism industry tends to focus upon the 15 percent of tourists who are already interested in cultural tourism (Silberberg, 1995; Lord, 1999). • The U.S. tourism industry overlooks people with disabilities (Ray and Ryder, 2003; Yau, McKercher and Packer, 2004). • New cultural tourists should be attracted. The tourism industry should seek to engage more segments of society (McKercher, 2002). • The tourism industry should more often aim to use a community-involvement approach (Keogh, 1990). • Cultural tourism lacks diversity. There are only a few groups of cultural tourists. Moreover, tourism industries have not identified other groups of potential cultural tourists (O'Leary, Morrison, and Alzua, 1998; Martin et al., 2004). • There is a lack of community participation in the cultural tourism process (Swain, 1995; Xia, 1999). • Many teenagers have no understanding and appreciation of cultural places (NHB, 2005). • There is only one group of cultural tourists: those who are educated, mature, and with a high income (Herbert et al., 1989). • There are limited numbers of tourists, so what tourists really need should be considered (Chantachon, 2006; Nasing, Rodhetbhai and Keeratiburana, 2014).
Motivation	<ul style="list-style-type: none"> • Many visitors have no motivation to read the information displayed in exhibitions or to visit cultural places (Rizvic et al., 2012). • If tourists' interests are taken into consideration, this may lead them to visit, understand, and appreciate cultural sites and museums (Boukas, 2008; NHB, 2005). • It is very difficult to identify and describe the motivations and needs of tourists with disabilities (Yau, McKercher and Packer, 2004). • It is unclear how best to attract and motivate people with disabilities to visit cultural places (Allan, 2013). • Most tourists lack the motivation to visit cultural places. They need enjoyable and entertaining experiences (Schouten, 1995; Moscardo, 2000; Halewood and Hannam, 2001). • Tourists have no motivation to visit cultural places because they do not understand cultural tourism (Timothy, 1997).
Management and funding	<ul style="list-style-type: none"> • There is a lack of renovation in heritage sites (Das and Acharjee, 2013). • Scarce funds in heritage sites are significant problem, leading to a lack of visitor management and inadequate protection of the site (Das and Acharjee, 2013). • There is no cooperation between political entities and cultural sites (Boyd and Timothy, 2001; Timothy, 1997). • Tourists are not satisfied with the management of cultural places (Reisinger and Turner, 2003; Chen and Chen, 2010; Yuksel, Yuksel and Yasin, 2010). • Infrastructural facilities in cultural places are often inadequate (Das and Acharjee, 2013). • The architecture, buildings, and local environment at historic sites have been abandoned by local communities (Laomee, 2009; Nasing, Rodhetbhai and Keeratiburana 2014). • The government should increase accessibility and improve the cultural environment and conveniences offered to tourists (Chaisorn, 1993; Hiranyahat, 2001; Buarapa, 2006; Pakpinpet, 2008).

Marketing and branding	<ul style="list-style-type: none"> • Tourists lack loyalty and the willingness to visit cultural places (Oppermann, 2000). • Most tourists lack brand loyalty in cultural tourism (Uncles, Dowling, and Hammond, 2003). • There is a general lack of advertising and promotion of cultural products and tourism (Das and Acharjee, 2013).
Personal experience	<ul style="list-style-type: none"> • Tourists do not have involvement (i.e. understanding, personal experience, etc.) in cultural sites (Prebensen, Woo, Chen and Uysal, 2012). • Many tourists do not have personal experiences with culture sites (Klaus and Mak-lan, 2012). • Tourists' attitudes towards cultural tourism are old-fashioned (Lee, Graefe and Burns, 2007).

- **Lack of diversity**

Cultural tourism is currently a niche market, with little attention paid to it compared to mass tourism (UNESCO 2003). Additionally, the tourism industry tends to focus upon the tourists who are already interested in cultural tourism (Keogh, 1990; Silberberg 1995; Aluza, O'Leary, and Morrison, 1998; Lord 1999; McKercher, 2002; UNESCO 2003; Martin et. al., 2004; Chantachon 2006; Nasing, Rodhetbhai, and Keeratiburana, 2014). There is therefore an opportunity to increase the diversity of audience for cultural tourism by appealing to other groups of potential customers.

However, the results of lower visitor numbers in cultural destinations could lead to several issues. First, cultural places are significant for the local economy. If there are less cultural tourists, then the economy in the local area will not develop (Madden, 2001; Stoddard et al., 2006; Kay, Wong, and Polonsky, 2009; Chou, 2013; Webster and Ivanov, 2014; Mowforth and Munt, 2015). Second, heritage and cultural attractions can enhance community engagement in each area. Lower visitor numbers can lead to less social engagement of people (Howard, 2001; Hill, 2004; Upright, 2004; Kay, Wong, and Polonsky, 2009; Kim, Uysal, and Sirgy, 2013; Lee, 2013). Third, most cultural places are funded by the government to provide value for the widest range of visitors. Low visitor numbers could result in a reduction of the budget or financial support from the public (Brooks, 2003; Lewis and Brooks, 2005; Kim, Cheng, and O'Leary, 2007; Kay, Wong, and Polonsky, 2009).

Competition between tourism organisations, moreover, means that effective marketing strategies are required to attract visitors, with important strategies like segmentation, targeting, and positioning to understand what customers really want

and to support them. In addition, several tourist attractions have begun to design products and services for specific groups (Fodness, 1994; Kale, McIntyre, and Weir, 1987; Reisinger and Mavondo, 2002; Hays, Page, and Buhalis, 2013; Kavoura and Katsoni, 2013).

To broaden and increase the potential market, this study draws upon “inclusive design” principles. Inclusive design aims to make products, services and environments accessible to the widest range of users possible, irrespective of impairment, age, or capability. In addition, it has been used to investigate, understand, and meet the needs of diverse people (British Standards Institute, 2005; Langdon, Persad, and Clarkson, 2008).

- **Lack of motivation**

However, at cultural sites, visitors have no motivation to read the story displayed behind the exhibitions and to visit to the real places (Rizvic et al., 2012). Moreover, the reason why tourists do not have motivation to visit is that they do not understand, appreciate, entertain and enjoy stories in cultural tourism (Schouten, 1995; Timothy, 1997; Moscardo, 2000; Halewood and Hannam, 2001; NHB, 2005; Boukas, 2008).

These problems highlight a good opportunity to further facilitate cultural tourism to increase visitors’ motivation. To increase tourists’ motivation, this study adopts digital storytelling, which is widely used to explain all types of stories, narratives, films, and novels in the design process of digital systems (Ryan, 2008; Schafer, 2008; Miller, 2012; Ohler, 2013; Cunsolo et al., 2013).

2.3.2 Increasing diversity in Cultural Tourism

Williams and O’Reilly (1998) state that diversity means any attribute people use to tell themselves that another person is different by using visible and remarkable demographic characteristics (e.g. race, sex and age). Many areas, regions and countries are planning strategies to attract more visitors, especially cultural places that have a few visitors. However, there are only a handful studies in the field of increasing diversity in cultural tourism.

To attract older adults and people with disabilities, The United Nations (2003) suggests that firstly, the tourism industry should identify places, zones or areas

having potential for growth, but small amount of visitors as niche markets for a new source of visitors. Furthermore, they should seek out the barriers of the market and remove those barriers for wheelchair-users. The United Nations (2003) specifically recommends that marketers and researchers who are responsible for increasing diversity should remove those barriers. By doing so, this could increase this market segment and create a competitive advantage.

To increase the number of non-cultural tourists, Silberberg (1995, p. 362) states that 'not every cultural product is willing or able to attract tourists, not every person is interested in culture'. Silberberg (1995, p. 363) also recommends that 'the strategy for cultural products is to move more of them along the continuum from willing to ready to able, the strategy for increasing the market focuses on widening the appeal of culture from the small percentage to larger percentages motivated in part, as an adjunct to another motivation, or to accidental cultural tourists'.

Lastly, Project M was conducted by National Heritage Board (NHB) (2005) to increase the awareness of culture amongst the youth. This project could lead up to a 70% increase in visitors to NHB museums in 2005 (more than 822,000 compared to the previous year's 480,292). NHB (2005) concluded that Project M could increase teenagers' understanding and appreciation of cultural places. Furthermore, the reason why teenagers are not attracted to cultural tourism is because they do not understand heritage sites adequately. Moreover, Boukas (2008) supports Project M in that the awareness of youth tourists can be increased by studying their behaviour and discovering in what they are interested. If their interests are taken into consideration, this may lead them to visit, understand and appreciate cultural sites and museums (Boukas, 2008; NHB, 2005). From these three studies, the concepts to increase diversity in cultural tourism for four target groups can be summarised on table 2.6

Table 2.6 Three concepts to increase diversity in cultural tourism

United Nations, 2003	People with disabilities and older adults	Seeking and removing barriers and creating barrier-free tourism for visitors.
Silberberg (1995)	Non cultural tourists	Widening from the small percentage to larger percentages cultural tourists.
National Heritage Board – NHB (2005)	Youth	Studying their behaviors and seeking what they are interested in.

These three suggestions can be linked to inclusive design concepts which refer to ‘the design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible ... without the need for special adaptation or specialised design.’ (The British Standards Institute, 2005). Initially, inclusive design seeks to find and remove barriers to cultural tourism. It can break down barriers and offer solutions that can benefit as many people as possible (CABE, 2006). Moreover, the Americans with Disabilities Act of 1990 illustrates that barrier-free stages are necessary for disabled people. Dong, Keates, and Clarkson (2004) comment that inclusive design can explore drivers and barriers so that drivers can be supported and barriers can be erased. Therefore, to broaden and increase the potential market, this study applies inclusive design principle as ‘understanding and designing for diversity’.

2.3.3 Why ‘inclusive design’ for cultural tourism?

Tourists have a wide variety of needs, including in terms of the barriers and drivers to engaging in cultural tourism. In order to design effective marketing strategies, marketers thus need to be aware of these barriers and aim to remove them. Dong, Keates, and Clarkson (2004) further argue that inclusive design can be used to explore drivers and barriers, so that drivers can be supported and barriers can be erased. Therefore, to broaden and increase the potential market for cultural tourism, this study draws upon inclusive design theory by seeking barriers and drivers in cultural tourism for five groups of Thai potential customers

- **Older adults:** the attempt to understand, and include, disabled and ageing people as customers is a new phenomenon (Burnett and Baker, 2001; Hudson, 2010). However, most of the tourism industry seems to ignore this

group of people, and treat them as a general group that are not much different from general tourists (Shaw and Coles, 2004). Moreover, the average age of the world population is increasing, and is predicted to continue increasing, whilst people are also living longer, and are becoming healthier and wealthier. Forecasts predict that in 2050, the number of ageing people will reach approximately 22 per cent of the world's population (Magnus, 2009). In the US, the market for senior tourism is more important because 'baby boomers', who were born between 1946 and 1964, will then be older adults. This age group is considered to be a powerful consumption group (D'Hudson and Saling, 2010). Moreover, this group has a lot of free time and money to spend on services and facilities, such as a ramp for a wheel chair or medical staff, who can support them.

- **Disabled people:** currently, the number of people with disabilities is approximately ten per cent of the total world population globally (Disabled World (TM), 2012). Ray and Ryder (2003) state that this rate is rising, and they have more money to spend than one would assume. Ozturk, Yayli and Yesiltas (2008) suggest that people with disabilities are significant and are very loyal customers. They tend to come back to the places that are suitable for their accessibility. Therefore, opening up this tourism market can result in a higher income for the tourism industry (Arellano, 2003). This concept is linked to Shaw-Lawrence's statement: 'it is essential that countries that wish to expand their incoming travel markets should have the necessary facilities in place and an understanding of how to service the special needs of tourists with disabilities' (Shaw-Lawrence, 1999, p.8).
- **People who are uninterested in cultural tourism completely (non-cultural tourists):** Kay, Wong and Polonsky (2009), state that most studies tend to place an emphasis on people who are already interested in tourism, and try to increase the number of this group only. However, there are fewer studies focusing on why non-tourists or non-cultural tourists travel, especially on barriers and drivers for cultural tourism. Some researchers explain that non-tourists are very difficult to specify, and have no criteria by which to identify them, compared to people who are interested in cultural tourism (Bennett, 1994; Milner, et al., 2004; Kay, Wong and Polonsky, 2009). Moreover, studies

about non-tourists mostly focus on demographic profiles and reasons for not travelling, rather than barriers and drivers. Therefore, this study includes non-cultural tourists as a potential group for cultural tourism.

- **Youth:** many tourism industries ignore this group, since they assume that cultural tourism is only for mature people, not for the younger generation (NHB, 2005). The National Heritage Board in Singapore (NHB) (2005) concluded that the reason why teenagers are not often attracted to cultural tourism is because they do not understand heritage sites adequately. This means that the awareness of young tourists could be higher if a better understanding about their behaviours and what they want, is provided. Boukas (2008) also supports the idea that the interests of young tourists can be identified by studying their behaviour. If their interests are taken into consideration, this may prompt them to visit, understand, and appreciate cultural sites and museums (NHB, 2005; Boukas, 2008). The Scottish Executive also states that young tourists are a very important target group for cultural tourism, since this group will be the future adult cultural tourists. Therefore, the tourism industry, and the government, should know their demographic profiles, barriers, drivers and behaviours, in order to predict the future trends in cultural tourism (Executive, 2001).

Therefore, this study, which applies an inclusive design principle, is differentiated from other research by categorising all potential cultural tourists in Thailand into five groups (youth, older adults, people with disabilities, non-cultural tourists, and cultural tourists), and exploring their barriers and drivers for cultural tourism using both Likert-scaling and open-ended questions.

2.3.4 Opportunities for inclusive design within cultural tourism

This section illustrates challenges and opportunities for current research in terms of inclusive design and the tourism industry. The key insights demonstrated below present a number of gaps, problems and opportunity in these cultural tourism issues of inclusive design studies.

- **Inclusive design for the tourism industry**

Burnett and Baker (2001) state that the attempt to understand and include disabled and ageing people as customers is a new phenomenon. However, most of the tourism industry seems to ignore such people and considers them as a general group which is not different from general tourists (Shaw and Coles, 2004).

Ozturk, Yayli, and Yesiltas (2008) present that people with disabilities are significant customers. Therefore, opening up this tourism market can result in a higher income for the tourism industry (Arellano, 2003). This concept is linked to Shaw-Lawrence's statement 'it is essential that countries that wish to expand their incoming travel markets should have the necessary facilities in place and an understanding of how to service the special needs of tourists with disabilities' (Shaw-Lawrence, 1999, p. 8).

Ray and Ryder (2003) comment that the rate of disability is significantly rising and they have more money to spend than one would assume. Currently the rate of disability is approximately 10% of the world's total population of 650 million people (Disabled World (TM), 2012). Moreover, disability tourism has represented a growing niche market of the tourism business. It is evaluated that the market share of disability tourism is worth around 117 billion USD per annum (Bizjak, et al., 2011). Significantly, it was found that no country in Asia and the Pacific had ever done any research into travel patterns for accessible tourism that made experiences available to those with disabilities.

According to the 2007 American Community Survey of the U.S. Census Bureau (2009), 41.2 million people (above five years old) (i.e. approximately 15 percent of the U.S. population) have a kind of disability, and around 41 percent of adults aged 65 years old and older have a kind of disability. More significantly, Darcy and Daruwalla (1999) argue that physically disabled people actually need to travel more frequently than people without any disability.

In the developed world, there is disability discrimination law that supports accessible tourism and inclusive design in the accessibility standards of buildings. However, in the developing world, especially in the Asia-Pacific region, only 5 of the 28 countries have such discrimination law to ensure accessibility and mobility for disabled persons (ESCAP, 2008). It could therefore be implied that tourism for disabled

people is currently in its first stage and needs the tourism industry and government to support it.

However, an in-depth understanding of senior tourism is lacking, especially in terms of cultural tourism and inclusive design. Although studies present information and data in senior tourism, most of them focus on consumer behaviour, basic information, and demographics (Chen and Shoemaker, 2014; Lepisto, 1985). Hence, this is a new opportunity to study senior tourism in the context of the relationship between inclusive design and cultural tourism.

As mentioned above, people with disabilities and older adults represent a growing market for the tourism industry (Ozturk, Yayli, and Yesiltas, 2008). In addition, the tourism industry in the U.S. is saturated with products and services and is engaged in high competition (Huh and Singh, 2007). As a result, this competition leads some tourism marketers to differentiate and target new customers overlooked by their competitors (Huh and Singh, 2007).

- **Inclusive design for tourists**

Several researches have investigated the criteria of tourists with regards to hotel selection. However, information about accessible accommodation is poorly documented. In general, there is neither a room layout nor specific detail for people with disabilities compared to non-disabled rooms (Darcy, 2010; O'Neill and Ali Knight, 2000). Moreover, most hotel managers do not recognise disabled people as potential customers (O'Neill and Ali Knight, 2000).

Westcott (2004) comments that disabled and senior tourists are loyal customers since they will return to accommodation which provides good accessibility. Moreover, other people can benefit from this, such as parents with babies and people with temporary injuries. Therefore, the tourism industry should take advantage of accessible tourism accommodation by providing more information on accessibility and providing specific details of room layout, etc. Darcy (2010) states that this additional cost is so small compared to the benefits that the hotels would receive. In particular, inclusive design could be adopted in this case in order to understand disabled people's needs in room and hotel design information, presentation and promotion that are relevant to them. Additionally, it will be more efficient and effective

for the hotel industry.

2.3.5 Increasing motivation in Cultural Tourism

Motivation is the driving force of individuals, which directs them to act in a particular way (Mayo and Jarvis, 1981). In the field of tourism, Pearce et al. (1998) suggest two relevant questions for travel motivation research:

- “Why do certain groups of tourists travel?” This question identifies the psychology of tourists as an important push factor.
- “Why do people go to a certain place?” This question identifies the tourist destination as a pull factor.

Many researchers argue that there are two essential drivers in travel motivation. ‘Push’ motivation, as a socio-psychological motive, is a desire and inspiration that influences an individual to travel, whereas ‘pull’ motivation is associated with the attributes of a particular place and involves the desire to visit a preferred destination (Crompton, 1979; Goodall, 1988; Yuan and McDonald, 1990; Fluker and Turner, 2000). In tourism research, push and pull theory has been generally accepted as a useful framework for explaining travel motivation and destination attributes.

In terms of cultural tourism, there is no specific travel motivation model. However, Crompton’s (1979) well-known discussion about the motivations of average travellers presents seven socio-psychological motivations that emerge from within the visitors, and are thus push (intrinsic) factors. These are: escape from a perceived mundane environment, exploration and evaluation of self, relaxation, prestige, regression, enhancement of kinship relationships, and facilitation of social interaction). Two cultural motivations, novelty and education, represent the influence of preferred places and are pull (extrinsic) factors.

Additionally, the idea of push and pull motivation has been widely adopted in advertising and promotion as a part of marketing strategies. A push strategy is to create demand through promotion to induce customers to buy a product. A pull strategy uses marketing research and branding to motivate customers to seek out a product (Wells, Burnett and Moriarty, 2000; Kotler, Bowen and Makens, 2003).

This concept is connected to digital storytelling methods in advertising and promotion. Digital storytelling can be applied in both push and pull marketing strategies. Push marketing may involve advertising using digital media, such as viral marketing, short stories, applications, websites, or games with a number of techniques in storytelling used to directly attract visitor motivation. For example, customers may be told about interesting or unseen locations and the importance of being cultural tourists, are shown the latest exhibition or festivals, and are encouraged to 'find themselves' by travelling (Miller, 2008). In pull marketing, digital storytelling can be applied to create branding and increase travellers' motivation to visit cultural places, by describing interesting cultural site and telling them about the history of a place to make them feel proud about it (Wells, Burnett and Moriarty, 2000; Kotler, Bowen and Makens, 2003).

Moreover, by using digital storytelling, online users can see the story or background behind an exhibition, in both virtual and physical museums, that can increase their motivation to visit cultural places (Hein, 2000; Tolva and Martin, 2004; Rizvic et al., 2012). Therefore, digital storytelling can enhance the connection between places and people, link the past and the present, apply push and pull factors, and represent cultural experiences as real life opportunities. Thus, digital storytelling is a valuable tool in the challenge of increasing motivation in cultural tourism.

2.3.6 Why digital storytelling for cultural tourism?

At cultural sites, visitors have no motivation to read the story displayed behind the exhibitions and to visit to the real places (Rizvic et al., 2012). These problems highlight a good opportunity to further facilitate cultural tourism to increase visitors' motivation. To increase tourists' motivation, this study adopts digital storytelling, which is widely used to explain all types of stories, narratives, films, and novels in the design process of digital systems (Miller, 2012; Ryan, 2008; Schafer, 2008; Ohler, 2013; Cunsolo et al., 2013). For this thesis, digital storytelling is defined as a medium that "uses personal digital technology to combine a number of media into a coherent narrative" (Ohler, 2013).

However, regarding the creation of digital storytelling, there is no guideline focusing specifically on cultural tourism for potential viewers, especially older adults and

disabled people, who are not target groups. Most guidelines regarding digital storytelling focus on educational purposes in classrooms and game designs. Moreover, Tenh, Shiratuddin, and Harun (2012) stated that experts have presented a number of theories. Moreover, in each theory, a variety of elements are redundant. Therefore, the aim of this study is to create and propose a digital storytelling guideline to motivate all five groups to engage in cultural tourism.

2.3.7 Opportunities for digital storytelling within cultural tourism

- **Digital storytelling in cultural media**

Due to its digital media, technique and presentation, digital storytelling is one of the best methods for use on websites, social media and other forms of online media (Hein, 2000; Tolva and Martin, 2004; Kaelber, 2007; Rizvic et al., 2012; Chen, Kao and Kuo, 2014; Floch and Jiang, 2015). Online museums, applications or websites can present museum collections, history and stories online without a watcher having to leave home. However, both physical and online museums share the same problem: that visitors have no motivation to read through every text displayed behind the exhibits (Kaelber, 2007; Rizvic et al., 2012).

Many studies have tried to establish the appropriate method to attract users to gain the maximum amount of formal information. Additionally, they have researched “how to enhance the viewer’s experience and learning in such environments” (Kaelber, 2007; Rizvic et al., 2012). As a result, digital storytelling is introduced as a new method that will enable visitors to explore an online museum, guided by storytelling. This way the users can learn about the context of the displayed objects and be motivated to explore all of them by means of entertainment.

Moreover, by using digital storytelling, online tourists can experience a story or background behind an exhibition, both virtually and in the real museum. Also, results from previous studies present the finding that digital storytelling can increase online users’ motivation to visit the real places (Hein, 2000; Tolva and Martin, 2004; Rizvic et al., 2012; Floch and Jiang, 2015). This concept could be applied to different kinds of cultural presentation such as stories about archaeological sites which are difficult to access physically. Rizvic et al. (2012) conclude that this technique will effectively enhance online users experience and motivation to visit the real cultural places.

Sundstedt et al. (2004) believe that the field of virtual technology illustrates a new opportunity for online users to access the virtual recreations of different heritage and cultural sites. Furthermore, this technology can present precise data about the actual place and provide digital storytelling to attract online visitors interest. In addition, it increases a site's accessibility to both researchers and general tourists. For example, some historical sites might be too expensive to visit, too inhospitable, too far away, too fragile, too dangerous, or no longer exist (Paquet and Viktor, 2005). As an alternative for cultural tourism, virtual models with digital storytelling can present interaction with historical items or fragile objects that cannot be handled in the real world (Paquet and Viktor, 2005). This is the opportunity that digital storytelling and virtual technology can provide to support cultural tourism regarding accessibility.

- **The latest technology in digital storytelling and cultural tourism**

As new technologies are developed, the potential uses for digital storytelling within other sectors will continue to increase in both number and importance. Digital storytelling can recreate an experience virtually. Moreover, it can reach physically inaccessible places and offer universal communication in many languages, leading to an improved visitor experience (Wither et al., 2010; Pujol et al., 2012; Keil et al., 2013; Floch and Jiang, 2015).

In the early stages, most digital storytelling was presented on the websites assembling a collection of formal information (Hein, 2014; Tolva and Martin, 2004). Next, they tried to adapt storytelling to create a user experience, but the problem was the limited technology and Internet speed (Jones, 2002; Rizvic et al., 2012). Nowadays, most of digital storytelling have moved into mobile phone applications with very high technology, such as the mobile device's sensor, GPS (Christodoulakis, 2014), augmented reality (AR) (Wither et al., 2010), mixed reality (MR) and 4D technology (Tarantilis et al., 2011). The advanced technology in digital storytelling presented previously can create a more realistic experience which links the real locations and formal information together to increase the user's motivation to visit the real sites (Wither et al., 2010; Pujol et al., 2012; Floch and Jiang, 2015).

Additionally, compared with previous digital storytelling in online museums which tried to present one content for all users, current cultural applications allow users to customise, personalise and share information to social media. In particular, sharing

can attract more users to visit cultural applications because they will follow, discuss and share what they are interested in with friends (Pujol et al., 2012).

However, recommendations about how to simplify information have not changed since 2000. Most studies emphasise that 'less is more'. In particular, due to the rapid change in mobile device technology, some projects try to focus on the latest innovation instead of creating simple stories. Online visitors need a simple and easy story structure to understand. Therefore, the key issue in digital storytelling is to create good stories and content that can be reused on many technology platforms in the future.

In the future, the tourism industry, museums and cultural sites will tend to develop more high technology to present the data more interactively and realistically in order to deliver a successful visitor experience. Therefore, interactive technology in cultural tourism, guiding the user's experience and increasing motivation, seems to be the new trend in the field. However, the key is how to apply and integrate these technologies effectively with good, simple content that can be reused on many platforms, resulting in meaningful, desirable and effective cultural tourism experiences.

2.4 Inclusive design - increasing diversity:

2.4.1 Definition of inclusive design

Dong, Clarkson, and Ahmed (2004) state that the early definition of inclusive design focused on products and buildings, and was later adapted to services and communications. Coleman (2001) also states that the context of inclusive design is recognised by the demographic, legal, and technological trends. Therefore, it is useful to consider definitions of inclusive design. Various definitions were collected from academic journals, university websites, and organisation websites as follows:

- **Academic journal:** more than 50 citations (Langdon, Persad, and Clarkson, 2010)
- **University website:** (Inclusive Design Research Centre, OCAD University, 2013)

- **Organisation websites:** Design Council, Royal College of Arts (<http://www.designcouncil.info>, 2013); Inclusive Design Toolkit, University of Cambridge (www.inclusivedesigntoolkit.com, 2013); (The British Standards Institute, 2005)

Table 2.7 Definitions of inclusive design from several sources

1.	Academic journal	<p><i>“Inclusive design aims to make products and services <u>accessible to the widest range of users possible irrespective of <u>impairment, age or capability.</u>”</u></i></p> <p>(Langdon, Persad, and Clarkson, 2010, p. 510)</p>	<ul style="list-style-type: none"> - Accessible - The widest range of users - Impairment, age or capability
2.	University website	<p><i>“Design that considers <u>the full range of human diversity with respect to <u>ability, language, culture, gender, age and other forms of <u>human difference.</u>”</u></u></i></p> <p>(Inclusive Design Research Centre, OCAD University, 2013)</p>	<ul style="list-style-type: none"> - The full range of human - Diversity - Human difference - Ability, language, culture, gender, age
3.	Organisation’s Websites Organization	<p>“It is a general approach to designing in which designers ensure that their products and services address the needs of <u>the widest possible audience, irrespective of age or ability.</u> Two major trends have driven the growth of Inclusive Design (also known as Design for All and as Universal Design in the USA) - <u>population ageing</u> and the growing movement to integrate disabled people into mainstream society.”</p> <p>(Design Council, Royal College of Arts, http://www.designcouncil.info/inclusivedesignresource/)</p>	<ul style="list-style-type: none"> - The widest possible audience - Irrespective of age or ability - Population ageing - Growing disabled people
		<p>Inclusive design emphasizes the contribution that understanding <u>user diversity</u> makes to informing these decisions. User diversity <u>covers variation in capabilities, needs, and aspirations.</u> (Inclusive Design Toolkit 2013, University of Cambridge)</p>	<ul style="list-style-type: none"> - User diversity - Variation in capabilities, needs, and aspirations
		<p>“A process whereby designers, manufacturers and service providers ensure that their products and services address the needs of <u>the widest possible audience</u>” (Department of Trade and Industry UK, DTI, 2000)</p>	<ul style="list-style-type: none"> - The widest possible audience

<p>"The design of mainstream products and/or services that are <u>accessible to</u>, and <u>usable by</u>, as many people as reasonably possible ... <u>without the need for special adaptation</u> or specialised design." (The British Standards Institute, 2005)</p>	<ul style="list-style-type: none"> - Accessible to - Usable by - As many people as possible - Without special adaptation
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The similarities between all presented inclusive design definitions could be grouped. A few commonalities are listed on the table 2.8.

Table 2.8 Keywords from definitions of inclusive design

1. Range of users	<ul style="list-style-type: none"> • The widest range of users (Langdon, Persad, and Clarkson, 2010) • The full range of human (Inclusive Design Research Centre, OCAD University, 2013) • The widest possible audience (Design Council, Royal College of Arts) • The widest possible audience (Department of Trade and Industry UK, DTI, 2000) • As many people as possible (The British Standards Institute, 2005)
2. Diversity	<ul style="list-style-type: none"> • Diversity and Human difference (Inclusive Design Research Centre, OCAD University, 2013) • User diversity (Inclusive Design Toolkit 2013, University of Cambridge)
3. Accessibility	<ul style="list-style-type: none"> • Accessible (Langdon, Persad, and Clarkson, 2010) • Accessible (The British Standards Institute, 2005)
4. Impairment	<ul style="list-style-type: none"> • Impairment, age or capability (Langdon, Persad, and Clarkson, 2010) • Ability, language, culture, gender, age (Inclusive Design Research Centre, OCAD University, 2013) • Irrespective of age or ability, Population ageing, Growing disabled people (Design Council, Royal College of Arts)
5. Universal	<ul style="list-style-type: none"> • Variation in capabilities, needs, and aspirations (Inclusive Design Toolkit 2013, University of Cambridge)

- Without special adaptation (The British Standards Institute, 2005)

After reviewing a wide range of definitions from many sources, and grouping keywords with similarities, this study has selected the definition that covers all keywords (range of users, diversity, accessibility, impairment, universal):

"The design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible ... without the need for special adaptation or specialised design"

(The British Standards Institute, 2005).

2.4.2 History and background of inclusive design

The term 'inclusive design' emerged in the mid-1990s as a synthesis of insights reaching back to the 1960s. It combined design with social issues such as ageing, disability, and social equality. The exhibition 'New Design for Old' (Manley, 1986) was held in the Victoria and Albert Museum in 1986. The aim of this was to present an age-friendly future regarding older adults' lifestyles and needs. Thus, a number of leading designers were asked to rethink products and elements in homes for the target group – ageing people.

Next, in 1989, Helen Hamlyn set up a foundation to improve ageing peoples' lives. The first step was to fund the program DesignAge at the Royal College of Art (RCA) to enhance design for elderly people (Laslett, 1989).

The first conference on inclusive design was held by the Ergonomics Society and DesignAge in 1992, and was attended by 176 delegates. The majority of participants were from industry, design, ergonomics, and medicine. The conference proceedings were published by Applied Ergonomics (Coleman and Pullinger, 1993). The most successful speech stated, "We have to conduct our lives as far as possible not simply in remembrance of our former but in the presence of our future selves" (Laslett, 1989, p. 22). This concept shifted "the focus from 'them' to 'us', not just for future generation, but for all of our futures" (Clarkson and Coleman, 2015, p. 3).

Clarkson and Coleman (2015) also confirm that the 1992 conference shifted the focus of inclusive design from the margins to the mainstream market, or from small groups of people (i.e. elderly, disabled people) to the potential mass market.

The term 'inclusive design' was coined in 1994 (Coleman, 2001). In the early stage, inclusive design focused mainly on ageing and disabled people. However, this changed when the first academic book on inclusive design was published in 2003 (Clarkson et al.). The book set up the scope of inclusive design as involving both ageing and social inclusion of people with disabilities. Moreover, it presented design tools, methods, and a future vision gathered from design, the research community, industry, and experts (Clarkson and Coleman, 2015).

2.4.3 Inclusive Design, Universal Design, and Design for All

Inclusive design refers to "the design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible ... without the need for special adaptation or specialised design" (The British Standards Institute, 2005). This study will use the definition of universal design that states that "universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialised design" (Mace, 1998).

The terms 'inclusive design' and 'universal design' have been widely used in research studies; however, it is important to determine the difference between the two. Table 2.9 below compares the similarities and differences between various studies of inclusive design and universal design in various contexts.

Table 2.9 Comparison between inclusive and universal design

<p>Target audience:</p> <ul style="list-style-type: none"> • People with disabilities, older adults, and everyone <p>Meaning:</p> <ul style="list-style-type: none"> • Usability to as many people as possible 	<p>Origins:</p> <ul style="list-style-type: none"> • Universal design - industrial and architectural design • Inclusive design - product design. <p>Focus:</p> <ul style="list-style-type: none"> • Inclusive design - individual is multi-faceted. • Universal design for everyone
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In the above table, it is clear that there are some significant similarities and differences between inclusive design and universal design. However, universal design was first introduced in industrial and architectural design relating to the built environment, while inclusive design was originally intended for product design. This suggests that for the built environment concept, the target group is the whole population. Therefore, universal design was primarily intended to create a common design that would work for everyone. In contrast with the product design concept, it focuses mainly on decision making in the context of people. Universal design tries to focus on the notion of the individual as multi-faceted, and on each design need presented by each individual. However, the inclusive design's needs will arise from factors or characteristics of people (Design for All Foundation, 2003; Klironomos et al., 2005; Preiser and Ostroff, 2001; Waller et al., 2013).

2.4.4 Applications of inclusive design and universal design in economy, industry and media

Table 2.10 summarises the applications of inclusive design and universal design from various studies in seven areas. However, this study focuses only on design industry and media related to the PhD research. Applications in other areas are further detailed in Appendix C2.

Table 2.10 Application of inclusive design in different areas

1. Business	<ul style="list-style-type: none"> • A positive issue of business strategy and design practice (Clarkson et al., 2003) • To strengthen business opportunities (Clarkson and Coleman, 2013) • Brand and market advantage (Clarkson and Coleman, 2013) • Innovation for accessibility and usability (Clarkson and Coleman, 2013)
2. Economics	<ul style="list-style-type: none"> • The Potential Support Ratio (PSR), the number of people aged 15 to 64 who could support one person over 65 (Clarkson and Coleman, 2013) • the most cost-effective solution to economic case (Frye, 2013) • Knowing the needs of older consumers is becoming more important due to an increasingly ageing and simultaneously declining population (Krauss, 2011)

3. Social impact	<ul style="list-style-type: none"> • The desirability of social cohesion and inclusivity (Clarkson and Coleman, 2013) • the accessibility of public buildings, spaces, and services that can support social inclusion (Clarkson and Coleman, 2013) • Improving the quality of people's lives through design in areas such as architecture, urban design, and public space (Clarkson et al., 2003) • Designing products more user-friendly for all target groups in the society (Meyer-Hentschel and Meyer-Hentschel, 2004).
4. Politics	<ul style="list-style-type: none"> • Supporting the increase in the social participation of older adults and people with disabilities (Krauss, 2011). • Politicians encourage the advancement of inclusive design concepts as competitive advantages (Krauss, 2011).
5. Education	<ul style="list-style-type: none"> • Introducing students to eight issues of diversity: ethnicity, race, class, gender, age, physical ability/disability, mental ability/disability, and religion (Tauke, 2010) • Providing inclusive design into several classes of design such as product, media, architectural, and urban design (Tauke, 2010). • <i>Universal Design in Education: Teaching Non-traditional Students</i> (Bowe, 2000) • <i>Universal Design for Learning (UDL)</i> (Rose and Meyer, 2002)
6. Design industry	<ul style="list-style-type: none"> • Inclusive design and universal design in design areas (Preiser, 2011; Fletcher et al., 2013)
7. Media	<ul style="list-style-type: none"> • Television: Video Description • Multimedia and the Web: Web caption and description web tools to create accessible web-based media. • Theatrical motion pictures access: For blind users and deaf users) • Environmental media - Captioning and description to live events, including interactive multimedia exhibits, museums, theme parks, and sporting centres. • Radio: For deaf drivers - text display for captioning; for blind users - a speech interface for digital radio command.

Design industry

Preiser (2011) states that universal design has been defined as making products, spaces and buildings, urban infrastructure, and information technology accessible to and usable by almost all people. Therefore, there are a great number of design approaches applied with inclusive and universal design, used by designers, managers and groups, healthcare and rehabilitation employees, and individuals dealing with disabilities. Examples of these disciplines and design applications are presented below.

Table 2.11 Universal Design – Relevant Disciplines (Preiser, 2011)

Industrial Design	-
Product Design	Utensils, tools, furniture, equipment
Graphic Design	Directories and guidance systems
Fashion Design	Clothing for various disabilities
Interior Design	Accessible design of dwellings, offices, and other spaces and places
Architecture	Equal access and circulation for all user groups and levels of disabilities
Urban Design and Planning	Accessible design of transportation facilities, university campuses and communities in general
Information Technology	Access to services and internet commerce
Health Facility Planners	Accessible hospital, rehabilitation, and care facilities

Fletcher et al. (2013) also specify how to apply inclusive design into five design areas as follows:

Table 2.12 Inclusive design in five design areas (Fletcher et al., 2013)

Industrial design	Universal design creates more interest among industrial designers than other disciplines of design. Fletcher et al. (2013) support that the demographic argument for design anticipating diversity of age and ability supports an orientation to function and the need to spark market appetite.
Technology design	A sub-set of industrial design is technology design, which has developed its relationship to universal design differently. Early conflict between inclusive design and assistive technology experts has created a commitment to promoting universal design as a baseline for standard products with assistive technology for individual users with limitations.
Architecture	As licensed professionals, architects accept the largest responsibility among the design professions with legal mandates for accessibility. Fletcher et al. (2013) state that they could be sued for failure to meet the requirements of the law.
Interior design	In general, interior design has presented a more positive response to inclusive design than architecture. In universities, interior designers are required to take a class on 'human factors' to graduate. Currently, new requirements for accredited interior design classes include 'universal design' as a concept that must be applied and understood. As a result, interior design students are more aware of the significance of inclusive design.
Urban design	Urban Design Planning in the U.S. has been enjoying renewal with the growth of major cities. Fletcher et al. (2013) state that the planning community in the U.S. vaguely embraces universal design. In addition, standards of accessibility are legally required and expected, but the philosophy of inclusive design is absent.

Media

In the study “Universal Design in Media”, O’Connell and Goldberg (2011) illustrate that universal and inclusive design become urgent as media is increasingly embedded into everyday life.

- **Television**

Television Closed Captioning: In 1972, the WGBH Educational Foundation broadcast the first television program for deaf or hard-of-hearing viewers by using captions. Nowadays, built-in captioning is recognised as the best example of universal design.

Television—Video Description: Video description also began at WGBH in 1990 under its trademark, ‘Descriptive Video Service or DVS’. This service has descriptive narration inserted in the natural pauses in dialogue, communicating key features such as actions, settings, and gestures.

Digital Television Transition: WGBH takes part in the deliberations of the Advanced Television Systems Committee (ATSC). Additionally, the DTV captioning standard, EIA-708, presents new features such as up to 63 caption services, multiple caption windows, multiple font choices, viewer-sizable fonts, as well as additional colour, border, and drop shadow options.

- **Multimedia and the Web**

O’Connell and Goldberg (2011) note that multimedia integrates dynamic and interactive features such as video, audio, text, graphics, and animation. Furthermore, most multimedia is packaged within web-delivered software, DVDs, and websites.

Currently, the formats of media via the web such as WindowsMedia, QuickTime, Flash, and RealMedia can present captions and descriptions as well as user controls. Moreover, WGBH have produced a suite of web caption and description web tools to create accessible web-based media.

- **Theatrical motion pictures access: From film to D-Cinema**

O’Connell and Goldberg (2011) suggest that disabled people with hearing or vision loss need to experience first-run movies in theatres at any time in any theatre with the same freedom as the sighted and hearing population. For blind users, new

technologies have been set up at hundreds of theatres throughout the United States. DVS Theatrical can present video description via infrared or FM listening systems to enable blind users to listen by using headsets, without disturbing other people.

For deaf users, the Rear Window Captioning System presents captions on a light-emitting diode (LED) mounted at the rear of a theatre, enabling deaf and hard-of-hearing audiences to use transparent plastic panels to read the captions. Moreover, the reflective panels can be adjustable, and users can sit anywhere in the theatre (O'Connell and Goldberg, 2011).

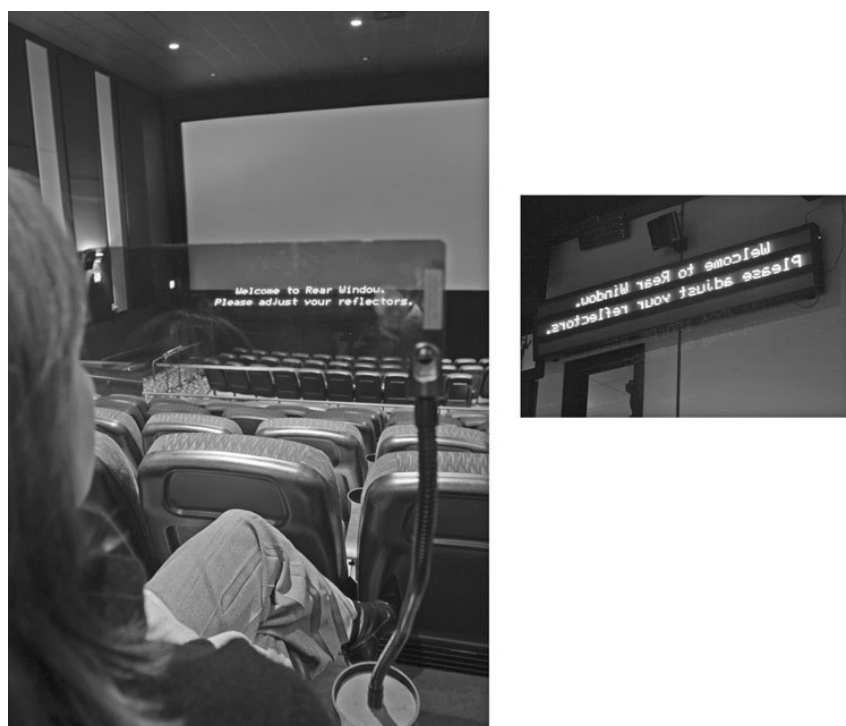


Figure 2.2 WGBH's Rear Window captioning system in a movie theatre (O'Connell and Goldberg, 2011)

- **Environmental media**

Captioning and description can provide access to live events, including interactive multimedia exhibits, museums, theme parks, and sporting centres. There are handheld devices offering captions and navigation features to control description. For example, WGBH has developed handheld devices with MoPix systems that present a visitor's experience at venues including Disney theme parks, the Whitney Museum of American Art, the Baseball Hall of Fame, and national park visitors' centres throughout the country. WGBH has also enhanced devices for in-flight

entertainment to allow users to access captioned media with user interfaces on seat-back screens. Furthermore, these installations can be adapted for bus shelters, taxis, hotel lobbies, and other public and private places (O'Connell and Goldberg, 2011).



Figure 2.3 Duratech handheld device used in theme parks and museums (O'Connell and Goldberg, 2011)

- **Radio**

O'Connell and Goldberg (2011) illustrate that the new technology, Hybrid DIGITAL (HD) radio, can broadcast multiple channels from a single radio station and show text display for captioning. These technologies can easily enable access to radio reading services and new services such as audio description and text displays for disabled users. Significantly, new radio designs are being developed to implement accessible controls, displays, and menu options for blind users, such as a speech interface for digital radio command. For deaf drivers, text display from radio about traffic, weather, or emergency alerts can offer critical safety benefits.

In summary, a great number of applications and disciplines are affected by inclusive design and universal design. However, could inclusive design be effectively applied to cultural tourism? This question has not been addressed in previous studies, and most of the existing literature is focused on seven primary areas: business issues (Clarkson and Coleman, 2013; Ostroff, 2011), economic issues (Clarkson and Coleman, 2013; Frye, 2013; Krauss, 2011), social issues (Clarkson and Coleman, 2013; Clarkson et al., 2003; Frye, 2013), political issues (Frye, 2013; Krauss, 2011; Preiser, 2011), education issues (Krauss, 2011; Ostroff, 2011; Preiser, 2011), design

issues (Fletcher, et. al, 2013; Preiser, 2011; Reed and Monk, 2011), and media issues (O'Connell and Goldberg, 2011). Therefore, this study presents an opportunity to focus on the relationship between inclusive design and cultural tourism.

2.4.5 Inclusive tourism

In recent years, there has been an increasing interest in 'inclusive tourism' for disabled people and older adults as the new growing tourism niche market (Bizjak et al., 2011).

'Inclusive tourism' is defined as "a global movement to ensure the full social participation of all persons with disabilities in travel, citizenships, and cultural contribution – and in the process to ensure the same for everyone" (Rains, 2007, p. 1). Rains (2009) also states the definition of inclusive tourism as "the application of Universal Design by the tourism industry to its products at every phase of their lifespan from conceptualisation to retirement and replacement" (p. 39). This means that inclusive tourism must be systematically applied in all stages of the design process such as product, service, and policy lifecycles. The process looks at everyone (i.e. children, adults, seniors, people with disabilities, pregnant women, etc.) in all their diverse abilities at all stages of the lifecycle.

However, another term that is closely related to inclusive tourism is 'accessible tourism'. Accessible tourism can be defined as the ability of "... all people, regardless of having a disability or not, to travel to another country, within the country and to any place, attraction or event they wish to visit" (Radet, 2002, p. 17). Darcy and Dickson (2009) also state that "accessible tourism enables people with access requirements, including mobility, vision, hearing and cognitive dimensions of access, to function independently and with equity and dignity through the delivery of universally designed tourism products, services and environments" (p. 34).

- **The difference between inclusive tourism and accessible tourism**

Rains (2007) points out the difference between inclusive tourism and accessible tourism by explaining that accessible tourism could be possible for any tourist

destination to be accessible. However, accessible tourism focuses mainly on accessibility and does not include attitudes and experiences.

In contrast, inclusive tourism includes all stakeholders, such as travellers, tourism industries, marketers, designers, and architects in order to achieve the best outcome for all. This includes the experiences and attitudes of travellers, who are recognised as valuable customers.

- **Accessibility and experience are the main focus**

Preiser (2001) argues that the problem with accessible tourism, inclusive tourism, or universally accessible design in tourism is the concept of 'visitability' (or accessibility) – the ability of a disabled person to enter a place (Nasar and Evans-Cowley, 2007; Preiser, 2001). There are only some destinations developing accessibility for disabled persons (Craeger, 2007). Moreover, universal design in tourism is the process that focuses on 'accessibility and planning' for ageing, disabled people, and people across the lifespan (Darcy and Dickson, 2009; Steinfeld and Shea, 2001).

A number of studies state that universal/inclusive design in tourism focuses on 'accessibility' as a central rather than an add-on compliance. For instance, an environmental approach to inclusive mobility should take into account wheelchair-users, families with prams, shoppers with trolleys, and tourists with luggage. In addition, interior and exterior lighting should be designed and considered for people with low vision (Darcy and Dickson, 2009; Michopoulou, 2015; Ozturk et al., 2008; Pagán, 2012; Sedgley et al., 2011).

The Designing for the 21st Century III conference on universal design focused on tourism, disability, and ageing in the area of 'accessibility' (Walsh, 2004). Moreover, families with children or babies, temporarily injured people, and pregnant women are all considered as a part of inclusive design for cultural tourism. These groups of people have similar needs to ageing and disabled people and can benefit from this issue being addressed (ESCAP, 2000). This means that product, graphic, and interior designers and architects should focus on how to create accessibility in every user journey stage for all groups of people (i.e. signs and information: easy to read typeface, contrasting colour or background; doorways: minimum width 85 cm and no

steps; pathway width: at least 180 cm wide; bathroom: wheelchair accessible; Darcy and Dickson, 2009; Michopoulou, 2015; Pagán, 2012)

2.4.6 Principles of inclusive design

1. Inclusive design strategy (Waller et al., 2015)

Waller et al. (2015) present the success criteria and the inclusive design strategy in the paper *Making the case for inclusive design* as follows:

- **Understanding diversity**

Businesses can broaden their customer base by considering a range of user journey stages such as at home, at work, holidays, and a number of environmental factors (i.e. rain, cold weather, ambient lighting; Elton and Nicolle, 2010). Moreover, most commercial businesses or organisations should focus on a wide range of users, from ‘fully able users’ to the minority of users with disabilities (Chamberlain and Yoxall, 2012; Waller et al., 2015).

- **Responding to this diversity with informed design decisions**

A range of people (ages, capabilities, social backgrounds, and cultures) have a range of needs, desires, and preferences. Inclusive design does not aim to design one product for all groups, but it can guide the development of an appropriate design for diversity. The main problem in this age is that almost all products and services tend to focus on young users. Sometimes, the older and disabled markets are non-existent. Thus, inclusive design aims to extend potential targets to cover the entire ‘Population Pyramid’. Inclusive design can respond to and design for diversity through: 1) developing a portfolio of products to cover a range of diversity types; 2) ensuring that the product has clear target users; and 3) making guided decisions to improve the success criteria.

This thesis adopts the above strategies as ‘understanding diversity’. This means including a wide range of cultural tourists in cultural tourism and ‘responding to this diversity with informed design decisions’. In this way, it is possible to offer guidelines and results from studies one to three and present the framework to increase diversity and motivation in cultural tourism.

2. Principles of inclusive design (CABE, 2006)

CABE (2006) presents the five principles of inclusive design as follows:

- **People:** to involve as many people as possible in the design process
- **Diversity and difference:** to understand the barriers of a wide range of people (i.e. tourists with luggage, people with disabilities, older adults, etc.)
- **Choices:** by understanding diversity and their barriers, it can break barriers and offer solutions for every user.
- **Flexibility:** Understanding and designing how the building will be used and who will use it.
- **Convenience to use:** it can provide convenient and enjoyable buildings to use for every user.

The 'flexibility' and 'convenience to use' principles mainly focus on interior, environment, and building factors. However, this thesis focuses on the principles of 'people' to include all potential cultural tourists; 'diversity' to seek out their barriers and strive to understand them; and 'choices' to offer solutions in studies one to three.

3. Inclusive design process (Clarkson et al., 2007)

Clarkson et al. (2007) state that inclusive products or services are designed by starting from a perceived need and developing appropriate solutions accordingly. This idea can be explained using the 'waterfall model of inclusive design' (Clarkson et al., 2007). This model aims to minimise the potential exclusion and is explained in detail as follows:

- **Discover:** to systematically explore the perceived need leading to an understanding
- **Translate:** to convert understanding into a completed description leading to requirements
- **Create:** to create preliminary concepts leading to concepts
- **Develop:** the final product or service leading to solutions

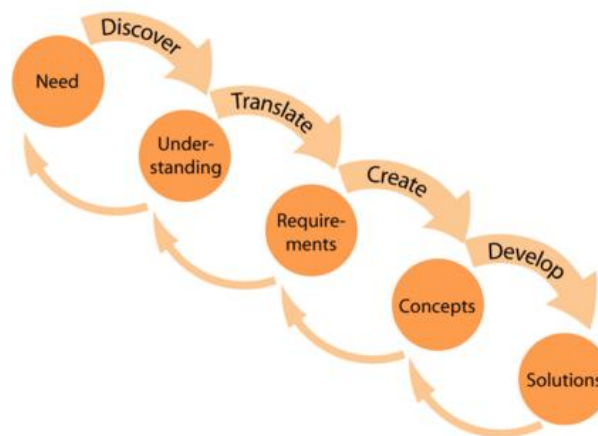


Figure 2.4 An inclusive design process (Clarkson et al., 2007)

This thesis will apply the model as follows:

- **Discover:** this study presents the main problems in cultural tourism and sets up the three key areas of cultural tourism, inclusive design, and digital storytelling.
- **Translate:** based on the 'discover' stage, the findings from the literature review will be analysed and synthesised leading to the initial framework.
- **Create:** this thesis details the framework by setting up three studies, leading to the final framework supported with empirical data.
- **Develop:** the evaluation of the final framework will be tested with experts to answer the research question.

Table 2.13 Principles of inclusive design adopted in this thesis

Inclusive design strategy	<p>'Understanding diversity' – to include a wide range of cultural tourists</p> <p>'Responding to this diversity with informed design decisions' – to present the framework to increase diversity and motivation in cultural tourism</p>
Principles of inclusive design	<p>People: to include all potential cultural tourists</p> <p>Diversity: to seek out their barriers and drivers to understand them</p> <p>Choices: to offer solutions in studies one to three</p>
Inclusive design process	<p>Discover: presenting the main problems in cultural tourism</p> <p>Translate: findings from the literature review will be analysed and synthesised, leading to the initial framework</p> <p>Create: detailing the final framework supported with empirical data</p> <p>Develop: evaluating the final framework</p>

2.5 Digital storytelling – increasing motivation:

2.5.1 Definition of digital storytelling

The term ‘digital storytelling’ is widely used to explain all types of stories, narratives, films, and novels in the design process of digital systems (Miller, 2008; Ohler, 2013; Ryan, 2008; Schafer, 2008). Due to its vast overuse, the meaning of the term has become unclear. Definitions were collected from the following sources:

- **Academic books:** (more than 10 citations) 1) *Digital storytelling in the classroom* (Ohler, 2013); 2) *Investigations on Digital Storytelling: The Development of a Reference Model* (Schafer, 2008); 3) *Digital Storytelling: A creator's guide to interactive entertainment* (Miller, 2008)
- **University course outline:** Ohio State University’s website for Digital Storytelling course (2013)
- **Organisation websites:** The University of Houston (www.digitalstorytelling.coe.uh, 2013); The Centre for Digital Storytelling (www.storycenter.org, 2013)

Table 2.14 Definitions of digital storytelling from several sources

1.	Academic books	<p><i>“Digital storytelling (DST) uses <u>personal digital technology to combine a number of media into a coherent narrative</u>”</i></p> <p>“Digital storytelling in the classroom”, (Ohler, 2013, p.16)</p> <hr/> <p><i>“Digital storytelling is to tell stories with digital means, which includes <u>digital media material</u>, such as digital images or sound, as well as software applications which support or even generate stories. Digital storytelling combines and shares aspects of computer graphics, virtual environments, virtual humans, behavioral animation, theatre, play and story writing, knowledge management, psychology and semiotics.”</i></p> <p>“Investigations on Digital Storytelling, The Development of a Reference Model” (Schafer, 2008, p.</p>	<p>- Personal digital -technology - A number of media - A coherent narrative</p> <hr/> <p>- Digital media material - A variety of media</p>
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	<p>3)</p> <p><i>“Digital storytelling is <u>narrative entertainment</u> that reaches the audience via <u>digital technology and media</u>. Additionally, digital storytelling techniques can make a dry or difficult subject more <u>alive and engaging to the viewers</u>”</i></p> <p>“Digital Storytelling: A creator's guide to interactive entertainment”, (Miller, 2008, p. 4)</p>	<ul style="list-style-type: none"> - Narrative entertainment - Digital technology and media - Alive and engaging to the viewers
<p>2. University's course outline</p>	<p><i>“Most basically, a digital story is a <u>short (3-5 minute) movie</u> which uses images, voice, and music to tell a story. There are <u>a variety of media</u> that can be used to create digital stories and a variety of reasons for creating them”</i></p> <p>Ohio State University's website in Digital Storytelling course (2013)</p>	<ul style="list-style-type: none"> - A short (3-5 minute) movie - A variety of media
<p>3. Organization's websites</p>	<p><i>“Digital storytelling at its most basic core is the practice of using <u>computer-based tools to tell stories</u>. There are a wealth of other terms used to describe this practice, such as digital documentaries, computer-based narratives, digital essays, electronic memoirs, interactive storytelling, etc.; but in general, they all revolve around the idea of combining the art of telling stories with <u>a variety of multimedia</u>, including graphics, audio, video, and Web publishing.”</i></p> <p>The University of Houston (www.digitalstorytelling.coe.uh, 2013)</p>	<ul style="list-style-type: none"> - Computer-based tools - Telling stories - A variety of multimedia
	<p><i>“<u>Modern expression of the ancient art of storytelling</u>. Throughout history, story-telling has been used to <u>share knowledge, wisdom, and values</u>. Stories have taken many <u>different forms</u>. Stories have been adopted to each successive medium that has emerged, from the circle of the campfire to the silver screen, and now the computer screen.”</i></p> <p>The centre for digital storytelling (www.storycenter.org, 2013)</p>	<ul style="list-style-type: none"> - Modern storytelling - Many different forms - Share knowledge , wisdom, and values

From Table 2.14, the similarities between all presented digital storytelling definitions could be grouped. A few commonalities are listed on the Table 2.15

Table 2.15 Keywords from definition of digital storytelling from many sources

1. Computer-based tool	<ul style="list-style-type: none"> • Computer-based tools (The University of Houston, 2013) • Modern storytelling (The center for digital storytelling, 2013)
2. A variety of media	<ul style="list-style-type: none"> • Digital technology and media (Miller, 2008) • A number of media (Ohler, 2013) • Digital media material (Schafer, 2008) • A variety of media (Schafer, 2008) • A variety of media (Ohio State University's website in Digital, 2013) • Telling stories with a variety of multimedia (The University of Houston, 2013) • <u>Many different forms</u> (The center for digital storytelling, 2013)
3. A short personal project	<ul style="list-style-type: none"> • A short (3-5 minute) movie (Ohio State University's website in Digital Storytelling course, 2013) • Personal digital technology (Ohler, 2013)
4. Narrative and share stories	<ul style="list-style-type: none"> • Coherent narrative (Ohler, 2013) • Narrative entertainment (Miller, 2008) • Alive and engaging to the viewers (Miller, 2008) • Share knowledge , wisdom, and values (The center for digital storytelling, 2013)

After reviewing a wide range of definitions from many sources and grouping keywords with similarities, the definition has been selected that covers all relevant keywords (computer-based tool, a variety of media, a short personal project, narrative, shared stories):

“Digital storytelling is narrative entertainment that reaches the audience via digital technology and media. Additionally, digital storytelling techniques can make a dry or difficult subject more alive and engaging to the viewers” (Miller, 2008, p. 4).

2.5.2 History and background of digital storytelling

Dana Atchley, a media artist and stage performer who used oral storytelling and digital media, first coined the term ‘digital storytelling’ in the late 1980s. In one particular performance, Atchley sat on the stage and projected homemade videos and his family photos on the screen, talking about his experiences (Bull and Kajder 2004; Chung, 2007; McLellan, 2006; Wales, 2012). Joe Lambert, a theatre producer, joined with Atchley and started to develop this art form as digital storytelling. It is the combination of several art forms, including theatre, digital art, storytelling, and design. However, the key point of the work is to support the general public to use this media form to share their own stories, using the current available media (McLellan, 2006; Wales, 2012).

The Centre for Digital Storytelling (CDS) as a non-profit organisation was set up in the early 1990s in California, USA. This centre set up digital storytelling workshops for people who did not have a digital storytelling or artistic background. The workshops originally encouraged people to present their personal experiences with digital technology as the core medium (Lambert, 2006; McLellan, 2006). After his observation of the CDS’s workshops, Lambert presented seven elements needed to create digital storytelling works. Following this, a number of organisations, such as the BBC and Digital Storytelling Asia initially adopted many projects from the CDS to broadcast, and later developed their own digital storytelling projects (McLellan, 2006).

Wales (2012) points out that the definition of digital storytelling was originally “the presentation of personal narratives highlighting important lived experiences” (Robin 2008, p. 224). Lambert also maintains that the key point of digital storytelling from the CDS’s workshops is to support general people to create their own short stories of around 3-5 minutes by using voice, still pictures, videos, music, and sounds as the core elements (Lambert, 2006; McLellan, 2006).

2.5.3 Applications of digital storytelling

Technologies in digital storytelling presentation continue to advance rapidly, and the possibilities for using digital storytelling in many areas are growing. There are many studies presenting applications for digital storytelling in many sectors presented in Table 2.16.

Table 2.16 Applications in digital storytelling in different areas

1. Marketing, advertising and promotion	<ul style="list-style-type: none"> • Applying stories for negotiation, persuasion, sales presentation, planning, and communication (Sumi, 2010; Schafer, 2008; Lambert, 2013; Spicer and Miller, 2014; Greene et al., 2015). • The best way to convince someone is by telling a story (McKee, 2003) • Viral marketing: Telling friends, and sharing content (Miller, 2008; Spicer and Miller, 2014; Greene et al., 2015) • Advertising and promotion by various means such as the Internet, mobile devices, iTV, video games, virtual reality, smart toys and theme park rides (Miller, 2008)
2. Management	<ul style="list-style-type: none"> • For action research, innovation and new product development (Boyce, 1996) • Telling or presenting a company's story (Swap et al., 2001; Nonaka and Konno; 2008; Sumi, 2010; Lambert, 2013; Nesteruk, 2014). • To motivate an audience through effective presentation with formal data and entertainment (Boyce, 1996; McLellan, 2006; Nesteruk, 2014).
3. Education	<ul style="list-style-type: none"> • Using digital storytelling for educational purposes (Roussuo, 2004; Miller, 2008; Yang and Wu, 2012; Lambert, 2013; Clausen et al., 2014). • An instructional tool that teachers use to introduce content and capture students' attention (Robin, 2008) • For teachers: To motivate and enhance student understanding effectively (Burmark, 2004; Muller, Eklund and Sharma, 2006; Kobayashi, 2012; Lambert, 2013). • For students: To apply their research, organize their ideas, express opinions, and construct narrative storytelling (Robin, 2008).
4. Personal motivation	<ul style="list-style-type: none"> • Telling their stories about everyday life events (Schafer, 2008; Lambert, 2013).
5. Media and entertainment	<ul style="list-style-type: none"> • Journalism: Using for multimedia reporting or digital storytelling (Lambert, 2013)

- Video games: Interactive narratives and game designs (Pausch et al., 1996; Hung et al., 2012; Lambert, 2013; Yang and Chang, 2013; Marsh et al., 2014).
- To encourage the motivation and learning of users (Göbel et al., 2009; Yang and Chang, 2013).

2.5.4 Digital storytelling in cultural tourism from 2000-2010 and 2010-2016

Examples of digital storytelling works from 2000 to 2010

This section illustrates the examples of online museums that use digital storytelling techniques to promote cultural tourism from 2000 to 2010. The aim is to provide an overall picture of existing online museums that use digital storytelling and to present features, strength and weakness of this media.

1. The virtual Smithsonian tour (<http://www.mnh.si.edu/panoramas>, 2002)



Figure 2.5 The virtual Smithsonian tour (<http://www.mnh.si.edu/panoramas>)

Research problem: Many people might never have the chance to visit the actual Smithsonian museums (Jones, 2002).

Features: 1) High-resolution images, video and audio clips, and artefacts that rotate in 3D. 2) Hotspots that contain artefacts that rotate in 3D and morph into other artefacts, high-resolution images, video and audio clips and more. 3) Two versions for both low (modem) and high-speed (broadband) connections. 4) The mobile version of the tour is being updated to include hotspots.

2. The Eternal Egypt project (www.eternegypt.org, 2004)



Figure 2.6 The Eternal Egypt project (www.eternegypt.org)

Research problem: As the information from the various museums throughout the country and archaeological websites is so interrelated, this project has developed to treat the country as a single virtual museum (Tolva and Martin, 2004).

Features: 1) A collection of high-resolution zoomable pictures. 2) Three-dimensional views of artefacts. 3) 360° images – interactive panoramic views of locations in Egypt. 4) Animations helping to illustrate and explain artefacts. 5) Up-to-date CCTV – web cameras providing up-to-date interactive views from certain locations in Egypt. 6) Library about Egyptian culture.

3. The gas chambers of Auschwitz (panorama.auschwitz.org, 2007)



Figure 2.7 The gas chambers of Auschwitz (panorama.auschwitz.org)

Research problem: Auschwitz attracts many visitors each year. However, the physical site is currently difficult to get and includes remnants of the past that are physically inaccessible (Kaelber, 2007).

Features: 1.) Eight themed virtual halls, set up in eight historic periods. 2) Information sheets. 3) Three-dimensional models that can be rotated by the user. 4) Video, films, animations and reconstructions. 5) Three main languages offered (Italian, English and Arabic).

4. The Sarajevo Survival Tools virtual environment

(<http://h.etf.unsa.ba/srp/project.htm>,2009)

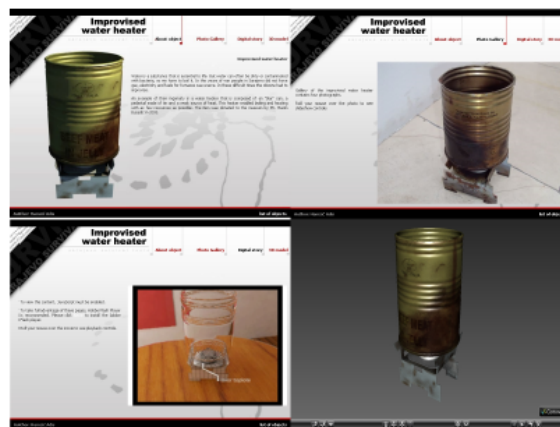


Figure 2.8 The Sarajevo Survival Tools virtual environment

(<http://h.etf.unsa.ba/srp/project.htm>)

Research problem: Today people live at a fast pace, with little time for culture and education. In Bosnia and Herzegovina museums have fewer and fewer visitors, often only school children and occasional tourists. This project was created to motivate visitors to explore the whole collection displayed in the virtual museum (Rizvic et al., 2012).

Features: 1) It contains objects created and used by the citizens of Sarajevo during the almost four-year period the city was under siege (1992–1996). 2) Text information for every object. 3) A gallery of photos for every object. 4) A movie and an interactive 3D model for every object.

5. The Virtual Museum of Iraq (www.virtualmuseumiraq.cnr.it, 2009)



Figure 2.9 The Virtual Museum of Iraq (www.virtualmuseumiraq.cnr.it)

Research problem: It is difficult to integrate between humanistic approaches (archaeological data and historical sources) and recent scientific methodologies (Cultraro et al., 2009).

Features: 1.) Eight themed virtual halls, set up in eight historic periods. 2) Information sheets. 3) Three-dimensional models that can be rotated by the user. 4) Video, films, animations and reconstructions. 5) Three main languages offered (Italian, English and Arabic).

Examples of digital storytelling works from 2010 to 2016

This section presents some examples of the latest cultural media in the field of digital storytelling from 2010 to 2016. The aim is to present the features, strengths and weaknesses of current media and compare this with the previous period (digital storytelling from 2000 to 2010).

1. The Westwood Experience: connecting stories to locations via mixed reality (Wither et al., 2010)



Figure 2.10 The Westwood Experience application (Wither et al., 2010)

Research problem: Most tour guides take visitors to heritage sites and start telling the stories behind the sites, but those places look different now from how they would have appeared in the past. This can limit the visitor's experience and imagination. However, current technology allows us to combine the real location with mixed reality effects.

Features: 1.) The application uses mixed reality (MR), including images, audio and augmented reality (AR), to link the real location and the past; 2.) The story is about the mayor of Westwood introducing and taking a tour of Westwood in 1949; 3.) Users have to walk around 1.1 miles and all interaction and the narrative of the story will be presented along the way.

2. CHESS (Cultural Heritage Experiences through Socio-personal interactions and Storytelling) (www.chessexperience.eu, 2011)



Figure 2.11 CHESS application at the Acropolis Museum (Pujol et al., 2012)

Research opportunity: This project can personalise information in museums to create custom stories.

Features: 1.) The project allows users to log-in and fill out a short quiz to gather visitors' preferences and find out what they are interested in; 2.) Each user's information is personalised to create an interactive storytelling experience; 3.) The project targets two levels of end-users: 3.1) visitors – they will use mobile phones to obtain and interact with information from the system; and 3.2) authors – they will use the application to create stories.

3. Show Taiwan (http://www.androidapps.biz/app/show.taiwan, 2013)



Figure 2.12 Show Taiwan Android application
(http://www.androidapps.biz/app/show.taiwan, 2013)

Research opportunity: This study applies a ‘kindergarten approach to learning’ (imagine, create, play, share, reflect and back to imagine) (Resnick, 2007) using a co-creating process for educational purposes to create a location-based guide application that integrates multimedia as in museum tours (Chen, Kao and Kuo, 2014)

Features: 1.) Using the concept of an e-book, each chapter has (1) a photograph with text, (2) a photograph with text and audio and (3) a video clip without a text caption or audio; 2.) The users can build their own private information resource; 3.) Geographic location is set by using the GPS signal; and 4.) The Google map is used for navigation.

4. Stedr (Android application, 2015) (Floch and Jiang, 2015)

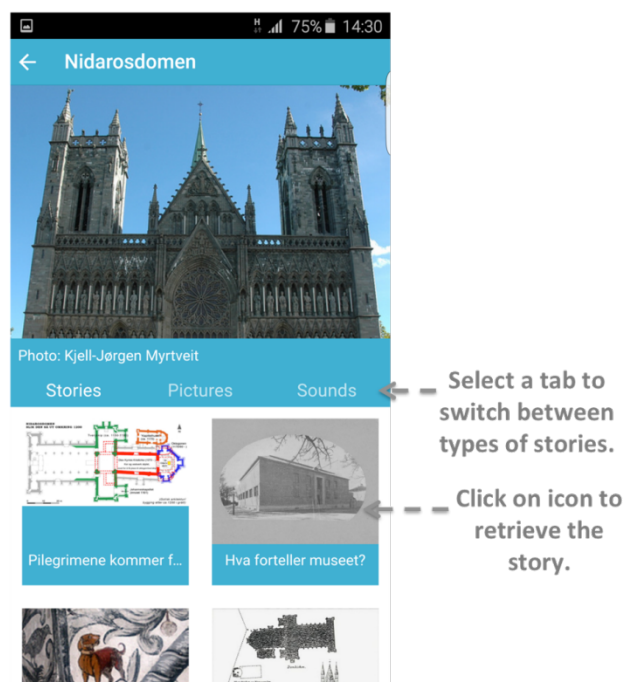


Figure 2.13 Stedr application (<http://stedr.blogspot.co.uk>, 2016)

Research problem: Many places that people pass in their everyday lives have so many stories behind them. However, these stories remain unknown or have been lost.

Features: This application offers users the ability to personalise their profile and location through augmented reality (AR). There are three main features in this application: 1.) discovery: users can browse contents, information or stories; 2.)

sharing: users can share stories, comments and pictures and ‘like’ social media; and 3.) creation: users can create stories through media (pictures, texts or video).

2.5.5 Trends in digital storytelling for cultural tourism from 2000-2010 and 2010-2016

This section has outlined digital storytelling trends in cultural tourism media from two time periods (2000–2010 and 2010–2016) presented in Table 2.17 and 2.18. Details are further presented in Appendix C3.

Table 2.17 Trends of digital storytelling in online museums from 2000 to 2010

Topics	Details
Creating visitor experience	<ul style="list-style-type: none"> • From ‘on view’ exhibitions into ‘visitor’s experience’ (Hilde, 2000; Rizvic et al., 2012). • From ‘assembling collectibles’ to fostering visitor experience (Tolva and Martin, 2004) • Using advanced technologies such as 3D animation, graphics, movies and high-resolution images to create realistic experience (Tolva and Martin, 2004).
3D technology	<ul style="list-style-type: none"> • The ability to link virtual 3D objects, stories and information (Jones, 2002). • 3D presentations can increase users interest more than a simple image does (Cultraro et al., 2009). • Interactive presentation is more striking than one-way communication (Cultraro et al., 2009). • Using state-of-the art technology with storytelling, especially on 3D images, can lead online users to have a new museum experience (Jones, 2002).
Accessibility	<ul style="list-style-type: none"> • Digital storytelling can enhance a story, present information and create mood and tone behind physically inaccessible places (Kaelber, 2007). • Using digital storytelling as a universal form of communication – offering a number of languages (Tolva and Martin, 2004)
Less is more information	<ul style="list-style-type: none"> • An overload of information and data in online museums can affect a visitor’s subjective experience (Tolva and Martin, 2004). • How to simplify complex information, not only engaging but also understandable for a variety of online visitors (Tolva and Martin, 2004; Cultraro et al., 2009).
High-speed bandwidth Internet requirements	<ul style="list-style-type: none"> • The latest web-enhanced presentations require newer and higher bandwidth internet connections (Jones, 2002) • Some applications require an up-to-date web browser and plug-ins to be installed (Tolva and Martin, 2004) • Not everyone can access the presentations (Tolva and Martin, 2004)

Table 2.18 Trends of digital storytelling in online museums from 2010 to 2016

Topics	Details
User experience (UX)	<ul style="list-style-type: none"> • Many current applications apply user experience (UX) (Wither et al., 2010; Pujol et al., 2012; Floch and Jiang, 2015). • For example, studying the user's profile, demographics, interests, cognitive or conceptual change, perception of value and inspiration
Personalisation and sharing on social media	<ul style="list-style-type: none"> • This allows users to give feedback, rate or answer questions about their interests, and they will then be presented with specific information matching their interests (Pujol et al., 2012). • To provide a smooth experience for each user visiting the museum (Pujol et al., 2012). • Current cultural media try to support users to customise, personalise and share their interests on social media rather than just presenting one type of information for all visitors (Pujol et al., 2012; Floch and Jiang, 2015).
Mobile device technology	<ul style="list-style-type: none"> • Regarding GPS, we can use a map presenting the surrounding locations and identify the social context (who is near you) to increase a good experience in cultural tourism (Christodoulakis et al., 2013; Christodoulakis, 2014). • Adopting GPS in a mobile device's sensor to locate users and show maps. • Augmented reality (AR) can present stories at the real sites through the camera and screen of a mobile device (Wither et al., 2010; Pujol et al., 2012; Floch and Jiang, 2015)
Keep it simple	<ul style="list-style-type: none"> • The cost of interactive technology is very expensive (Floch and Jiang, 2015). • It is better to focus on creating good stories and content that can be reused on many technology platforms (Floch and Jiang, 2015). • Users only need a simple, easy to understand, uncomplicated story structure (Wither et al., 2010; Pujol et al., 2012; Floch and Jiang, 2015).

2.5.6 Digital storytelling guidelines

In order to create digital storytelling, there are a number of guidelines presented by experts. This study sought to collect all digital storytelling guidelines in all categories. The criterion for selection was that each guideline must have more than ten citations in academic books and journal articles; the eight most relevant digital storytelling guidelines are listed below, and further explained in Table 2.19

1. The seven elements of digital storytelling (Lambert, 2002)
2. Five elements of DST (Paul and Fiebich, 2005)
3. Take six: Elements (Porter, 2005)
4. Six elements of DST (Salpeter, 2005)
5. Story elements (Ohler, 2008)
6. Expanded and modified digital storytelling elements (Robin, 2008)

7. Models for digital storytelling and interactive narratives (Shcafer, 2008)
8. A 10-step development checklist for creating an interactive project (Miller, 2012)

This study categorises all eight guidelines by their purpose: 1) general (Lambert, 2002; Porter, 2005; Salpeter, 2005); 2) educational (Ohler, 2008; Robin, 2008); 3) interactive entertainment (games, applications, or new technologies; Schafer, 2008; Miller, 2012); and 4) journalism (Paul and Fiebich, 2005). These guidelines are specifically designed to support the storytellers to create digital storytelling for different purposes with specific elements. Nevertheless, with many guidelines and elements, it is difficult to decide which guidelines or elements should be used to create digital storytelling for cultural tourism. In addition, there are both non-interactive and interactive forms. Therefore, the creation of a new digital storytelling guideline for cultural tourism by comparing all elements of the guidelines of experts is necessary. It will not only involve eliminating some redundant elements, but also refining the focus to be specifically on cultural tourism.

Table 2.19 List of digital storytelling guidelines from eight experts

1.	Lambert (2002)	The seven elements of digital storytelling Digital storytelling: Capturing lives, creating community	<ul style="list-style-type: none"> • A point of view • A dramatic question • Emotional content • The gift of your voice • The power of the soundtrack • Economy • Pacing 	General	631
2.	Paul and Fiebich (2005)	Five elements of DST The elements of digital storytelling	<ul style="list-style-type: none"> • Media • Action • Relationship • Context • Communication 	Journalism	31
3.	Porter (2005)	Take six: Elements Digitales: The art of telling digital stories	<ul style="list-style-type: none"> • Living in your story • Unfolding lessons learning • Developing creative tension • Economising the story told • Showing not telling • Developing craftsmanship 	General	12

4.	Salpeter (2005)	Six Elements of DST Telling tales with technology: Digital storytelling is a new twist on the ancient art of the oral narrative	<ul style="list-style-type: none"> • Personal • Begin with the story or script • Concise • Use readily-available source materials • Include universal story elements • Involve collaboration 	General	46
5.	Ohler (2008)	Story elements Digital storytelling in the classroom: New media pathways to literacy, learning, and creativity	<ul style="list-style-type: none"> • Point of view • Emotional engagement • Tone • Spoken narrative • Soundtrack music • Role of video and performance • Creativity and originality • Time, story length, and economy 	Education	230
6.	Robin (2008)	Expanded and modified digital storytelling elements Digital storytelling: A powerful technology tool for the 21st century classroom	<ul style="list-style-type: none"> • The overall purpose of the story • The narrator's point of view • A dramatic question or questions • Quality of the images, video, and other multimedia elements • Use of a meaningful audio soundtrack • The choice of content • Pacing of the narrative • Good grammar and language usage • Economy of the story detail • Clarity of voice 	Education	289
7.	Shcafer (2008)	Dimension star models for digital storytelling and interactive narratives Investigations on digital storytelling the development of a reference model	<ul style="list-style-type: none"> • Concreteness • User contribution • Coherence • Continuity • (Conceptual) Structure • Stage • Virtuality • Spatiality • Control • Interactivity • Collaboration • Immersion 	Interactive entertainment (games, applications, new technologies)	11
8.	Miller (2012)	A 10-step development checklist for creating an interactive project	<ul style="list-style-type: none"> • Premise and purpose • Audience and market • Medium, platform and genre • Narrative/gaming elements 	Interactive entertainment (games, applications, new technologies)	274

Digital storytelling: A creator's guide to interactive entertainment	<ul style="list-style-type: none"> • User's role and point of view • Characters • Structure and interface • Fictional world and setting • User engagement • Overall look and sound
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1. Lambert's guideline (2006)

Lambert was the first person to support Atchley, the first media artist who integrated oral storytelling and digital media in the late 1980s. Lambert is the founder of CDS (Centre of Digital Storytelling, USA) and set up workshops to support people to tell their own stories with digital techniques. After observations of digital storytelling projects from his workshops, Lambert introduced a guideline with seven elements as listed in Table 2.20 to guide storytellers to develop their works (Lambert, 2006). This guideline focuses on non-interactive digital storytelling and telling personal stories. He always encourages people to present stories about their life and personal experiences, and to narrate by themselves. This is seen in the most important and first element, 'point of view' (Lambert, 2006).

Table 2.20 The seven elements of digital storytelling (Lambert, 2006)

1. Point of view	What is the main point of the story and what is the perspective of the author?
2. A dramatic question	A key question that keeps the viewer's attention and will be answered by the end of the story
3. Emotional content	Serious issues that come alive in a personal and powerful way and connect the audience to the story
4. The gift of your voice	A way to personalise the story to help the audience understand the context
5. The power of the soundtrack	Music or other sounds that support and embellish the story
6. Economy	Using just enough content to tell the story without overloading the viewer
7. Pacing	The rhythm of the story and how slowly or quickly it progresses

2. Paul and Fiebich's guideline (2005)

Paul and Fiebich (2005) examined many projects of digital storytelling in their study from the School of Journalism and Mass Communication, University of Minnesota and The Media Centre. This guideline is different from others that were mostly adapted from Lambert's. Paul (2004) explains that they focused on journalistic storytelling and interactivity, and describe it as interactive multimedia for journalism (Paul, 2004; Paul and Fiebich, 2005). They present five elements for creating digital storytelling as listed in Table 2.21.

Table 2.21 Five elements of digital storytelling (Paul and Fiebich, 2005)

Media	Media refers to the material(s) used to create the story package. Unique to the digital story space is the ability to use any type and combination of media.
Action	Action refers to behaviour of the content, which consists of movement within the content or a movement of content that requires user action.
Relationship	Relationship refers to the connection and level of interactivity between the user and content.
Context	Context refers to how the story links to the relevant external information or material.
Communication	Communication refers to the mode of communication in the progress of story content.

3. Porter's guideline (2004)

Porter has worked as a digital storytelling consultant at summer camps. She presents her guideline as six elements of digital storytelling in her book, *Digitales: The art of telling digital stories*. Porter was inspired by Lambert's digital storytelling guideline to tell stories from the storyteller's point of view and personal experience, rather than focusing on the narrative that is not related to the storyteller (Porter, 2004).

Table 2.22 Take six: Elements (Porter, 2004)

Living inside your story	Each story should be told from first person perspective, narrated with your own voice with your personal and emotional experience of the event
Unfolding lesson learned	Each story needs to have a point that is revealed in the end
Developing creative tension	Creatively using tension and pacing in evolving the story and at the same time engaging the audience through to the end

Economising the story told	Preserving the essence of the tale; using the fewest words and images to make your point
Showing not telling	The use of vivid details to reveal feelings and information rather than being directly stated in the story
Developing craftsmanship	Good craftsmanship creatively combines media elements to convey significant meaning

4. Salpeter's guideline (2005)

Salpeter's (2005) article, "Telling tales with technology", presents a guideline of how to create digital storytelling works, with examples. From her observations of digital storytelling projects, Salpeter (2005) created six elements to develop digital storytelling projects as shown in Table 2.23. Kuan, Shiratuddin, and Harun (2012) suggest that this guideline is similar to Lambert's (2006) and Porter's (2004) guidelines. However, Salpeter does not mention whether this guideline is adapted from other experts. Like Lambert's guideline, Salpeter concentrates on telling stories from the storyteller's personal experience.

Table 2.23 Six elements of digital storytelling (Salpeter, 2005)

Personal	The narrator is encouraged to personalise the tale, making it clear how the people or events in the story impacted his or her life.
Begin with the story/script	Digital story creators are expected to narrow into their story, writing and even recording their script before they ever begin digitising images, importing sound effects, or using video editing tools.
Concise	This means tight editing and a very specific focus.
Use readily available source materials	Create a story with the minimum materials and technology.
Include universal story elements	Good stories include essential elements such as conflict, transformation, and closure.
Involve collaboration	Workshop participants give and receive feedback on their stories and scripts.

5. Ohler's guideline (2008)

Ohler (2008), the author of the textbook *Digital storytelling in the classroom: New media pathways to literacy, learning, and creativity*, states that he focuses specifically on how to use digital storytelling in classrooms. From his experience in using digital storytelling with teachers and students, he created eight elements of digital storytelling as shown in Table 2.24.

Ohler explains in his book that this guideline was inspired by Lambert's guide, but he adapted it for educational purposes. However, Ohler does not emphasise the first-person point of view like Lambert. He states that teachers should not restrict the way to present to just one pattern; point of view should be illustrated based on the student's own decision (Ohler, 2008).

Table 2.24 Story elements (Ohler, 2008)

Point of view	The range of the point of view that can be employed in digital stories is vast and is constrained only by whatever perspective it wanted to be imposed
Emotional Engagement	Storyteller having enough finesse to attract the audiences (either emotionally or impartially)
Tone	Tones may divert story to a different genre or moods
Spoken Narrative	Storyteller gives narrative the appropriate amount of focus in their story
Soundtrack music	Music used in an appropriately supportive role
Role of video and performance	Choose the suitable visual image to be used based on time and technology consuming
Creativity and originality	Teacher must have clear expectation and require a certain percentage of media, as digital tools can encourage students to be creative storytellers, but not guarantee originality
Time, story length, and economy	Limit the story length and input, enforce economy

6. Robin's guideline (2008)

Robin (2008) created this guideline by adapting Lambert's (Kuan et al., 2012) and published it in the book *Digital storytelling: A powerful technology tool for the 21st century classroom*. The purpose of this guideline was to evaluate students' works at the University of Houston (Robin, 2008).

Table 2.25 Expanded and modified digital storytelling elements (Robin, 2008)

The overall purpose of the story	Establishes a purpose early on and maintains a clear focus throughout.
The narrator's point of view	The point of view is well developed and contributes to the overall meaning of the story.
A dramatic question or questions	A meaningful dramatic question is asked and answered within the context of the story.
The choice of content	The content creates a distinct atmosphere or tone that matches different parts of the story. The images may communicate symbolism and/or metaphors.
Clarity of voice	Voice quality is clear and consistently audible throughout the presentation.
Pacing of the narrative	The pace (rhythm and voice punctuation) fits the story line and helps the audience really "get into" the story.

Use of a meaningful audio soundtrack	Music stirs a rich emotional response that matches the story line well. Images coordinated with the music.
Quality of the images, video and other multimedia elements	Images create a distinct atmosphere or tone that matches different parts of the story. The images may communicate symbolism and/or metaphors.
Economy of the story detail	The story is told with exactly the right amount of detail throughout. It does not seem too short or too long.
Good grammar and language usage	Grammar and usage were correct (for the dialect chosen) and contributed to clarity, style, and character development.

7. Schafer's guideline (2008)

Schafer presents her 12-point digital storytelling guideline, called the 'dimension star model', as her PhD research, and published it in the text book *Investigations on Digital Storytelling – The Development of a Reference Model* (Schafer, 2008). However, this guideline focuses mainly on interactive digital storytelling as listed in Table 2.26.

Table 2.26 Models for digital storytelling and interactive narratives (Schafer, 2008)

Concreteness	Origin of the source of the construct of story
User contribution	User makes contribution to the story structure by interacting with the system
Coherence	The contextual relationship of the story elements
Continuity	Describes the smoothness and chronological order of the story
Structure	Describes the dramatic arc that a story follows and its elements: actors, story object, themes, and events
Cognitive effort	Level of the energy necessary for the user to mentally create a story
Virtuality	The degree to which the activity of storytelling takes place in the real environment of the user or in a virtual world
Spatiality	The impact of (real or virtual) space toward the development of the story
Control	The degree of controllability: how much the user is able to govern the story's progress
Interactivity	The degree to which the user has the option to be actively engaged in the environment of the story
Collaboration	The option to interact with other users in the creation or experience of the story
Immersion	The degree of immersion: how much the user is drawn into the story

8. Miller's guideline (2012)

Miller (2012) presents a ten-point checklist for creating interactive digital storytelling in her book, *Digital storytelling: A creator's guide to interactive entertainment*. This book and the guideline emphasise interactive media only (i.e. video games,

websites, interactive television, mobile devices, etc.). Moreover, Miller (2012) compares old and new (interactive or online) storytelling tools and explains how to adapt this guideline to use in each media.

Table 2.27 A 10-step development checklist for creating an interactive project (Miller, 2012)

Premise and purpose	What is the core idea and purpose of the project?
Audience and market	Who is the user?
Medium, platform, and genre	What is the media (e.g. mobile phones, TV, or the Internet)? What type of platform (hardware)? (e.g. a computer, a console game, a mobile phone) What genre does it fall into? (e.g. simulation or action)
Narrative/gaming elements	What are the major events or challenges during the narrative?
User's role and point of view	What point of view will the user use? (first person or third person)
Characters	What function do characters serve? (adversaries, helper figures or allies)
Structure and interface	What is the starting place? How will the user navigate the project?
Fictional world and setting	What is the world and where is it set?
User engagement	What is the important goal by the end of this work?
Overall look and sound	What kinds of visuals will you use (e.g. video, animation, graphics) Is it realistic or fantasy environment? How do you plan to use sound in your work?

2.6 Inclusive Digital Storytelling for Cultural Tourism – a first combined approach

2.6.1 Why digital storytelling for inclusive design

Nevertheless, digital storytelling is useful and popular, but one problem is that all content is on a digital format (i.e., digital mobile devices, smartphones, interactive systems, laptops, and computers). This leads to questions about whether people (especially older adults and disabled people) are unable to access and understand this form of technology (Gill and Perera, 2003; Russell et al., 2008; Fuglerud and Sloan, 2013; Orso et al., 2015; Tsai et al., 2015). In addition, different groups of users have their own problems, behaviours, and experiences when using digital devices (Gill and Perera, 2003; Alonso, 2015).

Hence, this is an opportunity to apply inclusive design to this technology to understand users' needs to inform the industry, designers, and researchers and help create a system that supports all users (Gill and Perera, 2003; Dong et al., 2006; Chan et al., 2009; Fuglerud and Sloan, 2013). This could be adapted to any product and service and accessible to the widest range of users possible, irrespective of impairment, age, or capability. Moreover, there is a need to investigate, understand, and meet the needs of people (British Standards Institution, 2005; Langdon, Persad and Clarkson, 2010). This means that this study adopts the concept of inclusive design for digital storytelling to understand the behaviours of all potential groups of people, especially older adults and disabled people.

2.6.2 Opportunities for digital storytelling and inclusive design:

- **Commercial issues**

There are only a few studies examining digital technologies applied with inclusive design for products and services in real life. Gill and Perera (2003) illustrate that the industry aims for stylish enhanced digital media with a high return on investment, but digital media applied with inclusive design is a nascent method still trying to find its feet (Gill and Perera, 2003). Moreover, from the view of businesses, different groups of disabled users have different needs that must be met. In addition, many ageing people and people with disabilities, especially visually impaired people, want the minimum of confusion for practical systems. This is the main issue with combining business and the inclusive design concept, and leads to a conflict between the industry and some users (Alonso, 2015; Gill and Perera, 2003).

However, by adopting an inclusive design approach and finding out what users want, the mission of businesses could be complemented. For example, an iTV application could support an elderly lady to buy groceries, because she may purchase things that she is not usually able to buy if having to go out on her own (Gill and Perera, 2003). Dong et. al (2006) also propose that inclusive design could be applied for commercial uses to raise long-term profits and enhance companies' competitive edge, and could help to produce better products for all customers.

- **Barriers for older adults and people with disabilities**

The use of rich multimedia programs or applications has brought challenges regarding many issues. While the use of these technologies can improve learning experiences for students, digital media could become a barrier for some older adults and people with disabilities (Freire et. al, 2009). Furthermore, recent studies have raised the concern that current products and services are produced without consideration of older adults. Researchers explain that this problem may be due to the declining capabilities of the ageing people and people with disabilities. However, Chan et al. (2009) conclude that an inclusively modified design based on principles derived from research results could enable effective use of digital products and services for all people. Therefore, as the proportion of older adults continues to increase, research, products, and services applied with the inclusive design concept should increase to support and satisfy them, as all types of users can experience the benefit.

In summary, due to recent trends in industrialised countries, the population is older, living longer, healthier, and wealthier than ever, and is predicted to become even older (Administration on Aging, 2012; de Barrosa, Leitãob and Ribeiroa, 2014; European Commission, 2012). Additionally, older adults are becoming more experienced with new technology and have a better academic education. New technologies are increasingly widespread throughout the world and are easily accessible to everyone, including ageing and disabled people, who have traditionally had difficulties in using new information and communication technologies. While these technologies are increasingly used to cover all needs, there is insufficient research about the usability of digital technology for older adults and people with disabilities (de Barrosa, Leitãob and Ribeiroa, 2014).

2.6.3 Challenges of inclusive digital storytelling in this study

- **Creating the definition of inclusive digital storytelling**

Inclusive design in this study is imperative to ensure that everyone can follow digital storytelling. In order to adapt inclusive design with digital storytelling, this study will offer a definition of inclusive digital storytelling (IDST) as shown in the Table 2.28, postulating that Inclusive digital storytelling is narrative entertainment that reaches

and engages as many audiences as reasonably possible via digital technology and media.

Table 2.28 Definition of 'Inclusive digital storytelling'

Inclusive design	The design of mainstream products and/or services that are <u>accessible</u> to, and <u>usable</u> by, as many people as reasonably possible ... without the need for special adaptation or specialised design.
Digital storytelling	Digital storytelling is narrative entertainment that <u>reaches</u> the audience via digital technology and media. Additionally, digital storytelling techniques can make a dry or difficult subject more alive and <u>engaging</u> to the viewers
Inclusive digital storytelling	Inclusive digital storytelling is narrative entertainment that reaches and engages as many audiences as reasonably possible via digital technology and media.

- **Exploring audiences' ability to reach and engage with digital storytelling**

In order to understand audiences' ability to reach and engage with digital storytelling on digital mobile devices, inclusive design is applied to categorise diversity of cultural tourists in Bangkok, Thailand as: youths (15-24 years); people with disabilities; older adults (those over 60), established cultural tourists, and people uninterested in cultural tourism (i.e., non-cultural tourists). This section aims to present the inclusive digital storytelling (IDST) principle to understand diverse audiences in terms of reaching (accessibility and understanding) and engaging with (usefulness, usability, desire) digital storytelling on digital mobile devices to create a system that supports all users. To achieve this aim, research method - observation is applied and user journey stages are designed. Five groups of participants are asked to watch digital storytelling and asked to talk out loud about their feelings, and understanding at every stage.

2.7 Synthesis of the initial framework

Studies in the related areas of cultural tourism, inclusive design, and digital storytelling were analysed in order to identify relationships, gaps, problems, and opportunities. In analysing cultural tourism, the main problems were established: lack of diversity and lack of motivation.

- **Lack of diversity (inclusive design and cultural tourism):** To broaden and increase the potential market, this study draws upon inclusive design principles as ‘understanding and designing for diversity’ by researching barriers and drivers to engaging in cultural tourism among five different groups.
- **Lack of motivation (digital storytelling and cultural tourism):** To increase tourists’ motivation, this study adopts digital storytelling by creating and proposing a digital storytelling guideline to motivate all five groups to engage in cultural tourism.
- **Lack of understanding of the user’s behaviour whilst watching digital storytelling (inclusive design and digital storytelling):** This study adopts the concept of inclusive design for digital storytelling to understand the behaviours of all five groups of people, especially older adults and disabled people, to ensure that everyone can understand digital storytelling.

In order to resolve these problems, the research question was posed: “How could inclusive design and digital storytelling principles be applied to cultural tourism in Thailand?”. Moreover, a framework for inclusive digital storytelling to increase diversity and motivation for cultural tourism in Thailand has been constructed from the literature review and analysis and is presented in Figure 2.13.

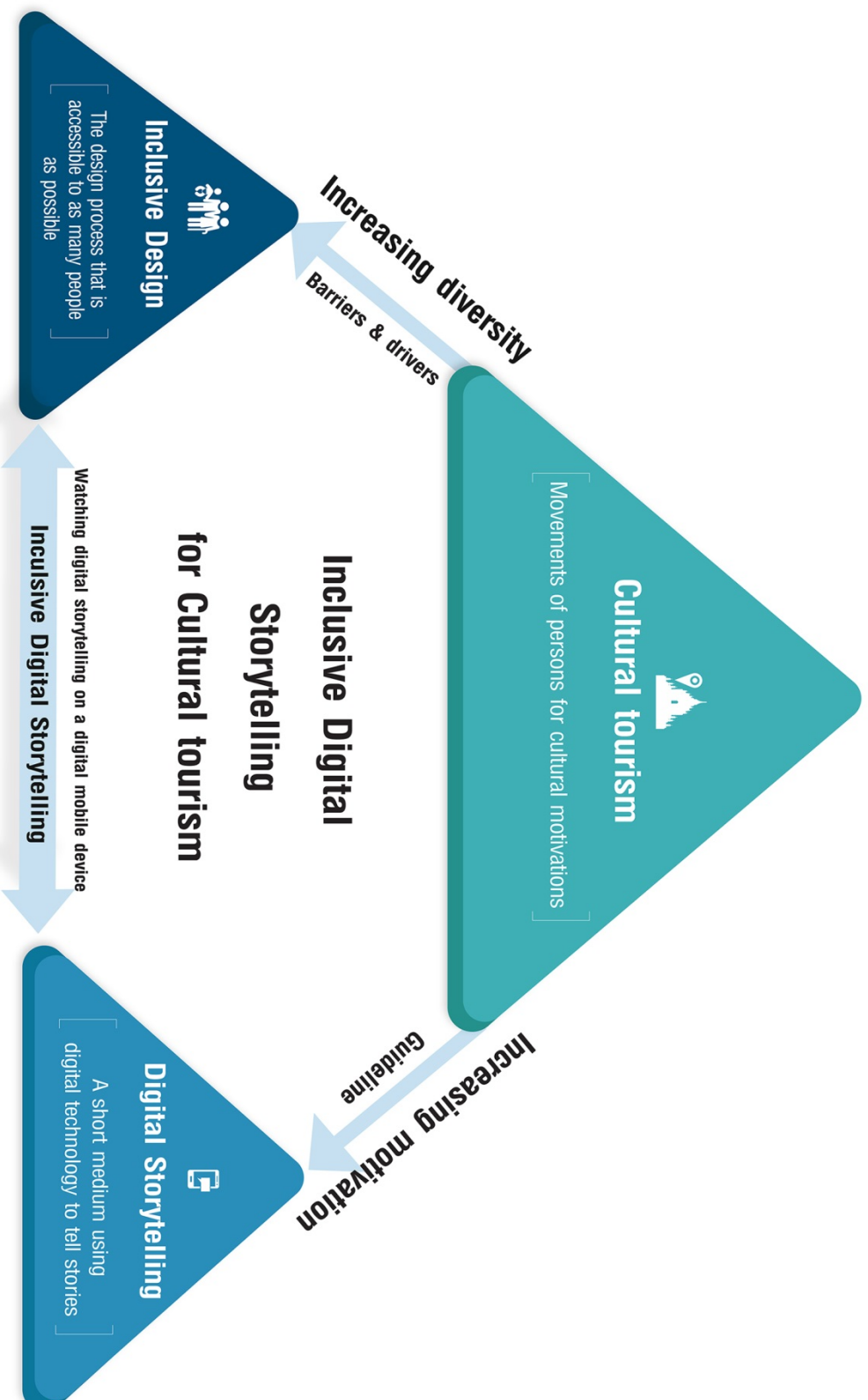


Figure 2.14 A framework for inclusive digital storytelling to increase diversity and motivation for cultural tourism in Thailand

2.8 Summary

This literature analysis and synthesis has covered three key topics (cultural tourism, inclusive design, and digital storytelling). It was intended to present the background and review of these three areas as follows:

- **Cultural tourism:** 1). Types of tourism; 2). The landscape of cultural tourism; 3). The importance, relevance and applications of cultural tourism; and 4). Cultural tourism in Thailand
- **Inclusive design:** 1). Definition of inclusive design; 2). History and background of inclusive design; 3). Inclusive Design, Universal Design, and Design for All; 4). Applications of inclusive design; 5). Inclusive Tourism; and 6). Principles of inclusive design
- **Digital storytelling:** 1). Definition of digital storytelling; 2). History and background of digital storytelling; 3). Applications of digital storytelling; 4). Digital storytelling in cultural tourism from 2000-2010 and 2010-2016; 5). Trends in digital storytelling for cultural tourism from 2000-2010 and 2010-2016; and 6). Digital storytelling guidelines

The following section presents the problems and opportunities of inclusive design and digital storytelling and the relationship between them in the field of cultural tourism. As stated in the present chapter, cultural tourism is considered to have a lack of diversity and motivation. To increase diversity, it could be linked to the concept of inclusive design, aiming to make products and services accessible to the widest range of users possible, irrespective of impairment, age, or capability. To increase tourists' motivation, this study applies digital storytelling. However, digital storytelling is available in digital formats only, which could be a barrier for some groups who are not familiar with the technology. Therefore, this study suggests forming a link between inclusive design and digital storytelling, in order to understand and include diverse audiences. Finally, a framework for inclusive digital storytelling to increase diversity and motivation for cultural tourism in Thailand is proposed to answer the research question: "How could inclusive design and digital storytelling principles be applied to facilitate cultural tourism in Thailand?"

Chapter 3: Research Methodology

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Quantitative and Qualitative Research Methods
Positivism and Interpretivism
Objectivism and Subjectivism
Exploratory, Descriptive and Explanatory

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3.7 Analytical process

3.8 Summary

3.1 Introduction

The literature analysis presented in Chapter 2 established that one current problem in cultural tourism is lack of diversity and motivation. In order to address these issues, this PhD research focuses upon two fields i.e. inclusive design to increase diversity, and digital storytelling to increase motivation in cultural tourism, and aims to present an initial framework embodying these areas. All studies in this research collect empirical data from potential cultural tourists (Study 1), digital storytelling experts (Study 2), digital storytelling users (Study 3) and cultural tourism, inclusive design and digital storytelling experts (Study 4). The research strategy, methodology and methods for data collection and analysis are discussed in this chapter.

Chapter 3 presents the planned research methods and strategies that will be used throughout. Initially, it starts with reviews and comparisons of various research strategies, and discusses how they may be adapted for this PhD research in three key areas: Tourism Studies, Human-Computer Interaction (HCI), and Design Research. Next, four research methodologies in design area are reviewed and analysed and the most suitable - Design Research Methodology (DRM) - is selected for application in this PhD research. Lastly, the DRM is presented in four stages: research clarification to identify the problems and present the research question, descriptive study 1 (DS-1) to review and analyse three factors, prescriptive study (PS) to develop and detail the initial framework by using empirical data from three studies, and descriptive study 2 (DS-2) to evaluate the final framework.

3.2 Research Strategy

Walsh and Wiggins (2003) explain that a research strategy is often considered as the method used to investigate and collect data. Moreover, Nickpour (2012, p. 58) asserts that a “research strategy is used as a general umbrella term to cover approaches, perspectives, aspects and types of research”. This section provides an illustrative review of some relevant research strategies in the social sciences and design.

3.2.1 Research Strategies in Social Science

- **Applied and Pure Research**

Pure research aims to advance knowledge. The outcomes of pure research are new theories, ideas or ways of thinking. However, applied research aims to solve specific research problems and questions, and is applied with a specific goal. In summary, the difference between these two terms is the research goal: Pure research has no specific goal, whereas applied research has to answer a particular question (Blanche, et al., 2006). This PhD is applied research as it concerns a research question that needs to be addressed.

- **Quantitative and Qualitative Research Methods**

Robson (2011) points out that qualitative research is exploratory and intended to gather knowledge, opinions, and motivations in order to develop an initial understanding. It is used to uncover hidden trends and to delve deeper into main problems in order to uncover and comprehend the way people think. Methods in this research mainly depend on verbal narrative and non-structured methods (i.e. interviews, focus groups, etc.). In contrast, quantitative research is used to gather numerical data by using statistics to examine cause-effect relationships between factors, and depends on structured techniques (i.e. surveys, questionnaires, etc.) (Bryman and Teevan, 2005).

This thesis uses a mixed-method (both qualitative and quantitative) to gather different types of data. In specific, in Studies 1 and 4, a quantitative method is applied involving a relatively large number of participants (Study 1- 500 participants and Study 4 -123 participants) and evaluated using statistical analysis. Qualitative methods are applied in Studies 2 and 3, in order to receive in-depth information from digital storytelling experts (Study 2) and five diverse groups of users (Study 3).

- **Positivism and Interpretivism**

Crotty (1998) explains that positivism and interpretivism (or anti-positivism) are the two main research approaches in social sciences. Positivists use the same quantitative techniques as scientific research to collect data (i.e. surveys, official statistics, etc.) because of its reliability and validity. In contrast, interpretivists believe

that people are different and apply qualitative techniques to collect data (i.e. observations, interviews, etc.)

- **Objectivism and Subjectivism**

Objectivism focuses on logical theory or knowledge based on empirical or external facts (Friedman 2003). However, subjectivism states that the truth is based on personal opinion. A statement or knowledge could be true for one researcher, but false for another. In this thesis, objectivism and subjectivism could be applied as:

Objectivism: Lockton (2013, p. 92) states that design research is “rational problem solving”. Thus, Study 1 seeks to find out about barriers and drivers in cultural tourism in Thailand for five groups considered as objectivism to explain phenomena, solving-problems and presenting empirical facts.

Subjectivism: in this thesis, Study 2 interviews experts about the guidelines of constructing digital storytelling, and Study 3 observes how users watch digital storytelling through various devices. Therefore, these studies are considered as examples of subjectivism because they depend on the opinions of groups of experts and users.

- **Exploratory, Descriptive and Explanatory**

Robson (2011) and Yin (2009) point out that exploratory research aims to explore and set up problems to present insights for further investigation. This type of research stresses new ideas, understanding and knowledge. However, there is no plan for statistical analysis.

Descriptive research aims to establish complete and accurate empirical data. The statistics and research methodology is fully planned (i.e. participants, sample recruitment, methods, etc.).

Explanatory research (or causal research) aims to identify cause-and-effect relationships, and concentrates mainly on analysing the situation or considering the relationships between variables.

Nickpour (2012) explains that exploratory research is set up as the first stage of research in order to uncover problems and questions that have not yet been

addressed. Next, descriptive research goes beyond exploratory research and establishes the methodology for the study, which is designed to solve and answer the research question. Explanatory research is the most comprehensive way of presenting data and cause-and-effect relationships.

3.2.2 Research Strategies in Design

- **Frayling (1993) Classification of Art and Design Research**

Frayling (1993) presents three research strategies in design in his text book *Research in Art and Design: research into* (art and) design, *research through* (art and) design, and *research for* (art and) design.

- Research *through* (art and) design includes developing new design products or methods and understanding the design process (Pontis, 2010).
- Research *into* design includes theoretical and/or historical investigation.
- Research *for* design focuses on the development of new artefacts in designs to visually present new knowledge (Pontis, 2010).

This research aims to construct a framework that will increase diversity and motivation in cultural tourism. The approach fits into research into design. Zimmerman et al., (2007) argue that research through design focuses on making the right things to change the situation from the current in order to improve it.

- **Cross (1999) Design Research Taxonomy**

Cross (1999, p. 6) states that knowledge in design is classified into three key sources: people, processes and products. He also presents research design taxonomy into three main categories as follow:

- Design epistemology: study of designerly ways of knowing
- Design praxeology: study of the practices and processes of design
- Design phenomenology: study of the form and configuration of artefacts

To some extent, there is a degree of design praxeology in the research background, literature analysis (Chapter 2) and in the three empirical studies that detail the initial

framework (Chapters 4, 5, and 6). Design epistemology comes into the evaluation by inclusive design, digital storytelling and cultural tourism experts on how the framework is used to increase diversity and motivation in practice (Chapter 7).

- **Fallman's (2008) Interaction Design Research Model**

Fallman (2008) presents the triangle shaped model of design research activity in three main areas: practice, studies and exploration. He focuses mainly on interaction design that is different from other related areas (i.e. HCI, CSCW, computer science, etc.).

Design Practice: This concerns interactive design works outside of the academic arena, such as commercial works or client commissions.

Design Exploration: Fallman (2008) points out that the most significant question for design exploration is “what if?”. It always concerns “problem-solving” Schön (1983) and “transcendence”(Ehn, 1988). In summary, design exploration emphasises the synthetic process to seek or test the new idea, asking “what if?”

Design Studies: This closely imitates traditional academic disciplines in design. The goal is to create an intellectual discipline and contribute knowledge. The main activities are conferences, workshops and group discussions. Fallman (2008, p. 9) summarises that “design studies focuses on describing and understanding rather than creating and changing, and aims to form a cumulative body of knowledge”.

3.2.3 Adopting a Research Strategy

A number of research strategies from social sciences were reviewed in terms of their approach, perspective and purpose. Design research strategies were reviewed regarding design research categories, taxonomy, types and applications. This thesis adopts research strategies presented in the table below.

Table 3.1 Research strategies adopted for this PhD research

General/ Social Sciences	Types	Applied research Pure research	Applied research
		Quantitative Qualitative	Mixed method Quantitative (Study 1 and 4) Qualitative (Study 2 and 3)
	Approach	Positivism Interpretivism (Anti- Positivism)	Mixed method Positivism (Study 1 and 4) Interpretivism (Study 2 and 3)
	Point of views	Objectivism Subjectivism	Objectivism (Study 1 and 4) Subjectivism (Study 2 and 3)
	Purpose	Exploratory Descriptive Explanatory	Exploratory and Descriptive
Design	Categories	Research <i>through</i> design Research into design Research for design	Research <i>into</i> design
	Taxonomy	Design epistemology Design praxeology Design phenomenology	Design praxeology (Chapters 2, 4, 5, 6) Design epistemology (Chapter 7)
	Applications	Design practice Design exploration Design studies	Design exploration and Design studies

3.3 Research Methodologies in Three Areas: cultural tourism, inclusive design and digital storytelling

As this PhD research explores and combines three key fields (cultural tourism, digital storytelling and inclusive design), a number of research methodologies in Tourism Studies, HCI and Design Research were reviewed, and the strengths and weaknesses of each methodology were presented in Table 3.2. Accordingly, below textbooks were identified as having the highest number of citations in their subject area:

- **Tourism Studies:** *Research Methods for Leisure and Tourism: A Practical Guide* (Veal, 2006) - 1771 citations
- **Human- Computer Interaction:** *Research Methods in Human-Computer Interaction* (Lazar, et al., 2010) - 896 citations
- **Design research: DRM:** *A Design Research Methodology* (Blessing and Chakrabati, 2009) - 701 citations

Table 3.2 Comparisons of research methodologies in three areas

Aim	Tourism Studies		1. Market research 2. Positioning 3. Consumer behaviour
	Human-Interaction	Computer	1. Understanding 2. Engineering 3. Re-engineering 4. Evaluating
	Design Research		1. Increasing understanding 2. Development and validation of knowledge, methods and tools
Main Issues	Tourism Studies		Policymaking, planning and managing
	Human-Interaction	Computer	Users, factors and systems
	Design Research		1. Lack of overview of existing research 2. Lack of use of results in practice 3. Lack of scientific rigour.
Data-collection Methods	Tourism Studies		Ethnography, interviewing, life histories, focus groups, personal diaries, case studies, surveys, content analysis
	Human-Computer Interaction		Ethnography, interviews, focus groups, eye tracking, usability testing, task analysis, laboratory experiments, questionnaires
	Design Research		Observation, participant observation, interviews, simultaneous verbalisation (audio or video taped), diary keeping, recording the evaluation of documents through snapshots, computer simulations, documents (case history, compilation, archival analysis), product data (product family data), questionnaires
Sampling Techniques (How to recruit samples)	Tourism Studies		1. Probability sample 2. Non-probability sampling
	Human-Interaction	Computer	1. Random 2. Systematic 3. Stratified 4. Multi-stage clustered 5. Quotas
	Design Research		N/A
Sample Size	Tourism studies		Various calculation formulas
	Human-Interaction	Computer	N/A
	Design Research		N/A
Validity	Tourism Studies		Internal and external validity
	Human-Interaction	Computer	Internal validity, external validity, repeatability
	Design Research		Internal and external validity

3.3.1 Aim

The aim of the Tourism Studies research is: 1) market research (market profiles, tourism marketing plans), 2) positioning (market segmentation, positioning), and 3) understanding consumer behaviours (forecasting studies, leisure needs) (Veal, 2006).

The aim of the HCI research is: 1) understanding (finding the meaning of studies phenomena), 2) engineering (developing new systems), 3) re-engineering (improving existing systems by redeveloping them), and 4) evaluating (accessing or validating products, theories or methods) (Kjeldskov and Graham, 2003).

The aim of the design research is: 1) increasing understanding of the phenomena of design in all its complexity, and 2) development and validation of knowledge, methods and tools to improve the observed situation in design (Blessing and Chakrabati, 2009).

The aim of HCI research and Design Research are similar in certain ways because they focus on both theory and practice-based development, and start with the understanding, development (products, systems, methods or tools) and evaluation to validate and improve. However, the aim of Tourism Studies research concerns theoretical aspects and links with other business areas (i.e. marketing, consumer behaviour, management, positioning, etc.).

3.3.2 Main Issues

The main issues in Tourism Studies are: 1) policy-making (the statement of principles), 2) planning (strategies to implement policies), and 3) managing (the process of implementing policies and plans) (Veal, 2006).

The main issues in HCI are: 1) Understanding users (user interfaces, the users), 2) factors (organisational factors, environmental factors, health and safety factors, comfort factors, task factors, productivity factors, etc.), and 3) system (constraints, system functionality) (Lazar, et al., 2010).

The main issues in design research are: 1) Lacking an overview of existing research, 2) The lack of use of results in practice, and 3) the lack of scientific rigour (Blessing and Chakrabarti 2009).

Main issues in Tourism Research are all areas in business and management: policymaking, planning and managing. In HCI, the main issues concern science and technology: users, factors and system. The lack of skills in conducting systematic Design Research needs to be addressed and solved.

Regarding the lack of an overview of existing research, Blessing and Chakrabarti (2009) explain that even though the number of papers published has increased rapidly, the standard of them has decreased (i.e. absence of a clear overview, results, empirical data, technical terms etc.) (Samuel and Lewis, 2001).

Regarding lack of use of results in practice, Blessing and Chakrabarti (2009) argue that results mostly end up in publications and rarely in practical design work. This is highlighted because the research aims to improve design in both theoretical and practical aspects. Hence, the results in design research should affect practical work as well. Samuel and Lewis (2001) argue that lack of scientific rigour means that design research is insufficiently complex and disciplined. This requires implementing a variety of research methods that are unfamiliar to designers.

3.3.3 Data-Collection Methods

All data-collecting approaches in the three areas are qualitative and quantitative. However, in Tourism Studies, a number of methods focus on secondary data analysis, such as case studies, content analysis, life histories, etc. In HCI, a number of methods concentrate on experiments in the laboratory or controlled areas using technological devices, such as eye tracking, usability testing, etc. Design research mainly deploys qualitative methods such as observation, interviews, simultaneous verbalisation and focus groups.

3.3.4 Sampling Techniques and Sample Size

In Tourism Studies, there are numerous techniques to recruit samples presented in textbooks, such as probability and non-probability samples. There are also a number of formulas to calculate sample sizes (Veal, 2006). There are five sampling techniques to recruit in HCI, but there is no method to calculate the amount of participants; there are no sampling techniques or sample-size calculations presented in the textbook. This could be because these techniques are for quantitative, not qualitative, methods. Design research mainly focuses on qualitative methods, however this could be seen as a weakness because of lacking scientific rigour (Samuel and Lewis, 2001; Blessing and Chakrabarti, 2009).

3.4 A Brief History of Design Research

Nigel Cross provides a background about design research in the book, *Designerly Ways of Knowing*, (Cross, 2007, pp. 119-127) where he argues that Le Corbusier, a modern movement designer, established the design methods in the 1960s. Initially, design methodology was perceived as an orderly, systematic procedure for design solution (Downton, 2003, p. 39; Gedenryd, 1998). Moreover, in 1962, the conference in design methods firstly established the term 'design methodology' as "the procedures or methods for designing as a valid scientific research subject" (Gedenryd, 1998, p. 19). Later, the Design Research Society in England and the Design Studies Journal were founded to support this. The approach has endured from the 1970s up until today (Cross, 2007b, p. 47; Downton, 2003, p. 41).

Next, in 1981, Archer (1995, p. 6) published the textbook, *Systematic Methods for Designers*, and presented the science of design research as: "1) systematic, 2) an enquiry to find answers, 3) goal-directed to follow the task description, 4) knowledge-directed to go further in providing information, and 5) communicable to be understandable for audiences".

However, Cross (2007) argued that, whilst research methods might be necessary in the area of science, they were not required in the practice of design because results could not be repeated and should not be copied. Professor Donald Schon also supported the concept that design practitioners usually know their work better than

they could explain. Accordingly, Schon developed the theory of applying social science methods, rather than fitting design into prescribed and structured methodologies. At that time, social science researchers began to use ethnography in their work, and it was thought that this method could help designers to understand their users' needs (Frankel, 2009a; Wasson, 2000, p.380). This concept continues to influence designers today.

3.5 Comparison Between Design Research Methodologies

This chapter presents four examples of design research methodologies briefly: 1) Design research methodology (DRM), 2) Centre for Design Research (CDR) model, 3) CAD Centre model, and 4) *n*-dim model.

3.5.1 Design Research Methodology (DRM)

This description-based model combines both descriptive and prescriptive elements in four stages: it starts with a research clarification to the first descriptive study, followed by prescriptive and the second descriptive study. This model is scientifically rigorous because it includes an evaluation stage to assess the effect of prescriptive and practical work, and is suitable for doctoral degree projects that have a three-year timeframe.

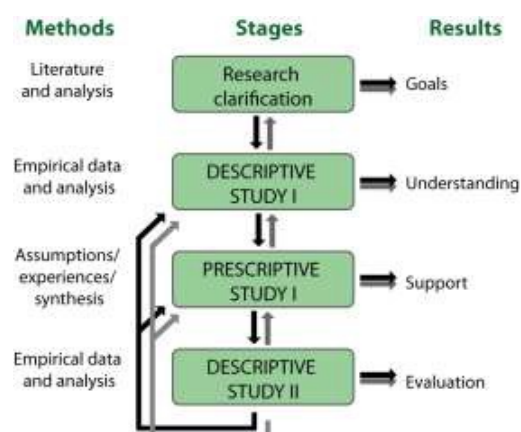


Figure 3.1 Design Research Model (Blessing and Chakrabarti, 2009)

3.5.2 Centre for Design Research (CDR) Model

This model is an iterative cycle of observation, analysis and intervention. The strength of this design methodology is that the three steps of observation (observe, analyse and intervene) are repeated many times. This guarantees the quality of the research, but could take too much time. Generally, this research methodology requires three years to complete, and so is suitable for a PhD (Tang, 1991)

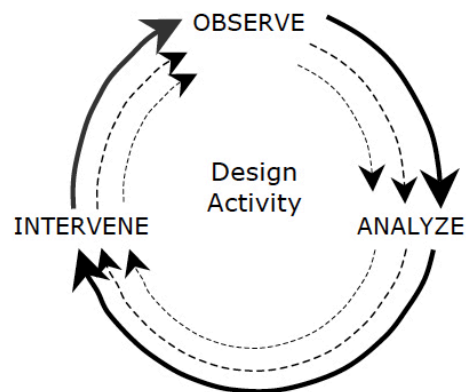


Figure 3.2 CDR research methodology (Tang, 1991)

3.5.3 CAD Centre Model

This model is based on description and prescription in research. Originally, the CAD model was created for AI design. Description presents the terms in reality and prescription presents them as envisaged reality. Although it was created for AI design, it could be adapted to many contexts (Duffy & O'Donnell, 1998).

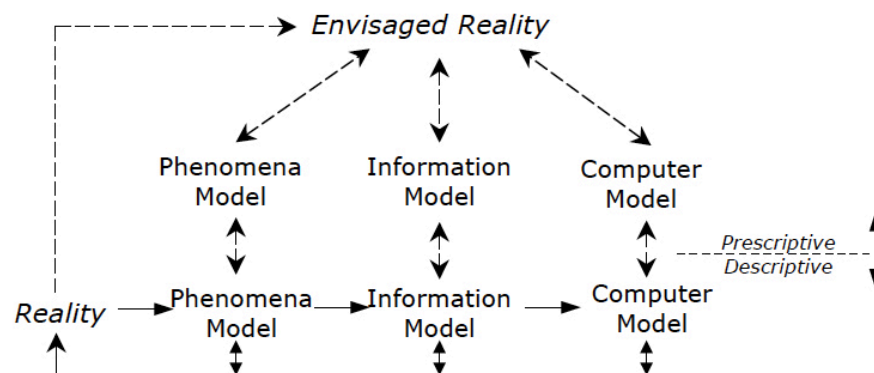


Figure 3.3 CAD research methodology (Duffy & O'Donnell, 1998)

3.5.4 *n*-dim Model

This model can increase practicality and be used in design research by focusing on the development of tools in the industry. It presents iterative cycles of description and implementation at the top and evaluates design tools at the bottom. It can combine both valid academic contributions with the industry's needs to create the new tools (Subrahmanian, et al., 1997)

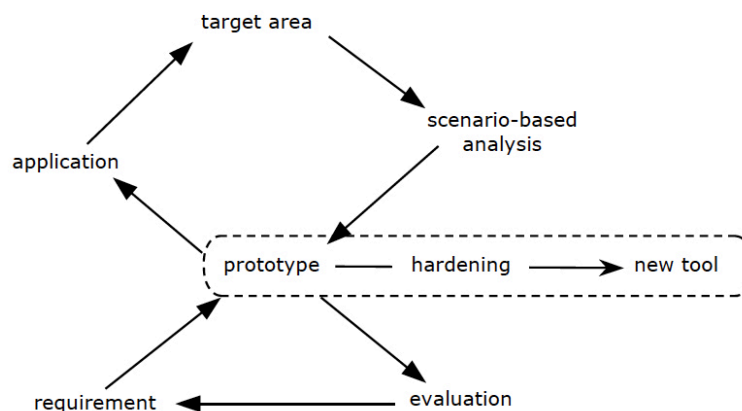


Figure x: *n*-dim model for creation of design support tools

Figure 3.4 *n*-dim research methodology (Subrahmanian, et al., 1997)

This section compares several useful research methodologies in design summarised in Table 3.3. Each model combines useful and relevant elements and structures. However, the majority of these design methodologies mainly focus on qualitative methods, such as observation (CDR, CAD and *n*-dim); only DRM focuses on both qualitative and quantitative methods. Moreover, the CAD and *n*-dim models focus specifically on AI in design and engineering design. Therefore, this PhD research chooses DRM as the main methodology by mixing both quantitative (questionnaires in Study 1 and online questionnaires in Study 4) and qualitative (interviews in Study 2 and observations in Study 3) methods. DRM allows the researcher to evaluate the final work (i.e. the research framework in this study) to answer the research question in Descriptive Study 1 (DS-1).

Table 3.3 Comparison between design research methodologies

Design Research Methodology (DRM)	701	Blessing and Chakrabarti (2009)	Design	Qualitative Quantitative	All qualitative and quantitative methods
Center for Design Research (CDR) Model	692	Tang (1991)	Design, Social Sciences	Qualitative	Mainly observation
CAD Centre Model	30	Duffy and O'Donnell (1998)	AI in Design Computer Mode Design Process Management	Qualitative	Mainly observation
n-dim Model	45	Subrahmanian, et al., (1997)	Engineering Design	Qualitative	Observations of design practice

3.6 Constructing a Design Research Methodology (Adapting DRM)

3.6.1 Research Clarification



This stage is designed to identify the research goals, problems, questions and related areas or factors to be reviewed. In this study, cultural tourism is analysed in terms of two research problems: lack of diversity and motivation. This stage will clarify the current understanding, develop an initial reference model, and propose approaches to address research problems through introduction and application of inclusive design to increase diversity, and digital storytelling to increase motivation in cultural tourism by framing the research question as ‘How could inclusive design and digital storytelling principles be applied to facilitate cultural tourism in Thailand?’ Lastly, success criteria and measurable success criteria are identified to judge the

results and evaluate the outcome of the study. Details of this section are presented below:

1. Identifying the overall topics of interest

- Cultural tourism is considered to be a niche market and little attention has been paid to it.
- Visitors are not diverse and have little motivation to visit cultural places and engage with the stories and information provided

2. Clarifying the current understanding and expectations

- To increase the diversity of tourists, this study applies inclusive design principles as 'understanding and designing for diversity'.
- To increase the motivation of tourists, this study adopts digital storytelling as 'the guideline to increase motivation'.

3. Clarifying criteria, main questions and hypotheses

- **Research question:** "How could inclusive design and digital storytelling principles be applied to facilitate cultural tourism in Thailand?"
- **Success criteria:** Creating the IDST for CT framework to address increasing diversity and motivation in CT, supported with empirical data from three studies
- **Success measurable criteria:** Usability and desirability of the IDST for CT framework

4. Selecting type of research

- Study 1: Quantitative (questionnaire)
- Study 2: Qualitative (interview)
- Study 3: Qualitative (observation)
- Study 4: Quantitative (online questionnaire)

5. Determining areas of relevance and contribution

- Cultural tourism, inclusive design and digital storytelling

6. Formulating Overall Research Plan

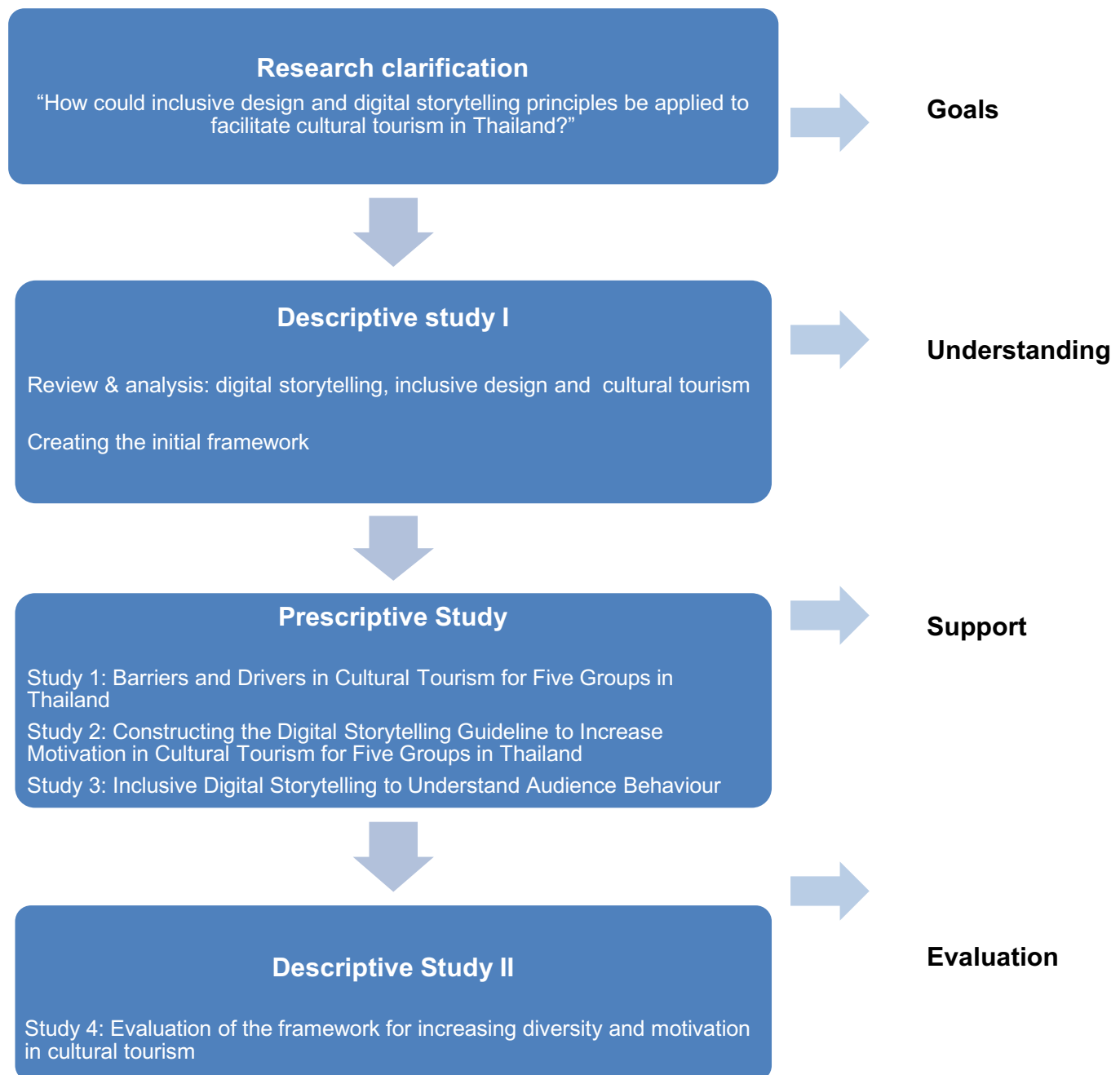


Figure 3.5 The overall research plan adapting with DRM

3.6.2 Descriptive Study 1 (DS1)



The aim of DS-1 is to provide a better understanding of the current situation in this PhD research by identifying, reviewing and analysing the three main factors: 1) Cultural Tourism, 2) Inclusive Design and 3) Digital Storytelling. In review-based DS-1, the importance and various applications of these factors are defined. This study reviews examples and trends of digital storytelling works in cultural tourism from two time periods: 2000-2010 and 2010-2016.

Comprehensive DS-1 analyses the opportunities between three factors to explain their relation to each other before considering literature concerning those relationships as: 1) inclusive design and cultural tourism, 2), digital storytelling and cultural tourism and 3) digital storytelling and inclusive design. Lastly, the initial framework for inclusive digital storytelling to increase diversity and motivation for cultural tourism in Thailand is created from the literature review; the analysis is presented at the end of Chapter 2. This initial framework will be developed and addressed in detail in the prescriptive stage, which will be composed of three studies and evaluated in descriptive study 2.

Table 3.4 Review-based and comprehensive in this thesis

Cultural tourism	Inclusive design	Digital storytelling
<ul style="list-style-type: none"> -Types of tourism -The landscape of cultural tourism -The importance, relevance and applications of cultural tourism -Cultural tourism in Thailand 	<ul style="list-style-type: none"> -Definition of inclusive design -History and background of inclusive design -Inclusive Design, Universal Design, and Design for All -Applications of inclusive design -Inclusive Tourism -Principles of inclusive design 	<ul style="list-style-type: none"> -Definition of digital storytelling -History and background of digital storytelling -Applications of digital storytelling -Digital storytelling in cultural tourism from 2000-2010 and 2010-2016 -Trends in digital storytelling for cultural tourism from 2000-2010 and 2010-2016 -Digital storytelling guidelines

Challenges and opportunities in Cultural Tourism	Inclusive Digital Storytelling for Cultural Tourism – a first combined approach
<ul style="list-style-type: none"> -Cultural Tourism - issues and potentials -Increasing diversity in Cultural Tourism -Why 'inclusive design' for cultural tourism? -Opportunities for inclusive design within cultural tourism -Increasing motivation in Cultural Tourism -Why digital storytelling for cultural tourism? -Opportunities for digital storytelling within cultural tourism 	<ul style="list-style-type: none"> -Why digital storytelling for inclusive design -Opportunities for digital storytelling and inclusive design: -Challenges of inclusive digital storytelling in this study

3.6.3 Prescriptive Study (PS)



Blessing and Chakrabarti (2009) state that design research is used to support and improve design in both academia and industry. Moreover, developing design support in a research project should be systematic. Therefore, empirical data, results, and studies collected systematically provide vital information for the development of design frameworks and principles for product development.

The prescriptive study aims to develop and strengthen the initial framework presented previously by collecting empirical data and presenting the results of the relationship from three key areas – cultural tourism, inclusive design and digital storytelling. This stage (PS-1) sets up three studies and reports with the criteria of the prescriptive study from DRM: 1) Task Clarification, 2) Conceptualisation, 3) Elaboration, 4) Realisation, and 5) Support Evaluation (Blessing and Chakrabarti, 2009).

Study 1: Barriers and Drivers in Cultural Tourism for Five Groups in Thailand

- **Problem:** Most of the tourism industry focuses upon only 15 per cent of tourists
- **The desired situation:** This study tries to seek out the remaining 85 per cent of tourists to increase diversity in cultural tourism
- **Aim:** To investigate what are the barriers and drivers for cultural tourism in the context of five different groups.
- **Value:** The industry and government organisations may be better able to recognise the significance of neglected groups and increase accessibility for these people.
- **Method:** Quantitative method; 500 questionnaires (100 for each group)
- **Participants:** Five groups of people (1. Youth; 2. Older adults; 3. Disabled people; 4. Non-cultural tourists; 5. Cultural tourists)
- **Validation:** 1). Yamane's formula to calculate sample size; 2). Skip interval - as the criteria to select samples; 3). Pre-test and Pilot test; 4). Reliability test was done by using Chronbach's Alpha and 5). 2 multiple coders to compare open-end answers
- **How to evaluate:** 1). Mean and S.D. scores and 2). Coding method
- **Research question 1:** What are the barriers and drivers in cultural tourism among five different groups?
- **Research question 2:** Are there any differences in answers between close-ended and open-ended questions?

Study 2: Constructing the Digital Storytelling: Guideline to Increase Motivation in Cultural Tourism for Five Groups in Thailand

- **Problem:** 1). Visitors have no motivation to read the story displayed behind exhibitions and visit actual sites **and** 2). There is no DST guideline focusing specifically on cultural tourism
- **The desired situation:** The DST guideline to increase the motivation in CT
- **Aim:** To create and propose a digital storytelling guideline to motivate five groups in Thailand to engage in cultural tourism.
- **Value:** 1). This study centralises many general guidelines of digital storytelling

into the single guideline and 2). It creates a new digital storytelling guideline for five groups representing specifically the motivation for cultural tourism.

- **Method:** Qualitative method; The 17 structured interviews focus on how to use the guideline of digital storytelling to motivate cultural tourism for the five groups.
- **Participants:** Four groups of people; 1.) Thai academic experts; 2.) Thai young industrial experts; 3.) Thai experienced industrial experts and 4.) International academic and industrial experts
- **Validation:** 1). three multiple coders to create DST guideline; 2). Pilot test and 3). two Multiple coders to compare interview results
- **How to evaluate:** Coding method
- **Research question 1:** What is the digital storytelling guideline that focuses specifically to cultural tourism?
- **Research question 2:** How can the digital storytelling guideline be used to motivate cultural tourism for five different groups in Thailand?

Study 3: Inclusive digital storytelling to understand audiences' behaviour

- **Problem:** DST is useful and motivated, but some people (especially older adults and disabled people) cannot access and understand this form of technology
- **The desired situation:** Insights into diverse audiences in terms of reaching and engaging with digital storytelling
- **Aim:** To understand diverse audiences in terms of reaching (accessibility and understanding) and engaging with (usefulness, usability, desire) storytelling on digital devices.
- **Value:** 1). Insights about diverse audiences in terms of reaching of and engaging with DST and 2). This study can inform industry, designers, and researchers to understand diverse users and create DST that includes and supports various groups of users
- **Method:** qualitative method; 50 observations (10 for each group). The participants will be asked to use a mobile device (ipad) to visit Youtube and watch 1.) short movie and 2.) short animation

- **Participants:** Five groups of people (1. Youth; 2.Older adults; 3. Disabled people; 4. Non-cultural tourists; 5.cultural tourists)
- **Validation:** 1). Watching recorded video and discussion after observation with three staff; 2). Pilot test and 3). Three multiple coders to compare results
- **How to evaluate** Mean scores and coding method
- **Research question 1:** What are the diverse audiences' behaviour in terms of reaching with digital mobile devices
- **Research question 2:** What are the diverse audiences' behaviour in terms of engaging with digital mobile devices

3.6.4 Descriptive Study 2 (DS2)



This stage evaluates the assumptions presented in the initial framework in DS-1 and supported with empirical results from PS (Blessing and Chakrabarti, 2009). It presents the structure to evaluate the DRM criteria accordingly: 1) reviewing existing documentation, 2) determining evaluation focus, and 3) developing evaluation plan(s) (Blessing and Chakrabarti, 2009).

This research provides the measurable success criteria in the Research Clarification stages (RC) as: usability and desirability of the IDST for CT framework. This is the purpose of the evaluation study, and reason behind using 120 online questionnaires that will be distributed into four main users of this framework, both in Thailand and internationally.

1. Reviewing existing documentation

- **Study 1:** Barriers and Drivers in Cultural Tourism for Five Groups in Thailand
- **Study 2:** Constructing the Digital Storytelling: Guideline to Increase Motivation in Cultural Tourism for Five Groups in Thailand
- **Study 3:** Inclusive digital storytelling to understand audiences' behaviour

2. Determining evaluation focus

- **Aim:** To evaluate the usability and desirability of a framework for increasing diversity and motivation in cultural tourism
- **Method:** Online questionnaires distributed to four groups; 1.) Thai cultural tourism experts and students; 2.) Thai inclusive design expert and students; 3.) Thai digital storytelling experts and students; and 4). International experts from all above groups

3. Developing Evaluation Plan(s)

- **Online questionnaire:** 18 items of questions (14 Likert scale and 4 open-ended questions)
- **Statistics:** 1). Mean scores and S.D. and 2). ANOVA test to identify the differences between the groups.

4. Undertaking evaluation(s)

- See results on Chapter 7

3.7 Analytical process

3.7.1 Study 1: barriers and drivers in cultural tourism for five groups in Thailand

Qualitative analysis

The key findings of open-ended answers were synthesised into a qualitative report. Responses to open-ended questions were analysed and structured using thematic coding analysis (Saldaña, 2015), and multiple coders (one senior and two junior researchers) in order to increase the reliability of data analysis.

In Chapter 4, Table 4.10 presents the barriers and Table 4.11 the drivers to cultural tourism among five groups, identified through their open-ended responses.

Validity (accuracy of observation)

- Providing guidelines, checklists, objectives, and processes to all staff at all stages of data collection to ensure each staff member explained and collected data correctly.
- It can be assumed that qualitative findings – barriers and drivers for cultural tourism in Thailand – were likely valid, due to the overall high number of five groups of participants included in all five groups (N=500).
- To translate the data correctly, the researcher translated all results from Thai to English. Next, the researcher asked a professional translator to double-check and correct all data again.
- A systematic checking of coding by three coders (one senior and two junior researchers) of the open-ended answers coded manually.
- A systematic final quality check of the coding by all coders to discuss and summarise all data.

Reliability (replicability)

This study can be assured by testing using a pre-test and pilot test, with content validity ensured by three experts (one design expert, one language expert, and one statistics expert). In addition, the result from a reliability test applying Cronbach's alpha was $0.907 > 0.900$ (excellent) (Burns and Bush, 2013). This means that this questionnaire had a very high standard of reliability.

The process of data collection and coding analysis can guarantee the validity of our analyses and support reliability by providing all details in the questionnaire; additionally, staff members were guided properly to understand the process and to give advices to respondents. In case of coding, all coders were presented with details and objectives before coding to understand the logic of the processes involved.

3.7.2 Study 2: constructing digital storytelling – guideline for increasing motivation in cultural tourism for five groups in Thailand

Qualitative analysis

The results of the interview material were transcribed from voice recordings to documents and translated from Thai to English by the researcher. A professional translator was asked to double-check and correct (if needed) all interview transcripts. All interview data were analysed and coded by three coders (one senior and two junior researchers) using thematic coding analysis (Saldaña, 2015), thus increasing the reliability of data analysis. In Chapter 5, Table 5.6 illustrates digital storytelling guidelines for cultural tourism by 17 experts.

Validity (accuracy of observation)

- By explaining backgrounds (how to create the digital storytelling guideline), results from the previous study (barriers and drivers for all five groups) aim, objectives and processes to all interviewees to ensure that each participant can understand the questions clearly.
- All interviews, both online (Skype) and face-to-face, were video and voice recorded to be double-checked and proofed, if necessary.
- To translate the data correctly, firstly, the researcher translated all interview results from Thai to English. Secondly, all data were proofed by a professional translator to double-check and correct (if needed) data.
- A systematic checking of coding of the interviews, coded manually, by three coders (one senior and two junior researchers).
- A systematic final quality check of the coding by all coders to discuss and summarise all data.
- All interviewees were selected from four groups with high standards of criteria: (1) Thai academic experts with an academic position or a doctoral degree in a related area; (2) Thai industrial experts with more than five years of experience; (3) young Thai industrial experts with less than five years' experience; (4) international academic and industrial experts.

Reliability (replicability)

Initially, the interview questions and plans were tested using three pilot test cases (Thai academic experts, Thai industrial experts, and young Thai industrial experts); this process reviewed the understanding of questions, the flow of the structured

interview, the timing of interviews, and assisted in developing the interview into its most recent version.

The interview process began by reviewing the backgrounds and findings of the first study to better understand several groups of people's needs. In the case of coding, all coders were presented with findings from the first study, and the background of digital storytelling guidelines. This process also aimed to provide a better understanding of the logic of the interviews.

3.7.3 Chapter 6: study 3 – inclusive digital storytelling to better understand audience behaviour

Qualitative analysis

Following observations, the researcher and two staff members watched the recorded video of the interviews and transcribed the voice recordings into spreadsheets. Next, the researcher translated from Thai to English and asked a professional translator to double-check their translation. Then, to obtain a coding analysis from the qualitative data, using thematic coding analysis (Saldaña, 2015), three coders (one senior and two junior researchers) discussed and grouped all comments into themes and sub-themes, as negative and positive comments.

Validity (accuracy of observation)

- Prior to the observation stage, the researcher clearly explained all 11 user journey stages, as well as the aims and objectives of each stage to all staff members.
- In this observation, it can be assumed that the qualitative data – comments from 11 user journey stages for all five groups – were likely valid, due to the number of participants from five groups (N=50)
- In terms of translation, the researcher translated all transcripts from Thai to English. Then, a professional translator rechecked the translation and discussed it with the researcher.
- A systematic checking of the coding of observation data, coded manually, by three coders (one senior and two junior researchers).

- A systematic final quality check of the coding by all coders to discuss and summarise all data into themes and sub-themes, as presented in this chapter.

Reliability (replicability)

Prior to observations, this study set up a pilot test with four people (two older adults and two disabled people) to test timing and errors while watching digital storytelling. The results indicated that many participants felt awkward about being recorded with the video camera placed at the front of the interviews. Hence, the researcher changed from using a DSLR camera to using a GoPro, a much smaller-sized camera. Additionally, the researcher reduced some user journey stages to save time.

Regarding coding analysis, all three coders were presented with the aims and objectives of the dissertation, information about previous studies, as well as the current study as a third body of research to better understand the logic of the current study.

3.7.4 Study 4: evaluation of a framework for inclusive digital storytelling for cultural tourism (IDST for CT) in Thailand

Qualitative analysis

The answers to four open-ended questions (items 15 to 18) were analysed and transcribed into a qualitative report. Data to open-ended questions were analysed by multiple coders (one senior and two junior researchers) and structured using thematic coding analysis (Saldaña, 2015) in a bid to analyse answers to research question four: *what changes or additions should be made to improve IDST for the CT framework?* as well as research question five: *what do participants like and dislike in the IDST for CT framework?*

Validity (accuracy of observation)

- The initial version of the online questionnaire was reviewed by three experts in different areas and developed into the final version.
- Due to the number of respondents (N=123), it can be assumed that qualitative data were likely valid.

- To translate the open-ended answers correctly, the researcher translated all results from Thai to English. Next, the researcher asked a professional translator to double check the translation and to make corrections where and if needed.
- A systematic checking of the coding of the open-ended answers, coded manually, by three coders (one senior and two junior researchers).
- A systematic final quality check of the coding by all coders to discuss and summarise all data.

Reliability (replicability)

This study was verified using a pilot test that included nine participants (including designers, cultural tourism users, and digital storytelling users). Participants' comments addressed the topics of user-friendliness, confusion, and suggestion. As a result, the final version of this online questionnaire was reduced from 26 to 18 items. Regarding coding analysis, all coders were presented with the primary aim, objectives, research problems, and questions of this dissertation, as well as the background of the fourth study to better understand the logic of this online survey.

The process of data collection can support reliability by classifying participants into four groups, using criteria such as: (1) Thai cultural tourism users (academia, industry, students); (2) Thai inclusive design users (academia, industry, students); (3) Thai digital storytelling users (academia, industry, students); (4) international inclusive design, digital storytelling, and cultural tourism users (academia, industry, students).

3.8 Summary

- **Research Strategies in Social Sciences and Design**

This PhD research is considered to be applied research because of its specific goals and mixed methodology (i.e. quantitative and qualitative research). Additionally, it adopts a mixed method research approach which concerns Positivism and Interpretivism. Objectivism (Studies 1 and 4) and Subjectivism (Studies 2 and 3) are applied as points of view. Lastly, the research purpose is set up as Exploratory and Descriptive.

This thesis is recognised as ‘Research into design’, as design taxonomy, design praxeology (Chapters 2, 4, 5 and 6) and design epistemology (Chapter 7) are applied. This study is considered as design exploration and design studies.

- **Comparison of Research Methodologies in Tourism Studies, HCI and Design Research**

This chapter started with the comparisons between three areas in terms of research methodologies. Firstly, Tourism studies aims to link data with other business sectors and focuses on main issues in business and management areas. In terms of data collection, a number of methods also focus on secondary data analysis. Additionally, there are many techniques to collect samples and formulas to calculate sample size.

In HCI research, the aims are similar to design research in that they try to create both theory and practice-based development. The main issues in HCI are science and technology. Methods in data collection are set up in the laboratory with technological devices. Additionally, there are five sampling techniques, but there is no method to calculate the number of participants.

Some of the main issues in design research are: lack of proper research and not knowing how to use it in reality. Design research is mainly qualitative, which is why its sampling techniques and methods for calculating sample size are not generally very common.

This study has tried to ensure some of the main issues in design research are addressed, the lack of using results in practice and the lack of scientific rigour by offering empirical results that designers, researchers or tourism industry professionals can make real use of. This study has adopted techniques to collect samples and formulas to calculate sample sizes from Tourism Studies in Study 1 and statistics to present similarities and differences in Study 4 in order to strengthen scientific rigour.

- **Comparison of Design Research Methodologies**

This chapter reviewed and compared four research methodologies in design (DRM, CDR, CAD Centre and *n*-dim models) and concluded that three out of four are

qualitative. Furthermore, CAD n-dim models are mainly used on AI in design and engineering design. Although the CDR model could be applied in both Design and Social Science areas, this methodology requires a three-year study period that only uses observation. However, only DRM could be applied in both qualitative and quantitative methods and focused specifically on design areas. Moreover, DRM also includes an evaluation stage for researchers or designers to evaluate the final results.

- **Designing a Research Methodology (DRM)**

The four stages of DRM as applied in this research are as follows:

Research Clarification: Two of the main problems in cultural tourism are lack of diversity and motivation. This research intends to address these two issues by introducing and applying two external fields, i.e. inclusive design to increase diversity, and digital storytelling to increase motivation in cultural tourism. Therefore, the research question is proposed as: “How could inclusive design and digital storytelling principles be applied to facilitate cultural tourism in Thailand?”

DS-1: This stage reviews and analyses the three main fields in order to provide a better understanding of the current situation in cultural tourism and the ways forward: 1) Cultural tourism, 2) Inclusive design and 3) Digital storytelling. In review-based DS-1, these three fields are defined, and their importance and various applications are considered. The opportunities between three fields and the relationships between them are illustrated in comprehensive DS-1. Lastly, the initial framework for inclusive digital storytelling (IDST) to increase diversity and motivation for cultural tourism in Thailand is constructed, developed in PS, and evaluated in DS-2.

PS: In order to develop and detail the initial framework by collecting empirical data, this stage presents three studies with the link between them: 1) Study 1 illustrates the link between inclusive design and cultural tourism, 2) Study 2 illustrates the link between digital storytelling and cultural tourism, and 3) Study 3 represents the link between inclusive design and digital storytelling.

DS-2: This stage evaluates the final framework presented in DS1, detailing the empirical data from three studies in PS to answer the research question.

Table 3.5 design research methodology (DRM) in this study

1. Research Clarification	- Identify research problems - Set up research question	“How could inclusive design and digital storytelling principles be applied to facilitate cultural tourism in Thailand?”
2. Descriptive Study 1 (DS1)	Literature review, analysis and synthesis	Initial framework for inclusive digital storytelling
3. Prescriptive study (PS)	1. Inclusive design and cultural tourism (500 Questionnaires)	Barriers and drivers to cultural tourism for five groups in Thailand
	2. Digital storytelling and cultural tourism (17 experts interviews)	The digital storytelling guideline for five groups in Thailand
	3. Inclusive design and digital storytelling (50 observations)	Five groups reaching of and engaging with digital storytelling
4. Descriptive Study 2 (DS2)	Evaluation of the final framework (126 online questionnaire)	Framework evaluated

Chapter 4: Barriers and Drivers in Cultural Tourism for Five Groups in Thailand

4.1. Introduction

4.2. Research Method

4.2.1 The sample sizes

4.2.2 Systematic sampling

4.2.3 Questionnaire development

4.2.4 Pre-test and Pilot test

4.3 Research question1: what are the barriers and drivers in cultural tourism among five diverse groups?

4.4 Discussion for research question1

4.5 Research question 2: Are there any differences in answers between scaling and open-ended questions?

4.6. Summary

4.6.1 Research question

Research question 1

Research question 2

4.6.2. Study implications

Marketing

Management

4.6.3 Study Limitations

1. The sample size

2. Likert scaling questionnaire

3. Lack of prior research

4. Access

5. Limited use in Thailand

6. Gender imbalance

4.6.4 Detailing the framework

4.1. Introduction

The literature review chapter illustrated useful information about the relationship between three key factors; inclusive design, digital storytelling and cultural tourism to create the framework for inclusive digital storytelling to increase diversity and motivation for cultural tourism in Thailand for Thai people.

However, in order to complete the final framework, this chapter focused on one of the main problems in cultural tourism that is ‘lack of diversity’ and presented results of the link between inclusive design and cultural tourism. This is because cultural tourism is a niche market to which little attention has been paid, especially compared to mass tourism. To broaden and increase the potential market, this study draws upon inclusive design principles to identify barriers and drivers in cultural tourism for five groups: 1) youth; 2) people uninterested in cultural tourism (non-cultural tourists); 3) older adults; 4) people with disabilities; and 5) cultural tourists. By researching barriers and drivers to engaging in cultural tourism among different groups, the industry and government organisations may be better able to recognise the significance of neglected groups and increase accessibility for these people. The aim and objectives of this chapter are in the Table 4.1. Moreover, this chapter aims to answer the research questions:

- **Research question 1:** What are the barriers and drivers in cultural tourism among five diverse groups?
- **Research question 2:** Are there any differences in answers between close-ended and open-ended questions?

Table 4.1 Aim and objectives of the study

1. To investigate what are the barriers and drivers for cultural tourism in the context of five different groups.	<p>1.1 To identify the barriers (why they do not) for cultural tourism among five groups of potential customers</p> <p>1.2 To identify the drivers (why they do) for cultural tourism among five groups of potential customers</p> <p>1.3 To compare the differences between close-ended and open-ended answers to seek out the neglected barriers and drivers within the context of Thailand’s cultural tourism.</p>
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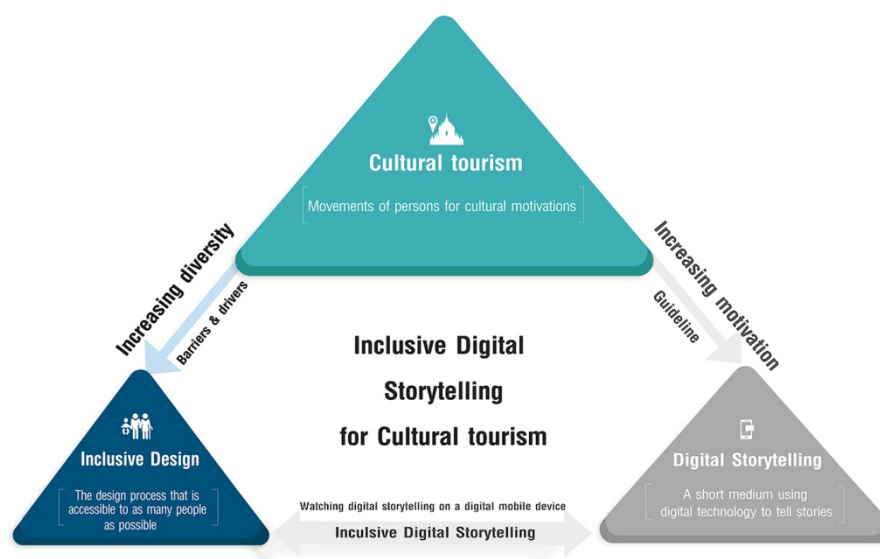


Figure 4.1 The link between inclusive design and cultural tourism in this chapter

To achieve these objectives, 500 questionnaires were distributed to five groups in various locations in Bangkok, Thailand from 1 to 30 August 2015. This study, which applies an inclusive design principle, is differentiated from other research by categorising all potential cultural tourists in Thailand into five groups (youth, older adults, people with disabilities, non-cultural tourists, and cultural tourists), exploring and comparing their barriers and drivers for cultural tourism using both Likert-scaling and open-ended questions. Although cultural tourism is the main source of income for Thailand, the study of cultural tourism from the tourist's perspective is not enough. Often the studies in this area are not directly related to cultural tourism. Therefore, this is a good opportunity to investigate the barriers and drivers in cultural tourism of five different groups.

4.2. Research Method

4.2.1 The sample size

This quantitative-causal study seeks to identify the drivers and barriers that affect the willingness of different groups to engage in cultural tourism. It focuses on five groups of people in Bangkok, Thailand: youth (fifteen to twenty-four years), people with

disabilities, older adults (over sixty years), established cultural tourists, and people uninterested in cultural tourism (i.e., non-cultural tourists). According to the study from Mandala Research, LLC (2013), most cultural tourists take around 3.6 trips annually. These statistics have been reported by other studies for more than twenty years (Mandala Research, LLC 2013). Therefore, this study uses the criteria of the number of trips to identify cultural tourists. Tourists at the museum will be asked how many cultural trips they make annually. If more than four trips are made per year, they will be considered as cultural tourists.

The sample sizes for the five groups were calculated using Yamane's formula (Yamane 1967) with an error margin of 10 percent and with a confidence coefficient of 90 percent. The number of populations in this study is known (finite population). Hence, the Yamane formula is more appropriate than other formulas to calculate sample sizes. The sample size for the study was calculated from the Bangkok population: youth (1,403,096), older adults (800,036), and people with disabilities (65,966) (National Statistical Office 2015).

$$n = \frac{N}{1 + N(e)^2}$$

Figure 4.2 Yamane's formula to calculate sample size (Yamane, 1967)

Where, n = the sample size, N = the size of population, e = the error of 5 percentage points.

Table 4.2 Bangkok population calculated for sample size of 90% confidence

Youth (15-24 years)	1,403,096	$n = \frac{1,403,096}{1 + 1,403,096 \times (0.10)^2}$
		$n = 99.99$
Older adult (over 60 years)	800,036	99.98
People with disabilities	65,966	99.84

Table 4.3 Total population in this study

1.	Youth	100
2.	Older adult	100
3.	Disabled people	100
4.	Non-interest cultural tourists	100
5.	Cultural tourists	100

To gather information, 500 questionnaires (100 for each group) were distributed in underground train stations, parks, and cultural and historical sites for a period of one month. Respondents were asked to indicate the extent to which various barriers and drivers were important to them on a seven-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neutral, 5 = somewhat agree, 6 = agree and 7 = strongly agree). Many studies recommend that data from Likert scale would become less accurate when below five or above seven (Bouranta, Chitiris, & Paravantis, 2009). Moreover, Lewis (1993) suggests that seven-point Likert scale could result in stronger correlations with t-test or any statistic results. The time for completion of the questionnaire varied from five to ten minutes. The questionnaire consists of three parts: Part 1 consists of eight questions concerned with demographic profile using the “nominal scale” (gender, age, education, marital status, type of disability, monthly income). Part 2 consists of twenty-five questions focused on barriers in cultural tourism. Part 3 consists of twenty-six questions regarding drivers in cultural tourism, using the Likert scale and open-ended questions.

4.2.2 Systematic sampling

Systematic sampling, a way to select a random sample systematically, and skip interval were used as the criteria to select samples in this study. “Skip interval is calculated by dividing the number of names on the list by the sample size in the following formula: Skip interval = population list size/ sample size” (Burns and Bush, 2013, pp.337)

Table 4.4 Skip interval for five groups

Youth	Siam train station	295,272	295,272/ 100 = 2,952
Older adults	Lumpini Park	12,000	12,000/ 100 = 120
Disabled people	Baanphrapradaeng disability foundation	490	490/ 100 = 4.9
Non-cultural tourists	Asok, Sala Daeng, Victory monument train station	197,079	197,079/ 100 = 1,970
Established cultural tourists	Museum siam	694	694/ 100 = 6.94

From the table 1, a skip interval of youth at Siam train station was 2,952. This means that every 2,952 youth was selected into the sample. For older adults, a skip interval at Lumpini Park was 120 and 4.9 for disabled people at Baanphrapradaeng disability foundation. A skip interval for Non-cultural tourists is 1,970 and 6.94 for cultural tourists.

4.2.3 Questionnaire development

From the literature review, there is a range of perceived barriers and drivers. This study collects and groups them into ten broad themes and adopts them as barriers and drivers in the questionnaire.

Table 4.5 Barriers and drivers collected from literature review

<p>1. Personal interest</p> <ul style="list-style-type: none"> • Uncomfortable experience, not entertaining (Davies and Prentice, 1995; Migliorino and Cultural Perspectives, 1998; Kay and Wong, 2009; OMRG, 2006) • Not relevant or of interest; have different interests (Crawford and Godbey, 1987; Henderson, <i>et al.</i>, 1988; Bennett, 1994; Davies and Prentice, 1995; Tian, <i>et al.</i>, 1996; Prentice, <i>et al.</i>, 1997; Milner, <i>et al.</i>, 2004; National Heritage Board – NHB (2005) Old and unfashionable (National Heritage Board – 	<p>1. New experience</p> <ul style="list-style-type: none"> • New experiences and different lifestyles (Crompton, 1979; You, <i>at el.</i>, 2008; Shi, 2010) • Meeting new and different people (Kozak, 2002; Hsu, Cai and Wong, 2007; You, <i>at el.</i>, 2008; Jonsson and Devonish, 2008; Mohammad and Som, 2010; Shi, 2010; Allan, 2013) • Personal rewards (Hsu, Cai and Wong, 2007) <p>2. Escaping from Daily Routine</p> <ul style="list-style-type: none"> • Visiting a place that I have not visited
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<p>NHB (2005); Rentschler, 2006; Swanson and Davis, 2006; Kay, Wong and Polonsky, 2009)</p> <p>2. Time</p> <ul style="list-style-type: none"> • Lack time to attend (Crawford and Godbey, 1987; Henderson, <i>et al.</i>, 1988; Davies and Prentice, 1995; Tian, <i>et al.</i>, 1996; Samdahl and Jekubovich, 1997; Migliorino and Cultural Perspectives, 1998; Geissler, <i>et al.</i>, 2006; Kay and Wong, 2009; Milner, <i>et al.</i>, 2004; Rentschler, 2006) • Inconvenient opening times and activity schedules (Crawford and Godbey, 1987; Henderson, <i>et al.</i>, 1988; Davies and Prentice, 1995; Tian, <i>et al.</i>, 1996; Samdahl and Jekubovich, 1997; Migliorino and Cultural Perspectives, 1998; Milner, <i>et al.</i>, 2004; Geissler, <i>et al.</i>, 2006; Rentschler, 2006; Kay and Wong, 2009) <p>3. Understanding</p> <ul style="list-style-type: none"> • Lack of past engagement (Crawford and Godbey, 1987; Bennett, 1994; Davies and Prentice, 1995; Tian, <i>et al.</i>, 1996; Prentice, <i>et al.</i>, 1997; Kay and Wong, 2009) • Poor past experience (Crawford and Godbey, 1987; Bennett, 1994; Davies and Prentice, 1995; Tian, <i>et al.</i>, 1996; Prentice, <i>et al.</i>, 1997; Kay and Wong, 2009) • Lack of information about where to go (Blazey, 1987; Huang and Tsai, 2003) <p>4. Health</p> <ul style="list-style-type: none"> • Physical well-being (Rose and Graesser, 1981; Blazey, 1987; Romsa and Blenman, 1989; Huang and Tsai, 2003) • Medical problems (LaGrow, 1990) <p>5. Finance</p> <ul style="list-style-type: none"> • Lack of concession pricing (Henderson, <i>et al.</i>, 1988; Tian, <i>et al.</i>, 1996; Prentice, <i>et al.</i>, 1997; Samdahl and Jekubovich, 1997; Kirchberg, 1998; Rentschler, 2006; Kay and Wong, 2009) • Overall and supplementary costs (Blazey, 1987; Romsa and Blenman, 1989; Davies and Prentice, 1995; Migliorino and Cultural Perspectives, 1998; Huang and Tsai, 2003; Rentschler, 2006; Kay and Wong, 2009) <p>6. Fear</p> <ul style="list-style-type: none"> • Fear of travelling alone (LaGrow, 1990; Huang and Tsai, 2003) 	<p>before (Hsu, Cai and Wong, 2007; You, <i>at el.</i>, 2008; Mohammad and Som, 2010)</p> <ul style="list-style-type: none"> • Getting away from home or mundane environment (Crompton, 1979; Kozak, 2002; Awaritefe, 2004; Kim, 2007; Jonsson and Devonish, 2008; You, <i>at el.</i>, 2008; Mohammad and Som, 2010; Shi, 2010) • Seeking adventure (Kozak, 2002; Jonsson and Devonish, 2008; Shi, 2010) <p>3. Gaining Knowledge</p> <ul style="list-style-type: none"> • Increasing knowledge about foreign destinations, people and things (Kozak, 2002; Jang and Wu, 2006; Hsu, Cai and Wong, 2007; Jonsson and Devonish, 2008; You, <i>at el.</i>, 2008; Mohammad and Som, 2010) • Education/ learning (Crompton, 1979; Kim, 2007) <p>4. Relaxation</p> <ul style="list-style-type: none"> • Just relaxing (Crompton, 1979; Kozak, 2002; Awaritefe, 2004; Jang and Wu, 2006; Kim, 2007; Shi, 2010) • Spending time with family/friends (Kozak, 2002; Jonsson and Devonish, 2008) <p>5. Culture</p> <ul style="list-style-type: none"> • Visiting historical/cultural sites (Kozak, 2002; Jonsson and Devonish, 2008; Shi, 2010) • Interesting/ unique culture or environment (Awaritefe, 2004) <p>6. Prestige</p> <ul style="list-style-type: none"> • Prestige, pride and patriotism (Crompton, 1979; Hsu, Cai and Wong, 2007) • Nostalgia (Hsu, Cai and Wong, 2007) <p>7. Information</p> <ul style="list-style-type: none"> • Recommendation from friends/acquaintances (Awaritefe, 2004) • Pre-trip information (You, <i>at el.</i>, 2008; Shi, 2010) <p>8. Advertising and branding</p> <ul style="list-style-type: none"> • Attractive and contemporary presentation (National Heritage Board – NHB, 2005) • Advertising in media (National Heritage Board – NHB, 2005) • Engaging online communities (National Heritage Board – NHB, 2005) <p>9. Destination attractiveness</p> <ul style="list-style-type: none"> • Location/accessibility/nearness of
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<ul style="list-style-type: none"> • Fear of hassles (Huang and Tsai, 2003) • Embarrassing aspects of visible disabilities (LaGrow, 1990) <p>7. Communication</p> <ul style="list-style-type: none"> • Interactions of individuals and social environments (Crawford and Godbey, 1987; Smith and Austin, 1991) • Lack of self-confidence (Crawford and Godbey, 1987) <p>8. Products/ Places</p> <ul style="list-style-type: none"> • Poor quality offerings (Davies and Prentice, 1995; Migliorino and Cultural Perspectives, 1998; Geissler, <i>et al.</i>, 2006; Kay and Wong, 2009) • Only for education and information (National Heritage Board – NHB, 2005) • Security concerns (Blazey, 1987) <p>9. Physical Access</p> <ul style="list-style-type: none"> • Physically difficult to get to (Crawford and Godbey, 1987; Kennedy, Smith and Austin, 1991; Tian, <i>et al.</i>, 1996; Prentice, <i>et al.</i>, 1997; Kay and Wong, 2009) • Difficult to access via public transport (Prentice, <i>et al.</i>, 1997; Migliorino and Cultural Perspectives, 1998; Rentschler, 2006; Kay and Wong, 2009) • Architectural barriers (e.g., cramped seating areas and unwieldy doors) (Crawford and Godbey, 1987; ODO, 2005) <p>10. Accommodation</p> <ul style="list-style-type: none"> • Accessibility of airplanes, hotels and restaurants (Kennedy, Smith and Austin, 1991; ODO, 2005; Harris Interactive Market Research, 2006) • Service of staff (Kennedy, Smith and Austin, 1991; ODO, 2005; Harris Interactive Market Research, 2006) 	<p>tourist site (Awaritefe, 2004; Kim, 2007; Shi, 2010)</p> <ul style="list-style-type: none"> • Convenience of transportation (You, <i>at el.</i>, 2008) • Low costs (cheap food/accommodation/other facilities) (Awaritefe, 2004; Jang and Wu, 2006; Hsu, Cai and Wong, 2007; Kim, 2007) • Outstanding scenery (You, <i>at el.</i>, 2008) <p>10. Cultural media</p> <ul style="list-style-type: none"> • Online museums, applications or websites (Kaelber, 2007; Payne, <i>et al.</i>, 2010; Rizvic, <i>et al.</i>, 2013) • Animation, VDO presentation, short movie (Kaelber, 2007; Payne, <i>et al.</i>, 2010; Rizvic, <i>et al.</i>, 2013) • VDO game about cultural stories (Michael and Chen, 2006; Bopp, 2008; Göbel, <i>et al.</i>, 2009; Pausch, <i>et al.</i>, 1996)
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4.2.4 Pre-test and Pilot test

The pre-test and pilot test were conducted for a period of one month. First, a pre-test of an in-person survey of sixteen young participants was tested in terms of 1) flow of the questionnaire, 2) length, and 3) respondent's interest and attention. The results obtained helped develop a revised version of the questionnaire by removing unclear questions, improving legibility by using larger text, and addition of more graphics (facial expressions on the Likert scale) and pictures of cultural tourism. Next, content validity was tested by three experts (one design expert, one language expert and one

statistics expert). Moreover, Rovinelli and Hambleton's (1976) Index of Item-Objective Congruence (IOC indexes) were calculated from three experts. The experts were asked to consider whether the scoring criteria addressed all aspects of barriers and drivers in cultural tourism for five groups and matched the objectives of this study. The experts rated the scoring criteria: 1 = item clearly match objective; 0 = uncertain, and -1 = item does not clearly match objective. The IOC data from the questionnaire showed that the content validity of the barriers was twenty-five out of twenty-eight and the drivers was twenty-six out of twenty-nine. This scoring had satisfied IOC's criteria over 0.5.

Thirty-five participants (youth, people with disability, older adults, non-cultural tourists) took part in a pilot test to help develop the final version based on seven issues: 1) clarity, 2) length, 3) interest, 4) problems, 5) good points, 6) bad points, and 7) changes needed. Most common participant comments included: "easy to understand", "not too long", "it can capture the interest throughout the time", "after finishing this questionnaire, I am interested in cultural tourism more than previously", "you should have more questions about people with disabilities or a separate section". Next, a reliability test was undertaken using Cronbach's Alpha. The instrument could present a high degree of reliability if the value of Cronbach's Alpha obtained was as follows: 0.9 (excellent), > 0.8 (good), > 0.7 (acceptable), > 0.6 (questionable), > 0.5 (poor), and < 0.5 (unacceptable) (Burns and Bush 2013). From the output of reliability statistics obtained, Cronbach's Alpha value of 0.907 > 0.900, it was concluded that this research instrument had very high reliability.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.907	.909	54

Figure 4.3 Reliability test by using Chronbach's Alpha

4.3 Research question1: what are the barriers and drivers in cultural tourism among five diverse groups?

4.3.1 Results

Table 4.6 Demographic results from five groups (500 respondents)

<i>Factor</i>	<i>Youth</i>	<i>Older Adults</i>	<i>People with Disabilities</i>	<i>Non-cultural Tourists</i>	<i>Established Cultural Tourists</i>
1. Gender					
Male	37	36	66	34	41
Female	63	64	34	66	59
2. Age					
15–17	31	-	1	8	4
18–22	49	-	2	28	22
23–25	20	-	2	1	27
26–34	-	-	9	31	18
35–45	-	-	13	27	25
46–59	-	-	35	5	3
60–65	-	58	18	-	1
66–75	-	36	11	-	-
76–85	-	6	6	-	-
85+	-	-	3	-	-
3. Education					
Primary/Secondary	8	29	67	5	10
High school	32	11	7	11	8
Diploma/Certificate	5	7	9	12	7
Undergraduate	51	38	2	64	58
Post-graduate or above	2	5	1	7	16
Other	2	4	14	-	1
4. Marital Status					
Single		31	53	62	74
Married		62	38	37	16
Other		6	9	1	7
5. Type of Disability					
Vision			16		
Hearing			7		
Mobility			74		
Mental health			1		
Intellectual functioning			2		
Cognitive/learning					
Long-term health conditions					
6. Monthly income (Thai bath)					
Below 5,000 bath	35	3	78	9	12
5,000–10,000 bath	24	26	3	24	17
10,001–20,000 bath	10	41	2	24	27
20,001–30,000 bath	9	9	2	12	8
30,001–50,000 bath	2	9		9	19
Above 50,000 bath	4	5		16	11
7. How many trips did you spend for “cultural tourism”?					
Never	11	16	56	13	
1–3 trips/year	30	27	28	45	
4–6 trips/year	20	28	2	13	58

7–9 trips/year	13	11	3	9	14
Above 9 trips/year	25	18	10	20	28

Table 4.6 presents the demographic data for the five participant groups. The quantitative results indicated that: most youth (49% - 49 respondents) were aged eighteen to twenty-two; 58% of older adults (58 respondents) were sixty to sixty-five years; 35% of people with disabilities (35 respondents) were forty-six to fifty-nine years; 31% of non-cultural tourists (31 respondents) were twenty-six to thirty-four years; and 27% of established cultural tourist (27 respondents) were twenty-three to twenty-five years. The largest group of the youth (51% - 51 respondents), 38% of older adults (38 respondents), 64% of non-cultural tourists (64 respondents), and 58% of established cultural tourists (58 respondents) had an undergraduate education level. However, the majority of people with disabilities (67% - 67 respondents) had a primary/secondary education level. In term of spending on cultural tourism, the largest portion of youth (30% - 30 respondents) and non-cultural tourists (45% – 45 respondents) spent one to three trips a year, while the largest portion of established cultural tourists (58% – 58 respondents) spent four to six trips a year. However, the most striking piece of data reported that the majority of respondents with disabilities, i.e. 56% of people with disabilities (56 respondents) had never travelled. Lastly, 28% of older adults (28 respondents) spent four to six trips a year.



Figure 4.4 Questionnaire distributions for five groups in many places

4.3.2 Barriers

For youth and non-cultural tourists, “a lack of time to attend” received the highest score (4.55 = somewhat agree and 4.26 = neutral) of all barrier factors. The same factor was also identified as the most and least important respectively by established cultural tourists (scoring 4.11 = neutral and 2.05 = disagree). For older adults, meanwhile, the item “difficult to access via public transport” recorded the highest mean value of (4.46 = neutral) while “poor past experience” scored lowest (2.81 = disagree). For people with disabilities, “physical well-being” was prioritised (5.41 = somewhat agree), with concerns about “interactions with individuals and social environment” scoring the lowest mean value (2.50 = somewhat disagree).

The results obtained from the respondents regarding barriers to engaging in cultural tourism are presented in Table 4.7. The scale ranges from “strongly disagree” (1) to “strongly agree” (7), with mean scores indicate as

- 1.00-1.49 = Strongly disagree
- 1.50-2.49 = Disagree
- 2.50-3.49 = Somewhat disagree
- 3.50-4.49 = Neutral
- 4.50-5.49 = Somewhat agree
- 5.50-6.49 = Agree
- 6.50-7.00 = Strongly agree

For youth and non-cultural tourists, “a lack of time to attend” received the highest score (4.55 = somewhat agree and 4.26 = neutral) of all barrier factors. The same factor was also identified as the most and least important respectively by established cultural tourists (scoring 4.11 = neutral and 2.05 = disagree). For older adults, meanwhile, the item “difficult to access via public transport” recorded the highest mean value of (4.46 = neutral) while “poor past experience” scored lowest (2.81 = disagree). For people with disabilities, “physical well-being” was prioritised (5.41 = somewhat agree), with concerns about “interactions with individuals and social environment” scoring the lowest mean value (2.50 = somewhat disagree).

Table 4.7 Mean scores of barriers in cultural tourism for five groups

<i>Barriers</i>	<i>Youth</i>	<i>Older Adults</i>	<i>People with Disabilities</i>	<i>Noncultural Tourists</i>	<i>Established Cultural Tourists</i>
<i>1. Personal interest</i>					
Uncomfortable experience, not entertaining	3.20 (SD1.694)	2.93 (SD1.500)	3.75 (SD2.359)	3.24 (SD1.685)	3.23 (SD1.855)
Not relevant or of interest; have different interests	3.67 (SD1.627)	3.26 (SD1.535)	3.63 (SD2.312)	3.61 (SD1.820)	3.50 (SD1.806)
Old and unfashionable	2.49 (SD1.210)	2.91 (SD1.598)	2.85 (SD2.269)	2.66 (SD1.641)	2.62 (SD1.615)
<i>2. Time</i>					
Lack of time to attend	4.55 (SD1.919)	4.30 (SD1.778)	3.95 (SD2.472)	4.26 (SD2.008)	4.11 (SD1.941)
Inconvenient opening times and activity schedules	4.41 (SD1.818)	4.04 (SD1.504)	3.83 (SD2.353)	3.88 (SD1.903)	4.11 (SD2.013)
<i>3. Understanding</i>					
Lack of past engagement	3.33 (SD1.505)	3.42 (SD1.441)	3.57 (SD2.273)	3.45 (SD1.817)	3.31 (SD1.689)
Poor past experience	2.48	2.86	3.22	2.57	2.61

	(SD1.460)	(SD1.317)	(SD2.222)	(SD1.616)	(SD1.469)
Lack of information on where to go	4.22 (SD1.845)	3.90 (SD1.578)	4.08 (SD2.461)	3.55 (SD1.828)	3.58 (SD1.903)
4. Health					
Physical well-being	2.39 (SD1.635)	3.71 (SD1.585)	5.41 (SD2.132)	2.33 (SD1.764)	2.69 (SD2.544)
Medical problems	2.06 (SD1.615)	3.38 (SD1.563)	3.79 (SD2.651)	1.99 (SD1.467)	2.27 (SD1.612)
5. Finance					
Lack of concession pricing	3.37 (SD3.581)	3.28 (SD1.504)	3.95 (SD2.463)	2.79 (SD1.996)	2.94 (SD1.962)
Overall costs and supplementary costs	3.64 (SD2.087)	3.59 (SD1.385)	3.93 (SD2.166)	3.62 (SD2.117)	3.14 (SD1.779)
6. Fear					
Fear to travel alone	3.37 (SD2.126)	3.44 (SD1.661)	4.06 (SD2.632)	2.96 (SD2.020)	2.66 (SD1.805)
Fear of hassles	3.80 (SD2.025)	3.63 (SD1.481)	4.60 (SD2.470)	3.08 (SD1.785)	2.93 (SD1.789)
Embarrassing aspects of visible disabilities	1.66 (SD1.293)	3.02 (SD1.715)	3.04 (SD2.344)	1.95 (SD1.373)	2.05 (SD1.425)
7. Communication					
Interactions with individuals and social environment	2.32 (SD1.632)	3.04 (SD1.360)	2.50 (SD2.057)	2.25 (SD1.591)	2.22 (SD1.256)
Lack of self-confidence	2.45 (SD1.763)	3.18 (SD1.495)	3.37 (SD2.432)	2.07 (SD1.451)	2.32 (SD1.447)
8. Products/Places					
Poor quality offerings	3.47 (SD1.806)	3.60 (SD1.531)	3.88 (SD2.366)	3.50 (SD1.925)	3.63 (SD1.796)
Only for education and information	3.47 (SD1.514)	3.54 (SD1.472)	3.67 (SD2.308)	3.71 (SD1.876)	3.30 (SD1.621)
Security concerns	3.69 (SD1.846)	3.89 (SD1.566)	4.56 (SD2.421)	3.98 (SD1.884)	3.48 (SD1.858)
9. Physical Access					
Physically difficult to get to	4.35 (SD1.755)	4.30 (SD1.721)	5.04 (SD2.152)	4.08 (SD1.862)	3.89 (SD1.852)
Difficult to access via public transport	4.44 (SD1.836)	4.46 (SD1.654)	5.24 (SD2.244)	4.20 (SD1.853)	3.74 (SD1.724)
Architectural barriers (e.g., cramped seating areas and unwieldy doors)	3.24 (SD1.545)	4.19 (SD1.563)	5.02 (SD2.227)	3.99 (SD1.781)	3.37 (SD1.796)
10. Accommodation					
Accessibility of airplanes, hotels, restaurants, etc.	3.39 (SD1.588)	3.90 (SD1.584)	4.77 (SD2.298)	4.02 (SD1.933)	3.48 (SD1.727)
Service of staff	3.96 (SD1.818)	3.87 (SD1.572)	4.24 (SD2.348)	3.92 (SD1.859)	3.81 (SD1.737)

4.3.3 Drivers

For young people, “outstanding scenery” received the highest score (5.50 = agree) while older adults reported being motivated by the prospect of “visiting a place that I have not visited before” (5.14 = somewhat agree). For people with disabilities, “prestige, pride, and patriotism” was rated highest (5.89 = agree). Non-cultural tourists indicated “spending time with family/friends” as the biggest driver for engaging in cultural tourism (5.48 = somewhat agree) while established cultural tourists were more interested in “increasing knowledge about foreign destinations, people, and things” (5.69 = agree). The item “video game about cultural stories” received the lowest score from every group (youth: 3.85 = neutral; older adults: 3.38 = somewhat disagree; people with disabilities: 1.65 = disagree; non-cultural tourists: 3.54 = neutral; cultural tourists: 4.34 = neutral).

Table 4.8 Mean scores of drivers in cultural tourism for five groups

<i>Drivers</i>	<i>Youth</i>	<i>Older Adults</i>	<i>People with Disabilities</i>	<i>Non-cultural Tourists</i>	<i>Established Cultural Tourists</i>
<i>1. New Experience</i>					
New experiences and different lifestyles	5.32 (SD1.663)	4.96 (SD1.555)	5.33 (SD2.045)	5.33 (SD1.798)	5.44 (SD1.773)
Meeting new and different people	4.66 (SD1.854)	4.81 (SD1.510)	5.31 (SD2.014)	4.81 (SD1.873)	4.79 (SD1.760)
Personal rewards	4.47 (SD1.766)	4.90 (SD1.454)	5.84 (SD1.774)	4.99 (SD1.732)	4.96 (SD1.708)
<i>2. Escaping from Daily Routine</i>					
Visiting a place that I have not visited before	5.36 (SD1.494)	5.14 (SD1.399)	5.51 (SD2.120)	5.36 (SD1.567)	5.48 (SD1.574)
Getting away from home or mundane environment	5.10 (SD1.583)	5.07 (SD1.325)	5.68 (SD1.792)	4.89 (SD1.705)	5.16 (SD1.754)
Seeking adventure	4.97 (SD1.638)	4.73 (SD1.403)	4.94 (SD2.226)	5.02 (SD1.614)	5.32 (SD1.606)
<i>3. Gaining Knowledge</i>					
Increasing knowledge about foreign destinations, people and things	4.93 (SD1.612)	4.81 (SD1.417)	5.59 (SD1.849)	5.29 (SD1.578)	5.69 (SD1.475)
Education/ learning	4.88 (SD1.635)	4.78 (SD1.481)	5.46 (SD1.883)	5.29 (SD1.591)	5.49 (SD1.662)
<i>4. Relaxation</i>					
Just relaxing	5.24 (SD1.572)	5.01 (SD1.403)	5.84 (SD1.668)	5.46 (SD1.642)	5.39 (SD1.641)
Spending time with family/friends	5.41 (SD1.583)	4.93 (SD1.529)	5.22 (SD2.082)	5.48 (SD1.547)	5.30 (SD1.712)

<i>5. Culture</i>					
Visiting historical/cultural sites	4.89 (SD1.556)	4.76 (SD1.310)	5.49 (SD1.941)	5.26 (SD1.495)	5.30 (SD1.528)
Interesting/unique culture or environment	5.20 (SD1.463)	4.93 (SD1.252)	5.40 (SD1.938)	5.46 (SD1.592)	5.54 (SD1.580)
<i>6. Prestige</i>					
Prestige, pride, and patriotism	5.15 (SD1.527)	4.86 (SD1.198)	5.89 (SD1.746)	5.14 (SD1.804)	5.46 (SD1.581)
Nostalgia	4.28 (SD1.798)	4.64 (SD1.443)	4.82 (SD2.213)	4.49 (SD1.778)	4.95 (SD1.769)
<i>7. Information</i>					
Recommendation from friends/acquaintances	4.36 (SD1.650)	4.31 (SD1.496)	4.33 (SD2.288)	4.46 (SD1.702)	4.68 (SD1.617)
Pre-trip information	4.52 (SD1.542)	4.28 (SD1.485)	4.00 (SD2.441)	4.74 (SD1.694)	4.86 (SD1.665)
<i>8. Advertising and Branding</i>					
Attractive and contemporary presentation	4.85 (SD1.672)	4.31 (SD1.369)	4.51 (SD2.336)	4.65 (SD1.684)	5.23 (SD1.648)
Advertising from media	4.35 (SD1.749)	3.97 (SD1.440)	4.34 (SD2.377)	4.45 (SD1.714)	4.55 (SD1.759)
Engaging online communities	4.36 (SD1.750)	3.85 (SD1.723)	2.55 (SD2.335)	4.50 (SD1.883)	4.62 (SD1.674)
<i>9. Destination Attractiveness</i>					
Location/accessibility/distance or nearness	4.83 (SD1.511)	4.37 (SD1.629)	4.26 (SD2.415)	4.79 (SD1.816)	5.03 (SD1.627)
Convenience of transportation	4.86 (SD1.682)	4.46 (SD1.609)	5.55 (SD2.032)	4.88 (SD1.742)	5.31 (SD1.633)
Low cost/expenses (cheap food/accommodation/other facilities)	4.67 (SD1.871)	4.55 (SD1.515)	4.68 (SD2.309)	4.63 (SD1.721)	5.01 (SD1.808)
Outstanding scenery	5.50 (SD1.547)	4.78 (SD1.438)	5.09 (SD2.289)	5.20 (SD1.690)	5.60 (SD1.491)
<i>10. Cultural Media</i>					
Online museums, applications, or websites	4.26 (SD1.661)	4.04 (SD1.528)	2.40 (SD2.265)	4.58 (SD1.724)	4.76 (SD1.593)
Animation, VDO presentation, short movie	4.16 (SD1.650)	3.96 (SD1.514)	2.49 (SD2.236)	4.09 (SD1.886)	4.77 (SD1.611)
Video game about cultural stories	3.85 (SD1.855)	3.38 (SD1.681)	1.65 (SD1.388)	3.54 (SD1.909)	4.34 (SD1.755)

4.4 Discussion for research question1: what are the barriers and drivers in cultural tourism among five different groups?

4.4.1 Barriers

This study identified some similarities and differences between the top five barriers identified by the five groups. Table 4.9 presents mean scores for the top five barriers and drivers to cultural tourism among five groups. For example, the items “difficult to

access via public transportation” and “physically difficult to get to” were applicable to all five groups while “lack of time to attend” applied to four groups excluding people with disabilities. Three groups including older adults, people with disabilities and non-cultural tourists identified “architectural barriers” as important, along with “inconvenient opening times and activity schedules.” Thus, these items can be considered as significant for all five groups.

The most important issues accepted by all groups as significant barriers were “difficult public transportation for access” and “physically difficult to get to.” This confirmed the findings from a number of previous studies, including research about cultural places that are physically difficult to reach (Tian, Crompton, and Witt 1996; Prentice, Davies, and Beeho 1997; Kay, Wong, and Polonsky 2009; Pathak 2014) and the difficulty of accessing some historical places via public transportation (Rentschler 2006; Garcia et al. 2013; Kantawateera et al. 2014). The lack of public transport is a problem, for example, if tourists cannot afford their own cars. Kay, Wong, and Polonsky (2009) suggest that such physical barriers have a significant impact, while Prentice, Davies, and Beeho (1997) state that some tourists are unwilling to use public transportation due to poor accessibility.

A “lack of time to attend” was identified as important by four groups except people with disabilities, while “inconvenient opening times and activity schedules” were an issue according to three groups including youth, older adults and established cultural tourists. However, these factors received lower scores from people with disabilities. Several other studies suggest that cultural tourists and non-visitors consider time constraints a critical barrier to engaging with cultural tourism (Crawford and Godbey 1987; Henderson, Stalnaker, and Taylor 1988; Davies and Prentice 1995; Tian, Crompton, and Witt 1996; Milner, Jago, and Deery 2004; Kay, Wong, and Polonsky 2009; Fodness 2016). In this study, time concerns were ranked the most significant factor by young people, noncultural tourists, and cultural tourists alike; it is generally a concern for all visitors. Inconvenient opening times and activity schedules are also cited as a problem in many studies (Samdahl and Jekubovich 1997; Migliorino 1998; Rentschler 2006; Kay, Wong, and Polonsky 2009).

Older adults, people with disabilities and non-cultural tourists identified “architectural barriers (e.g., cramped seating areas and unwieldy doors)” as significant, although this same factor received lower scores from young people and established cultural tourists. This means that physical barriers do not affect young people and cultural tourists as much as they do with older adults, people with disabilities, and noncultural tourists.

4.4.2 Drivers

From the top five drivers identified by the five groups (see Table 4.9), the most popular motivating factors for engaging in cultural tourism were identified as “visiting a place that I have not visited before” and “just relaxing”, each of which was picked by four groups excluding people with disabilities. The item “new experiences and different lifestyles” was also identified as important by three groups including youth, older adults and non-cultural tourists.

Three groups (youth, older adults, and non-cultural tourists) said that exposure to “new experiences and different lifestyles” was an important driver for engaging with cultural tourism. This finding is consistent with prior research that has identified interests, enjoyment, and experiences as intrinsic drivers to motivate tourists to engage in tourism activities (Crompton 1979; Yau, McKercher, and Packer 2004; Kim and Ritchie 2014). This could imply that, for the five groups studied, internal drivers are more important than external ones. For example, Neulinger (1974) states that several tourism studies indicate that leisure is intrinsically motivated, without expectation of extrinsic rewards.

Research on disabled tourism, meanwhile, confirms that people with disabilities have the same intrinsic need to engage in travel activities as their nondisabled counterparts (Darcy and Daruwalla 1999; Yau, McKercher, and Packer 2004; Wu, Chang, and Hsieh 2014; Altinay et al. 2016).

“Visiting a place that I have not visited before” was prominent amongst four groups apart from people with disabilities. This driver is related to similar finding from Crompton (1979), who states that some tourists go on vacation to change their environment, no matter how comfortable their environments are. This may also

explain why “just relaxing” was selected by four groups in this study - apart from established cultural tourists - as a number of studies state that tourists mostly feel physically exhausted when they return home but that travelling can be mentally relaxing (Crompton 1979; Kozak 2002; Kim, Cheng, and O’Leary 2007).

Some studies also state that relaxation is the most significant motivation in tourism, especially in the holiday season, regardless of the places visited and travelers’ nationalities, since people tend to use their vacations to relax emotionally and physically (Kozak 2002; Tsephe and Obono 2013). Krippendorf (1987) and Kim, Cheng, and O’Leary (2007) further state that relaxation and getting away from routine are the top psychological factors for travelling.

Table 4.9 Mean scores for barriers and drivers in the top five to cultural tourism among five groups

<i>Barriers and Drivers</i>	<i>Five Different Groups of Respondents</i>				
	<i>Youth</i>	<i>Older Adults</i>	<i>People with Disabilities</i>	<i>Non-cultural Tourists</i>	<i>Established Cultural Tourists</i>
<i>Barriers</i>	1. Lack of time to attend (4.55)	1. Difficult to access via public transport (4.46)	1. Physical well-being (5.41)	1. Lack of time to attend (4.26)	1. Lack of time to attend (4.11)
	2. Difficult to access via public transport (4.44)	2. Lack of time to attend (4.30)	2. Difficult to access via public transport (5.24)	2. Difficult to access via public transport (4.20)	2. Inconvenient opening times and activity schedules (4.11)
	3. Inconvenient opening times and activity schedules (4.41)	3. Physically difficult to get to (4.30)	3. Physically difficult to get to (5.04)	3. Physically difficult to get to (4.08)	3. Physically difficult to get to (3.89)
	4. Physically difficult to get to (4.35)	4. Architectural barriers (e.g. cramped seating areas and unwieldy doors) (4.19)	4. Architectural barriers (e.g. cramped seating areas and unwieldy doors) (5.02)	4. Accessibility of airplanes, hotels, restaurants, etc. (4.02)	4. Service of staff (3.81)
	5. Lack of information about where	5. Inconvenient opening times and activity schedules	5. Accessibility of airplanes, hotels,	5. Architectural barriers (e.g.	5. Difficult to access via public

	to go (4.22)	(4.04)	restaurants, etc. (4.77)	cramped seating areas and unwieldy doors) (3.99)	transport (3.74)
<i>Drivers</i>	1. Outstanding scenery (5.50)	1. Visiting a place that I have not visited before (5.14)	1. Prestige, pride and patriotism (5.89)	1. Spending time with family/friends (5.48)	1. Increasing knowledge about foreign destinations, people and things (5.69)
	2. Spending time with family/friends (5.41)	2. Getting away from home or mundane environment (5.07)	2. Personal rewards (5.84)	2. Just relaxing (5.46)	2. Outstanding scenery (5.60)
	3. Visiting a place that I have not visited before (5.36)	3. Just relaxing (5.01)	3. Just relaxing (5.84)	3. Interesting/unique culture or environment (5.46)	3. Interesting/unique culture or environment (5.54)
	4. New experiences and different lifestyles (5.32)	4. New experiences and different lifestyles (4.96)	4. Getting away from home or mundane environment (5.68)	4. Visiting a place that I have not visited before (5.36)	4. Education/learning (5.49)
	5. Just relaxing (5.24)	5. Interesting/unique culture or environment (4.93)	5. Increasing knowledge about foreign destinations, people and things (5.59)	5. New experiences and different lifestyles (5.33)	5. Visiting a place that I have not visited before (5.48)

4.5 Research question 2: Are there any differences in answers between scaling and open-ended questions?

4.5.1 Result

Although cultural tourism is significant for all groups, there is a lack of studies within the context of Thailand's cultural tourism. An illustrative literature review resulted in no related data about barriers to, and drivers of, cultural tourism in Thailand. Consequently, in structuring the scaling questions, this study referred to already identified barriers and drivers from other studies not conducted in Thailand. Therefore, the objective of this section is to compare the close-ended and open-ended answers in order to identify potential similarities and differences between

drivers and barriers to cultural tourism in Thailand and elsewhere, and to seek out the neglected barriers and drivers within the context of Thailand's cultural tourism. This could potentially help inform industry, researchers, and government organisations regarding the neglected barrier and driver items for five different groups in the context of Thailand. In order to research, develop and deliver effective cultural tourism in Thailand, stakeholders involved need to consider these barriers and drivers as the real needs and aspirations of five Thai groups.

4.5.2 Barriers

Table 4.10 Open-ended answers for barriers to cultural tourism among five groups

<i>Group</i>	<i>Theme</i>	<i>Subtheme</i>	<i>Value (number of mentions)</i>
<i>Youth</i>	Transportation	traffic jams, difficult to go, poor public transportation, travel cost is high, too far from my home, and no private car	47
	Weather	too hot, poor weather	24
	Social Issues	no one (friends, family) to go with, too crowded and group tours	20
	Advertising and Presentation	bad presentation and information, old-fashioned, no information on where to go	12
	Facilities	poor facilities – dirty toilets, environment	9
	Safety	criminals & pickpockets, some places too commercial – bad image	6
<i>Older Adults</i>	Transportation	traffic jams, difficult to go, poor transportation, not convenient to travel - too far	46
	Weather	too hot, poor weather	36
	Social Issues	do not like long holiday – too crowded, too crowded, some tourists' manners not proper, service of staff	20
	Facility and Accommodation	dirty toilets, lack of facilities, full of rubbish, accommodation not suitable	8
	Advertising and presentation	no information where to go, no staff to explain, presentation difficult to understand	4
<i>People with Disabilities</i>	Transportation	difficult to travel to, not convenient to travel for people with disabilities, traffic jams	28
	Weather	too hot, poor weather	13
	Disability Problems	no disabled toilet, vision problems, communication problems, bad service for people with disabilities, no accessibility (ramp), cannot travel alone	13
	Social Issues	No one to take me out, no one to take care, too crowded	11
<i>Non-</i>	Transportation	traffic jams, difficult to get to, not convenient on	34

<i>cultural Tourists</i>		public transportation, too far, taking too long a time	
	Weather	too hot, poor weather	25
	Social Issues	too crowded, some tourists' manners not proper	16
	Facilities	no parking, not enough toilets, no facilities, dirty toilets, poor accommodation	10
	Safety	too dangerous, some cultural events are dangerous	5
	Advertising and Presentation	not interesting presentation, too much text and information	5
<i>Cultural Tourists</i>	Transportation	No convenient transportation, poor transportation, traffic jams, difficult to go to, too far	26
	Weather	too hot, poor weather	25
	Advertising and Presentation	poor and old fashioned presentation, poor organisation and management, some places too commercial, no information on where to go, no advertising and promotion for historical places	21
	Social Issues	some tourists' manners not proper, too crowded	17
	Safety	not safe, criminals, pickpockets, taxi cheats	8
	Facilities	dirty toilets, no parking	5

Responses to open-ended questions were analysed using thematic coding analysis (Saldaña, 2015) by multiple coders (one senior and two junior researchers) in order to increase reliability of data analysis. Table 4.10 presents the barriers to cultural tourism among five groups, identified through their open-ended responses.

- **Youth**

For youth, “transportation” (n=47) (traffic jams, difficult to go, poor public transportation, travel cost high, too far from home, and no private car) was the most significant barrier. This result is related to the second-ranked Likert-scale question “physical access.” Moreover, it was found that many open-ended responses were different, compared to close-ended answers such as:

- Weather (n=24) (too hot, poor weather)
- Social issues (n=20) (no friends or family to go with, too crowded, group tours)
- Advertising and presentation (n=12) (bad presentation and information, old-fashioned, no information on where to go)
- Facilities (n=9) (poor facilities, dirty toilets, environment)

- Safety (n=6) (criminals and pickpockets, some places too commercial, bad image).

- **Older adults**

For older adults, “transportation” (n=46) (traffic jams, difficult to go, poor transportation, not convenient to travel, too far) was mentioned as the most significant barrier. Moreover, it was found that some issues identified through open-ended questions were different to those highlighted through close-ended questions.

These included:

- Weather (n=36) (too hot, poor weather)
- Social issues (n=20) (do not like long holidays, too crowded, some tourists’ manners not proper, service of staff)
- Facilities and accommodation (n=8) (dirty toilets, lack of facilities, full of rubbish, accommodation not suitable)
- Advertising and presentation (n=4) (no information on where to go, no staff to explain, presentation is difficult to understand).

- **Disabled people**

For people with disabilities, “transportation” (n=28) (difficult to travel, not convenient to travel for people with disabilities, traffic jams) was the most significant barriers. Moreover, it was found that the answers to many open-ended questions were different compared to close-ended questions such as:

- Disability problems (n=13) (no accessible toilet, vision problems, communication problems, bad service for people with disabilities, no accessibility (ramp), cannot travel alone)
- Weather (n=12) (too hot)
- Social issues (n=11) (no one to take me out, no one to take care of me, too crowded).

- **Non-cultural tourists**

For non-cultural tourists, similarly, “transportation” (n=34) (traffic jams, difficult to get there, not convenient on public transportation, too far, taking too long a time) was the

most significant barrier. Moreover, it was found that many open-ended responses were different compared to close-ended choices such as:

- Weather (n=25) (too hot, poor weather)
- Social issues (n=16) (too crowded, some tourists' manners not proper)
- Facilities (n=10) (no parking, not enough toilets, no facilities, dirty toilets, poor accommodation)
- Safety (n=5) (too dangerous, some cultural events dangerous)
- Advertising and presentation (n=5) (not interesting presentation, too much text and information).

- **Cultural tourists**

For cultural tourists, consistent with all other four groups, "transportation" (n=26) (no convenient transportation, poor transportation, traffic jams, difficult to go, too far) was the most significant barrier. Barriers identified through open-ended questions which were different compared to close-ended options included:

- Weather (n=25) (too hot, poor weather)
- Advertising and presentation (n=21) (poor and old fashioned presentation, poor organisation and management, some places too commercial, no information on where to go, no advertising and promotion from historical places)
- Social issues (n=17) (some tourists' manners not proper, too crowded)
- Safety (n=8) (not safe, criminals, pickpockets, taxi cheats)
- Facilities (n=5) (dirty toilets, no parking).

4.5.3 Drivers

Table 4.11 Open-ended answers for drivers to cultural tourism among five groups-- open-ended responses

<i>Group</i>	<i>Theme</i>	<i>Subtheme</i>	<i>Value (number of mentions)</i>
<i>Youth</i>	Prestige	learning about the past, doing homework	9
	Financial Issues	having money, overall costs	7
	Weather	good weather	4
<i>Older Adults</i>	Culture	knowing and seeing Thai culture, nostalgia, preserving and promoting Thai culture, seeing original Thai culture (plays)	25
	Time	free time	11
	Presentation and Activity	interesting presentations, exhibitions and events, taking pictures, fun activities	9
	Religion	going to temples, donating to temples	7
	Financial Issues	winning the lottery, having money, not too expensive	5
	Information	reading the reviews	2
<i>People with Disabilities</i>	Religion	donating to temples, going to temples	12
	Financial Issues	winning the lottery, having money	6
	Accessibility	good accessibility, ramp, toilets	2
<i>Noncultural Tourists</i>	Facilities	enough parking, indoor exhibitions, good food, good environment, student discount	9
	Financial Issues	having money, not too expensive	8
	People	good people, not too crowded	6
	Religion	donating to temples	5
	Weather	good weather	4
<i>Cultural Tourists</i>	Prestige	seeking identity of Thai culture, preserving and promoting culture, seeing the real cultures, learning about cultures	
	Presentation and Activity	interesting presentation, hi-technology, interactive activity or adventure	11
	Financial Issues	reasonable price	3
	Facilities	good facilities	2

Table 4.11 presents the drivers to cultural tourism among five groups, identified through their open-ended responses.

- **Youth**

For youth, most open-ended and close-ended responses were similar. However, while the item “prestige” was similar to a close-ended answer but it was different in the details, such as learning about the past and doing homework. Moreover, some open-ended themes were different compared to close-ended issues such as:

- Prestige (n=9) (learning about the past, doing homework).
- Financial issues (n=7) (having money, overall costs).
- Weather (n=4) (good weather).

- **Older adults**

For older adults, some open-ended themes were different compared to close-ended issues such as:

- Culture (n=25) (knowing and seeing Thai culture, nostalgia, preserving and promoting Thai culture, seeing original Thai culture (plays))
- Time (n=11) (free time)
- Presentation and activity (n=9) (interesting presentations, exhibitions and events, taking pictures, fun activities)
- Religion (n=7) (going to temples, to donate to temples)
- Financial issues (n=5) (winning the lottery, having money, not too expensive)
- Information (n=2) (reading from reviews).

- **People with disabilities**

For people with disabilities, some open-ended responses were different compared to close-ended responses. These included:

- Religion (n=12) (donating money to temples, going to temples).
- Financial issues (n=6) (winning the lottery, having money).
- Accessibility (n=2) (good accessibility, ramps, toilets).

- **Non-cultural tourists**

For non-cultural tourists, these included:

- Facilities (n=9) (enough parking, indoor exhibitions, good food, good environment, student discount)
- Financial issues (n=8) (having money, not too expensive)
- People (n=6) (good people, not too crowded)
- Religion (n=5) (donating to temples)
- Weather (n=4) (good weather).

- **Cultural tourists**

For cultural tourists, “prestige” (n=19) (seeking identity of Thai culture, preserving and promoting culture, seeing real cultures, learning about cultures) was the most significant barrier. This result is related to the first rank of the close-ended results: gaining knowledge (5.69) (increasing knowledge about foreign destinations, people and things, education/learning). Moreover, some answers were among the identified drivers different to those in close-ended responses.

- Presentation and activity (n=11) (interesting presentation, hi-technology, interactive activity or adventure).
- Finance (n=3) (reasonable price).
- Facilities (n=2) (good facilities).

4.5.4 Discussion

Results from open-ended questions highlighted “transportation” as the most significant barrier mentioned by all groups. This was consistent with findings from close-ended questions. However, some transportation subthemes identified through open-ended questions were different. These included: traffic jams, no convenient public transportation, no convenient travel for people with disabilities, too far, taking too long a time from home, poor transportation, travel cost high, and no private car. These findings reinforce the importance of “transportation” as a key and common barrier identified through both close-ended and open-ended responses. Meanwhile, there are some differences specific to Thai context, especially in the case of traffic

jams and poor transportation. Transportation is an essential area of improvement to be considered by the Thai government and tourism organisations.

Interestingly, open-ended responses highlighted “weather” (too hot, poor weather) as the second most significant barrier common across all five groups. This is while the literature review did not identify this factor as a barrier to cultural tourism. In fact, most foreign tourists travelling to Thailand state warm weather as one main motivation for choosing Thailand as travel destination. This could be considered as a good example in explaining the context-dependent nature of barriers and drivers to cultural tourism and the limitations to results driven from literature analysis. In this case, the tourism industry and the Thai government could explore options to solve this problem (e.g., setting up air conditioning in museums or exhibitions, setting up events or festivals in winter).

Another open-ended barrier covered by all groups is the “social issues.” All groups stated that social issues (e.g., having no one (friends, family) to go with, too crowded and some tourists’ manners not proper) were considered as their main concerns. It is worth noting that most respondents stated that they do not like crowds of tourists, especially on holidays or at festivals. Moreover, in regard to “some tourists’ manners not proper” comment, most people stated that sometimes foreign tourists do not know and appreciate Thai traditions, especially in old temples. It is important for cultural destinations to have good management and improved systems to control the number of tourists. Moreover, there should be information or instructions for foreign tourists informing them regarding the restrictions in temples or historical places in Thailand and encouraging appropriate manners.

The last barrier raised by all five groups is “facilities” (dirty toilets, no accessible toilets, not enough toilets, lack of facilities, full of rubbish, accommodation not suitable for older adults, no parking, no accessibility ramps, no facilities). Although this factor did not score highly, it was considered as a common barrier to all respondents. This is while the literature review findings suggested ‘facilities’ as a barrier mainly impacting older adults and people with disabilities. This implies the need for general and large-scale improvements to facilities in cultural places in Thailand.

“Advertising and presentation” (bad presentation and information, poor and old-fashioned style, no information on where to go, no staff to explain, presentation difficult to understand, no advertising and promotion for historical places) was another barrier commonly raised by four groups expect people with disabilities. Tourism organisations and the Thai government should consider improving information provision, presentation and suitable advertisement to all groups to promote cultural tourism and attract key target audiences.

Most open-ended drivers were similar to those identified through close-ended responses. “Financial issues” (having money, overall costs, winning the lottery, not too expensive, reasonable price) seemed common across all five groups. This is while the literature review, had not identified any of these as potential drivers to cultural tourism. Accordingly, it could be argued that Thai people considered cultural tourism as an expensive reason for travelling. Therefore, tourism organisations and the Thai government could aim to provide appropriate information regarding cultural tourism as for instance, many cultural places are free to access.

Another interesting driver identified through open-ended responses was “religion” (going to temples, donating to temples). While this was not considered a significant driver to cultural tourism in other studies, in Thailand, donation is one of the popular traditions and as .most people are Buddhists, visiting Buddhist temples could act as one major motivation. In addition, older adults and people with disabilities stated that donating to temples is one main activity that leads them to go out. This could provide valuable insight to the tourism industry to design appropriate initiatives and programmes to attract Thai tourists, especially for older adults, people with disabilities, and non-cultural tourists.

4.6. Summary

4.6.1 Key insights

This chapter illustrated the relationship between inclusive design and cultural tourism to broaden and increase the potential market. The aim is to identify barriers and drivers in cultural tourism for five groups: 1) youth; 2) people uninterested in cultural

tourism (non-cultural tourists); 3) older adults; 4) people with disabilities; and 5) cultural tourists. Furthermore, it focused on addressing these research questions:

- **Research question 1: What are the barriers and drivers in cultural tourism among five different groups?**

According to Table 4.9, the most common barrier in cultural tourism cited by the five groups appeared to relate to 'transportation' (e.g., 'difficult public transportation to access' and 'physically difficult to get to'). However, except for disabled people, barriers about time (e.g., 'lack of time to attend' and 'inconvenient opening hours') were also important. Architecture barriers, meanwhile, were identified as a significant barrier for three groups (older adults, disabled people and non-cultural tourists), but not for young people and cultural tourists. However, compared to barriers, drivers for engaging in cultural tourism seem to differ more between groups. Only three items 'visiting a place that I have not visited before', 'just relaxing' and 'new experiences and different lifestyles', were included in the top five for the majority of groups. By contrast, some barriers to cultural tourism in Thailand, such as 'difficulty accessing public transportation', sites being 'physically difficult to get to', a 'lack of time', 'architectural barriers' and 'inconvenient opening times and activity schedules', were common to more groups.

- **Research question 2: Are there any differences in answers between close-ended and open-ended questions?**

For the open-ended section, the main objective is to seek out the neglected barriers and drivers within the context of Thailand's cultural tourism. From data in barriers (transportation, weather, social factors, facilities, and advertising and presentation) and drivers (financial issues and religion), these open-ended answers are common for five groups and different from the scaling answer section collected from other research. This is because, in close-ended questions, the researcher collected data and questions from other countries' studies during the literature review stage. However, in the open-ended sections, Thai respondents answered their real barriers and drivers. This is particularly true when discussing topics that few studies have researched or when dealing with cultural differences. This means that the Thai government, tourism organisations and tourism industry designers and researchers should consider the open-ended answers as specific barriers and drivers in the context of Thai cultural tourism.

The next chapter will address another main problem for cultural tourism, 'lack of motivation to read or visit the actual places'. This problem highlights a good opportunity to facilitate further cultural tourism to increase the motivation of visitors by using digital storytelling. The aim of the next study is to create and propose a digital storytelling guideline to motivate five groups in Thailand to engage in cultural tourism

4.6.2. Study implications

- **Marketing**

From a marketing perspective, these five groups can be targeted more effectively if the tourism industry can present and develop advertising campaigns that counter the different barriers and respond to the various drivers of each group. However, tourism marketers must understand that cultural tourists are not homogeneous. Therefore, marketing decision makers need to understand both the barriers and drivers for these groups, as this study presented. Moreover, in terms of drivers, only three drivers—"visiting a place that I have not visited before," "just relaxing," and "new experiences and different lifestyles"—were common reasons for most of the groups. Therefore, the Tourism Authority of Thailand could use these as guidelines to set up and design accessible cultural tourist routes for walking or biking, with the concept of one district/one cultural place(s), to help new visitors with their ambitions (visiting new places, relaxation, and new experiences).

- **Management**

The results of this study could also contribute to management, in both government and tourism organisations in Thailand. For example, issues related to transportation (e.g., difficulty accessing sites via public transport) were identified by all five groups, however, changing the whole system of public transportation in Thailand would be a complicated, large-scale and long-term project. This study recommends that tourist organisations create tour routes with private transport, such as buses or vans that could cater for older tourists and wheelchair users, offering to collect tourists from starting points in the popular areas (e.g., hotels, tourist centres, or tourist spots).

Four groups also highlighted concerns about a lack of free time and inconvenient opening hours. Tourism industry should consider establishing appropriate

programmes in respond to this and to promote these to their potential customers, especially the youth. Architectural barriers were further identified as significant by three groups (older adults, people with disabilities, and non-cultural tourists). This study suggests that Thailand should establish a Thai Disability Act to provide and support accessibility and inclusivity for people with disabilities and older adults (e.g., ramps on the footpaths and building entrances). Additionally, the Thai government and tourism organisations should consult with landscape architects to create barrier-free access to cultural sites.

4.6.3 Study Limitations

1. The sample sizes

The researcher calculated sample sizes from Yamana's formula (Yamane, 1967), which resulted in 100 participants for each group. Moreover, when deciding the criteria to select participants, this study chose "Skip interval = population list size/sample size" (Burns & Bush, 2013, pp. 337). However, the skip interval for some groups was too high (one youth from 2,952 at the Siam train station, and one person from 1,970 non-cultural tourists at the train stations). It was also impossible to count every person in reality because the train stations were too crowded. Hence, the researcher and staff agreed to count overall groups of people instead of counting one by one. For example, the group of people walking was around 100.

Suggestion: In order to lower the skip interval rate, the researcher recommends choosing locations that are not too crowded or in controlled areas, as doing so will allow the researcher to accurately count the number of people one by one.

2. Likert scaling questionnaire

Upon distributing the questionnaire, many of the disabled people and older adults said they were not familiar with the scaling answer, especially for seven scales. Hence, the researcher had to use 'words' instead of numbers for evaluation (i.e. very low, low, quite low, medium, quite high, high, very high). However, when participants answered the open-ended questions, they were able to understand and responded very well.

Suggestion: If participants are older adults or disabled people, the researcher recommends avoiding complicated ways of answering (i.e. Likert scale questions). These groups need simple, easy and quick ways to answer.

3. Lack of prior research

Due to the lack of factors regarding cultural tourism in Thailand, the researcher collected barriers and drivers from other countries' studies during the literature review. However, in the open-ended questions, many participants reported different barriers and drivers when compared with the scaling questions. For example, numerous other studies considered the 'weather' as the most important driver to encourage people to visit Thailand. However, Thai people considered weather as a barrier to stop them from travelling.

Suggestion: The researcher recommends using open-ended questions in the survey to gain true responses from participants.

4. Access

In this study, the survey was set up in a number of official government locations: 1.) The Baanphrapradaeng Disabled Foundation for disabled people and 2.) The Museum Siam, which is frequented by cultural tourists. The researcher and staff contacted these places and sent the cover letter and questionnaire, which were approved in two months.

Suggestion: If the researcher needs to contact official places in Thailand (i.e. government offices, public organisations, foundations), they have to send an official cover letter and questionnaire; a process that typically takes a least two months to be approved.

5. Regional sample in Thailand

The study sample was taken from city of Bangkok in Thailand. Thus, the research was limited to one urban area within the country and the results may not be representative or applicable to other regions. As a result, it is difficult to generalise

the findings about barriers and drivers to other areas which may have different cultural, socio-demographic or economic contexts.

Suggestion: Further research should be conducted in other rural and urban areas in Thailand, as well as to compare these barriers and drivers in other countries and contexts. This would help assess universal validity and practicality of the results and indicate to what extent the barriers and drivers identified in this research, are generalisable in other contexts.

6. Gender imbalance

In this study, participant recruitment followed a volunteer-based model and participant gender ration could not be an option. As a results, there was a gender imbalance in four groups as: youth (male: 37 and female: 63), older adults (male: 36 and female 64), people with disabilities (male: 66 and female: 34), non-cultural tourists (male: 34 and female: 59). During participant recruitment, females were observed to be more inclined to accept to participate rather than men, resulting in the existing male/female ratio. Female overrepresentation in both close-ended and open-ended responses and the potential bias it might introduce to study results should be further considered.

Suggestion: Further research should consider the factor about genders and control it to balance both genders.

4.6.4 Detailing the framework

From the results of this study, the IDST framework was detailed on the link between inclusive design and cultural tourism to increase diversity in cultural tourism. The detailed data presented with the top barriers and drivers for each group is illustrated on the Figure 4.5.

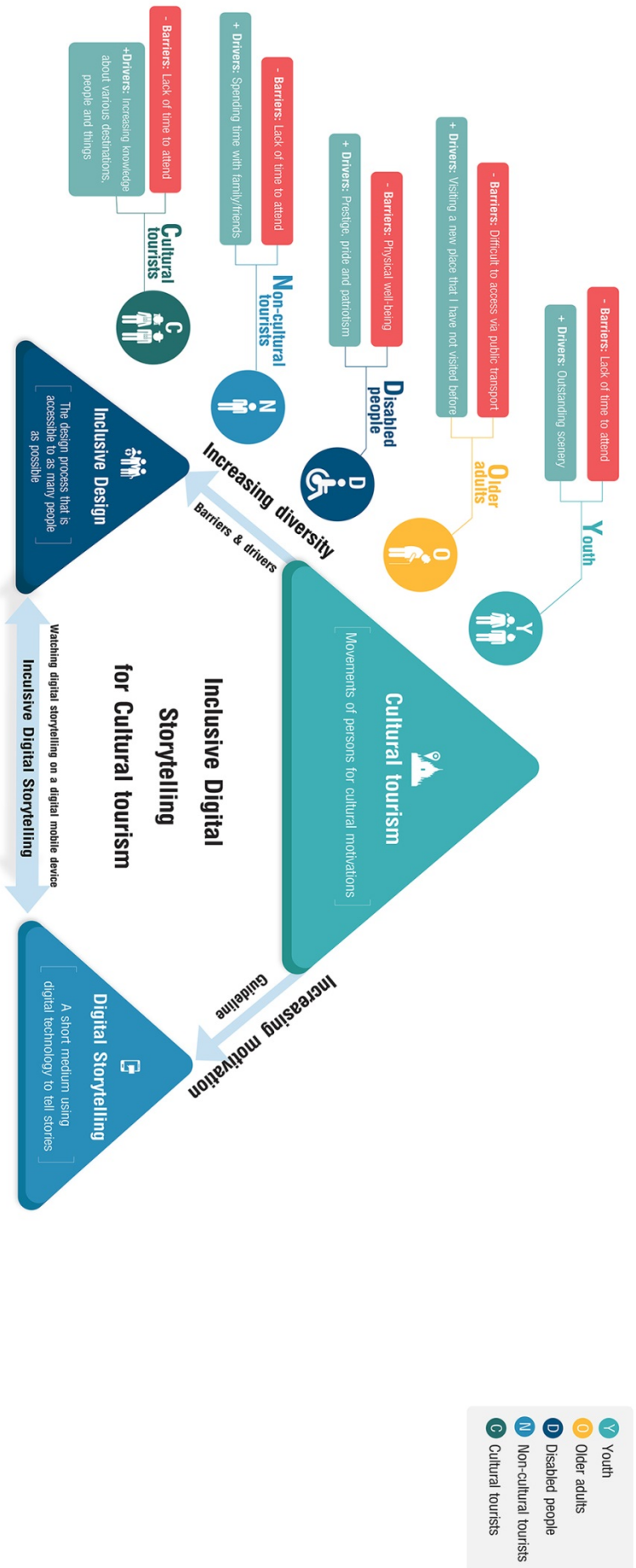


Figure 4.5 The results of the study presenting with the top barriers and drivers for each group

Chapter 5: Constructing the Digital Storytelling: Guidelines to Increase Motivation in Cultural Tourism for Five Groups in Thailand

5.1. Introduction

5.2 Research question 1: What are the digital storytelling guidelines that focus specifically to cultural tourism?

5.2.1 The new digital storytelling construction

5.2.2 Research method

5.2.3 Results

5.3 Research question 2: How can the digital storytelling guidelines be used to motivate cultural tourism for five different groups in Thailand?

5.3.1 Research method: interviewing digital storytelling experts

5.3.2 Results and discussion

5.4 Summary

5.4.1 Research question

Research question 1

Research question 2

5.4.2 Implication of this study

Cultural places

User experience design (UX)

Personalisation technique

Local engagement

5.4.3 Study limitations

1. Interviewees – a lack of academic background

2. Misunderstanding in digital storytelling

3. Interviewees – a lack of experience with some groups

4. Limited use with Thai users

5.4.4 Detailing the framework

5.1. Introduction

This chapter was started by the second main problem in cultural tourism that is ‘lack of motivation’ and presented results of the link between digital storytelling and cultural tourism. This is because at cultural sites, visitors have little motivation to read the stories displayed behind exhibitions and to visit actual sites. This problem highlights a good opportunity to facilitate further cultural tourism to increase the motivation of visitors by using digital storytelling. However, to create digital storytelling, there is no guideline focusing specifically on cultural tourism for potential viewers, especially older adults and disabled people, who are not target groups. This chapter aims to answer the research questions: and the aim and objectives of this chapter are in the Table 5.1:

- **Research question 1:** What are the digital storytelling guidelines that focus specifically on cultural tourism?
- **Research question 2:** How can the digital storytelling guidelines be used to motivate cultural tourism for five different groups in Thailand?

Table 5.1 Aim and objective of the chapter

<p>To create and propose digital storytelling guidelines to motivate five groups in Thailand (youth, older adults, disabled people, non-cultural tourists, and cultural tourists) to engage in cultural tourism.</p>	<p>1.1) To create the new guidelines of digital storytelling combined from eight main sources.</p> <p>1.2) To illustrate how to use the digital storytelling guidelines to increase motivation in cultural tourism for five diverse Thai groups.</p>

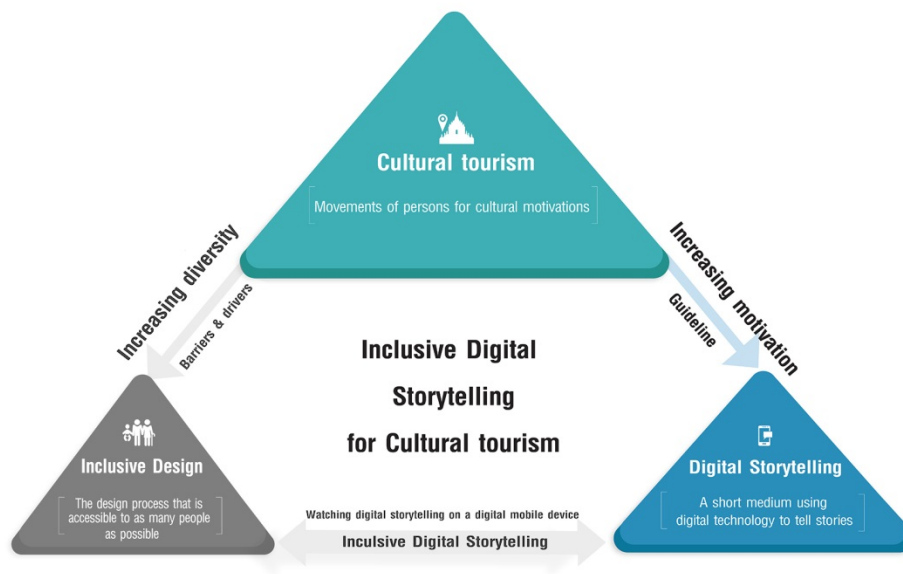


Figure 5.1 The link between digital storytelling and cultural tourism in this chapter

This study collects and creates 11 elements for non-interactive digital storytelling: 1). the storyteller's point of view; 2). a key question; 3). the core idea and purpose; 4). emotional content; 5). story structure; 6). economy; 7). the rhythm of the story; 8). the storyteller's voice; 9). soundtrack; 10). quality of media; and 11). background and characters. Seventeen face-to-face and online interviews (Skype) were conducted from December 2015 to March 2016 focusing on how to use each element of digital storytelling to motivate cultural tourism among the five groups.

Based on the original purpose of digital storytelling that is low-budget and non-professional project, everyone could create their own digital stories. Therefore, the key issue in the guidelines is to create good stories and content that can be created by everyone, not just professionals and used on many technology platforms in the future.

5.1.1 Why digital storytelling for cultural tourism?

At cultural sites, visitors have no motivation to read the story displayed behind the exhibitions and to visit to the real places (Rizvic et al., 2012). To increase tourists' motivation, this study adopts digital storytelling, which is widely used to explain all types of stories, narratives, films, and novels in the design process of digital systems (Miller, 2012; Ryan, 2008; Schafer, 2008; Ohler, 2013; Cunsolo et al., 2013).

In applying digital storytelling, a variety of techniques such as plots, characters, conflict, humour, and competition are used to promote and advertise that are not hard-sell advertising (Miller, 2012; Alcantud et al., 2014; Wexler et al., 2014). Additionally, a number of cultural and heritage sites around the world have been widely digitised as virtual museums or applications with digital storytelling, making difficult stories or subjects seem more alive and connected to viewers (Tolva and Martin, 2004; Hein, 2014; Cunsolo et al., 2013).

5.2 Research question 1: What are the digital storytelling guidelines that focus specifically to cultural tourism?

5.2.1 The new digital storytelling construction

Regarding the creation of digital storytelling, there is no guideline focusing specifically on cultural tourism for potential viewers, especially older adults and disabled people, who are not target groups. Most guidelines regarding digital storytelling focus on educational purposes in classrooms and game designs. Moreover, Tenh, Shiratuddin, and Harun (2012) state that experts have presented a number of theories. Moreover, in each theory, a variety of elements are redundant. This study seeks to collect all digital storytelling guidelines in all categories. The criterion for selection is that each guideline has more than 10 citations in academic books and journal articles; the guidelines are presented as eight digital storytelling guidelines in Table 5.2 However, all of them focus on general, educational, journalism, and interactive entertainment purposes.

However, in Table 5.2, some elements in the digital storytelling guidelines are shared, but some of them are unique to a particular guideline. Tenh, Shiratuddin, and Harun (2012) raise the question of how to know which elements are really

needed in a digital storytelling guideline. Therefore, the creation of the new digital storytelling guidelines by comparing all elements of the guidelines of these famous experts will not only involve refining and eliminating some redundant elements but also focus specifically on cultural tourism.

Table 5.2 Lists of digital storytelling guidelines from eight experts

1.	Paul and Fiebich (2005)	Five Elements of DST The elements of digital storytelling	<ul style="list-style-type: none"> • Media • Action • Relationship • Context • Communication (5) 	Journalism	31
2.	Porter (2005)	Take six: elements Digitales: The art of telling digital stories	<ul style="list-style-type: none"> • Living in your story • Unfolding lessons learning • Developing creative tension • Economizing the story told • Showing not telling • Developing craftsmanship (6) 	General	12
3.	Salpeter (2005)	Six Elements of DST Telling Tales with Technology: Digital Storytelling Is a New Twist on the Ancient Art of the Oral Narrative	<ul style="list-style-type: none"> • Personal • Begin with the story or script • Concise • Use readily-available source materials • Include universal story elements • Involve collaboration (6) 	General	46
4.	Lambert (2006)	The seven Elements of Digital Storytelling Digital storytelling: Capturing lives, creating community	<ul style="list-style-type: none"> • A point of view • A dramatic question • Emotional content • The gift of your voice • The power of the soundtrack • Economy • Pacing (7) 	General	631
5.	Ohler (2008)	Story elements Digital storytelling in the classroom: New media pathways to literacy, learning, and creativity	<ul style="list-style-type: none"> • Point of view • Emotional engagement • Tone • Spoken narrative • Soundtrack music • Role of video and performance • Creativity and originality 	Education	230

			<ul style="list-style-type: none"> • Time, story length and economy (8) 		
6.	Robin (2008)	Expanded and modified digital storytelling elements <u>Digital storytelling: A powerful technology tool for the 21st century classroom</u>	<ul style="list-style-type: none"> • The overall purpose of the story • The narrator's point of view • A dramatic question or questions • Quality of the images, video & other multimedia elements • Use of a meaningful audio soundtrack • The choice of content • Pacing of the narrative • Good grammar and language usage • Economy of the story detail • Clarity of voice (10) 	Education	289
7.	Schafer (2008)	Dimension star Models for Digital Storytelling and Interactive Narratives	<ul style="list-style-type: none"> • Concreteness • User contribution • Coherence • Continuity • (Conceptual) Structure • Stage • Virtuality • Spatiality • Control • Interactivity • Collaboration • Immersion (12) 	Interactive entertainment(games, applications, new technologies)	11
8.	Miller (2012)	A 10-step development checklist for creating an interactive project <u>Digital storytelling: A creator's guide to interactive entertainment</u>	<ul style="list-style-type: none"> • Premise and purpose • Audience and market • Medium, platform and genre • Narrative/ gaming elements • User's role and point of view • Characters • Structure and interface • Fictional world and setting • User engagement • Overall look and sound (10) 	Interactive entertainment (games, applications, new technologies)	274

This study categorises all eight guidelines by their purpose: (1). general (Porter, 2005; Salpeter, 2005; Lambert, 2013); (2). educational (Ohler, 2008; Robin, 2008); (3). interactive entertainment (games, applications, or new technologies) (Schafer, 2008; Miller, 2012); and (4). journalism (Paul and Fiebich, 2005). These guidelines are specifically designed to support the storytellers to create digital storytelling for

different purposes with specific elements. Nevertheless, with many guidelines and elements, it is difficult to decide which guidelines or elements should be used to create digital storytelling for cultural tourism. In addition, there are both non-interactive and interactive forms.

5.2.2 Research method

To create new digital storytelling guidelines for cultural tourism, this study collects and creates four main themes and 11 subthemes from the eight digital storytelling guidelines presented in Table 5.3. The process of constructing the new guideline was that each element in every guideline was initially written on a separate card. Sixty-four elements were derived from the eight guidelines: (1). six elements from Take Six (Porter, 2005); (2). five elements from digital storytelling (Paul and Fiebich, 2005); (3). six elements from DST (Salpeter, 2005); (4). the seven elements of digital storytelling (Lambert, 2013); (5). eight story elements (Ohler, 2008); (6). 10 expanded and modified digital storytelling elements (Robin, 2008); (7). 12 elements from the Dimension Star models for digital storytelling and interactive narratives (Schafer, 2008); and (8). 10 steps from a development checklist for creating an interactive project (Miller, 2012). In addition, the researcher asked three PhD students undertaking major design research at Brunel University London as coders to group all non-interactive digital storytelling elements in common according to the similarity of definitions. Elements that do not match will not be considered in the guidelines.

5.2.3 Results

After a discussion, all the coders agree to group the elements into four main themes and 11 subthemes. The construction of these guidelines is illustrated in Table 5.3 to depict it clearly. The first theme is 'initial questions', composed of basic information about setting up the main concept and purpose before designing the digital storytelling. The elements in this theme are as follows: (1). the storyteller's point of view; (2). a key question; (3). the core idea and purpose; and (4). emotional content. The second theme is 'scripting', which deals with how to develop the story from beginning to end and how to simplify the amount of information. The elements in this theme are as follows: (5). story structure; (6). economy; (7). the rhythm of the story. The third theme is 'media choices'. This theme mainly involves which media to use

and how to choose the proper voice and soundtrack to improve viewers' experience. The elements in this theme are as follows: (8). the storyteller's voice; (9). the soundtrack; and (10). the quality of the media. The last theme is 'audience experience'. It involves the location of the story and the actor to attract people's interest. The element in this theme is (11). the background.

Table 5.3 The new digital storytelling guidelines composed from the work of eight digital storytelling experts

1. Initial questions	1. The storyteller's point of view	What is the main point of the story and what is the perspective of the author? (Lambert, 2006)
	2. A key question	A key question that keeps the viewer's attention and will be answered by the end of the story. (Lambert, 2006)
	3. The purpose	Established a purpose early on and maintains a clear focus throughout. (Robin, 2008)
	4. Emotional Content	Good stories include essential elements such as conflict, transformation, and closure. (Salpeter, 2005)
2. Scripting	5. Story structure	What are the major events or challenges during the narrative? (Miller, 2012)
	6. Economy	Using just enough content to tell the story without overloading the viewer. (Lambert, 2006)
	7. The rhythm of the story	The rhythm of the story and how slowly or quickly it progresses. (Lambert, 2006)
3. Media choices	8. The storyteller's voice	Storyteller gives narrative the appropriate amount of focus in their story. (Ohler, 2008)
	9. Soundtrack	Music or other sounds that support and embellish the story. (Lambert, 2006)
	10. Quality of media	What is the media (e.g. mobile phones, TV or the Internet)?
4. Audience experience	11. Background and characters	What is the world and where is it set?

5.3 Research question 2: How can the digital storytelling guidelines be used to motivate cultural tourism for five diverse groups in Thailand?

5.3.1 Research method: interviewing digital storytelling experts

After the creation of the new digital storytelling guidelines, 17 face-to-face and online interviews (Skype) were conducted from December 2015 to March 2016. The aim of this section is to answer the question “how to use digital storytelling elements to increase motivation in cultural tourism for five different groups?”. Before the interviews, experts were presented with the results of the first study about the barriers and drivers of the five groups with respect to cultural tourism to understand these users. The structured interviews, presented in Table 5.5, focused on how to use each element of the digital storytelling guidelines to motivate cultural tourism for the five groups based on the data from the first study. In addition, the 17 interviews were separated into four groups: (1). Thai academic experts with an academic position (i.e., assistant professor, associate professor, or professor) or a doctoral degree in a related area; (2). Thai industrial experts with more than five years of experience in digital storytelling; (3.) young Thai industrial experts with less than five years of experience in digital storytelling; and (4). international academic and industrial experts with at least five international publications or worldwide broadcast experience in digital storytelling.

Table 5.4 17 expert profiles in digital storytelling who are interviewed

No.	Categories	Interviewee and their countries	Gender	Age	Occupation	Academic position (for a lecturer)	Experience in digital storytelling
1.	International academic and industrial experts	Expert 1 (Bosnia and Herzegovina)	Female	48 years	A lecturer	Associate Professor	15 years
2.		Expert 2 (Denmark)	Male	40 years	Director and Animator	-	19 years
3.		Expert 3 (England)	Female	40 years	A lecturer	-	6 years
4.		Expert 4 (Malaysia)	Male	34 years	A lecturer	-	5 years
5.	Thai academic experts	Expert 5	Male	62 years	A lecturer	Associate Professor	30 years
6.		Expert 6	Female	45 years	A lecturer	-	20 years
7.		Expert 7	Female	51 years	A lecturer	Assistant Professor	29 years
8.		Expert 8	Male	51 years	A lecturer	Assistant Professor	15 years
9.		Expert 9	Male	39 years	A lecturer	Assistant Professor	15 years
10.	Thai industrial experts	Expert 10	Female	32 years	Art director/ story designer		10 years
11.		Expert 11	Male	33 years	Animation supervisor	-	10 years
12.		Expert 12	Male	30 years	Story board artist	-	10 years
13.		Expert 13	Female	39 years	Head of animator	-	15 years
14.		Expert 14	Male	31 years	Director	-	10 years
15.	Young Thai industrial experts	Expert 15	Female	25 years	Animator	-	4 years
16.		Expert 16	Female	25 years	Concept artist	-	4 years
17.		Expert 17	Female	27 years	Concept artist	-	5 years



Figure 5.2 Thai experts during interviewing

Table 5.5 All 11 interview questions for experts

Q1	The storyteller's point of view	<i>What 'The storyteller's point of view' (the 1st or 3rd point of view) will you use in digital storytelling to increase motivation in cultural tourism for five different groups and why?</i>
Q2	A key question	<i>What style of 'A key question' (The main concept or a question that will be answered by the end. For example, what is the origin of Thai people?) will you use in digital storytelling to increase motivation in cultural tourism for five different groups and why?</i>
Q3	The purpose	<i>What 'purposes' (such as to initially understand the meaning of cultural tourism, to be impressed or to lead them going out...) will you set up in digital storytelling to increase motivation in cultural tourism for five different groups?</i>
Q4	Emotional Content	<i>What style of 'Emotional Content' (high-low, stable-swing emotions or mood -tone feelings) will you use in digital storytelling to increase motivation in cultural tourism for five different groups?</i>
Q5	Story structure	<i>What style of 'Story structure' (basic – one or no climax or many climaxes) will you use in digital storytelling to increase motivation in cultural tourism for five different groups?</i>
Q6	Economy	<i>What 'Economy' (the level of amount of information – high, moderate, low) will you use in digital storytelling to increase motivation in cultural tourism for five different groups and why?</i>
Q7	The rhythm of the story	<i>What style of 'The rhythm of the story' (slow, moderate or fast rhythm) will you use in digital storytelling to increase motivation in cultural tourism for five different groups and why?</i>
Q8	The storyteller's voice	<i>Is it necessary to use 'The storyteller's voice' and what style of voice will you use in digital storytelling to increase motivation in cultural tourism for five different groups?</i>
Q9	Soundtrack	<i>What style of 'Soundtrack' will you use in digital storytelling to increase motivation in cultural tourism for five different groups?</i>
Q10	Quality of media	<i>What 'Media' will you use in digital storytelling to increase motivation in cultural tourism for five different groups and why?</i>
Q11	Background and characters	<i>What 'Background' (The real, surreal, fantasy world or locations) will you set up in digital storytelling to increase motivation in cultural tourism</i>

for five different groups and why?

5.3.2 Results and discussion

Raw data from the interviews were coded by the three coders and categorised into themes. The results of the interview are presented in Table 5.6 below to summarise experts' recommendations concerning 11 elements.

Table 5.6 Digital Storytelling Guidelines for Cultural Tourism from 17 Experts and the number of people who made them in []

Digital Storytelling Elements	Diversity of People				
	Youth	Older adults	Disabled people	Non-cultural tourists	Established cultural tourists
<p>1. The storyteller's point of view</p> <p><i>What is the main point of the story and what is the perspective of the author?</i> (Lambert, 2013)</p>	The 1 st person point of view of a young person [14]	The 1 st person point of view of an older adult [14]	The 1 st person point of view of disabled person [12]	The 1 st person point of view of celebrities, movie stars or famous people [14]	The 1 st person point of view of real famous travelers [13]
<p>2. A key question</p> <p><i>A key question that keeps the viewer's attention and will be answered by the end of the story</i> (Lambert, 2013).</p>	<p>1. Relate to their taste and trends [4]</p> <p>2. Seeking new experience and new perspective [3]</p> <p>3. Interested in games, cartoons, superhero or movie stars [2]</p> <p>3. Challenging, complex and linked to the next stage [2]</p>	<p>1. Related to religion, senior love going to temple to donate [4]</p> <p>2. The concept of the family trip [3]</p> <p>3. How to better physical health or better living [3]</p>	<p>1. Related to religion, this group love going to temple to donate [5]</p> <p>2. Culture tourism is for all groups, including disable people [2]</p> <p>3. Accessibility or transportation [2]</p>	<p>1. Benefits of being cultural tourists [3]</p> <p>2. Financial issue [2]</p> <p>3. See new things [2]</p>	<p>1. Unseen, interesting locations and unique information [7]</p> <p>2. New and interesting perspective [2]</p> <p>3. Cultural tourism can lead to other benefits</p>
<p>3. The purpose</p> <p><i>Established a purpose early on</i></p>	1. To understand the meaning of cultural tourism [8]	1. To understand the meaning of cultural tourism [8]	1. To understand the meaning of cultural tourism [8]	1. To understand the meaning of cultural tourism [9]	1. To understand the meaning of cultural tourism [6]

<i>and maintains a clear focus throughout (Robin, 2008).</i>	2. To seek out the new experience and perspective [4] 3. To realise the importance of cultural tourism [3]	2. To remind them about the past [3] 3. To see the benefits of cultural tourism [2]	2. The meaning of cultural tourism [8] 3. To provide information about accessibility and disability [6].	2. To open a new world, new experiences and new friends [3] 3. To provide interesting information [3]	2. To present interesting and in-depth information [5] 3. To visit unseen places [3]
4. Emotional Content <i>Good stories include essential elements such as conflict, transformation, and closure (Salpeter, 2005).</i>	1. High emotion [10] 2. Exciting and positive emotional content [5] 3. A lot of conflicts [5]	1. Stable and moderate emotion [12] 2. Positive emotion [4] 3. No conflict [3] 3. Avoid sadness & negative meaning [3]	1. Stable and moderate emotion [6] 2. Positive feelings [3] 3. Not too serious or stressful [3]	1. High and strong emotional content [9] 2. Creating a peak point and a lot of conflicts [4]	1. Moderate and formal emotional content [8] 2. Emotion is not necessary for this group [2]
5. Story structure <i>What are the major events or challenges during the narrative? (Miller, 2012)</i>	1. Complex, strange, many peak points and climaxes [8] 2. New, innovative and trendy structure [4] 3. Simple & Basic structure [3]	1. Simple, basic and conservative style [5] 2. They need direct information [4] 3. No need to use gimmick, trick or hidden plot [3]	1. Basic, conservative and stable structure, no climax, [12] 2. One climax point [5] 3. Do not like fast and new structure [2]	1. Complex, strange, many peak points and climaxes [7] 2. Structure should be concise and short [5] 3. New, innovative and trendy structure [3]	1. Simple & Basic structure [5] 2. Complex, strange, many peak points and climaxes [4] 3. One or no climax [3].
6. Economy <i>Using just enough content to tell the story without overloading the viewer (Lambert, 2013).</i>	1. Less, concise and short information [9] 2. Choose only one point/ concept [4] 3. Interesting information [3] Types of information: 1. Use a hidden story & gimmick to attract them to find out more [3] 2. Use environmental	1. Low amount, concise and short information [7] 2. Moderate information [2] 2. No one wants in-depth information [2] Types of information: 1. Use a hidden story & gimmick to attract them to find out more [4] 2. Not too new or updated,	1. Low amount, but necessary information [4] 2. High amount of information about accessibility [3] 2. Choose only one point/ concept [3] Types of information: 1. Present information about accessibility [3]	1. Low amount, concise and short information [10] 2. Interesting information [5] 3. Choose only one point/ concept [4] Types of information: 1. Use a hidden story & gimmick to attract them to find out more [4]	1. Low amount, but necessary information [8] 2. Choose only one point/ sentence [4] 3. Useful and interesting information [3] Types of information: 1. Use a hidden story & gimmick to attract them to find out more [4] 2. Use environmental

	pictures [2]	they cannot remember well [2]	2. Use a hidden story or gimmick to attract them to find out more [2]	2. Use environmental pictures [2]	pictures [3]
7. The rhythm of the story <i>The rhythm of the story and how slowly or quickly it progresses (Lambert, 2013).</i>	Fast rhythm [8] Example: 1. Like a Hollywood movie or advertising they are familiar with [4] 2. Such as advertising, music videos or movie trailers [2]. 3. Compared to music: pop [2]	Slow rhythm [8] Example: 1. Depend on the story: Adventure movie: fast rhythm; Romantic or dramatic movie: slow rhythm [5]	Slow rhythm [7] Example: 1. Depend on the story: Adventure movie: fast rhythm; Romantic or dramatic movie: slow rhythm [5]	Fast rhythm [8] Example: 1. Such as advertising, music videos, Hollywood movies or movie trailers [5]. 2. Depend on the story: Adventure movie: fast rhythm; Romantic or dramatic movie: slow rhythm [4] 3. Compared to music: pop [3]	Standard rhythm [5] Example: 1. Depend on the story: Adventure movie: fast rhythm; Romantic or dramatic movie: slow rhythm [4] 2. Standard like a Hollywood movie [2] 3. Such as advertising, music videos or movie trailers [2]
8. The storyteller's voice <i>Storyteller gives the narrative the appropriate amount of focus (Ohler, 2008).</i>	1. Voice is necessary [6]. 2. Not necessary [5] Style of voice: 1. Present positive or funny tone, Thai people always love comedy [3] 2. Depends on story and screenwriting [2] 3. Lively, swing and fluctuate voice [2]	1. Voice is necessary [8] 2. Not necessary [1] Style of voice: 1. Present positive or funny tone, Thai people always love comedy [4] 2. Calm, peaceful and stable voice [2] 3. Depends on story and screenwriting [2]	1. Voice is necessary [8] Not necessary [2] Style of voice: 1. Present positive or funny tone. Thai people always love comedy [3] 2. Calm, peaceful and stable voice [2]	1. Voice is necessary [6]. 2. Not necessary [5] Style of voice: 1. Present positive or funny tone. Thai people always love comedy [3] 2. Lively, swing and fluctuate voice [2]	1. Voice is not necessary [4]. 2. Voice is necessary [3] Style of voice: 1. Present positive, lively or funny tone. Thai people always love comedy [4] 2. Depend on the story and objectives [3] - We can use any style [2]
9. Soundtrack <i>Music or other sounds that support and embellish the story (Lambert,</i>	Necessary [5] Style of soundtrack: 1. Contemporary or popular music, such as pop [6]. 2. Soundtrack - relate to their ages, taste and	Necessary [6] Style of soundtrack: 1. Simple and easy-listening [8] 2. Older or traditional Thai songs to feel nostalgia [4]	Necessary [4] Style of soundtrack: 1. This group is too broad. It depends on their ages, educational background and types of	Necessary [3] Style of soundtrack: 1. This group is too broad. It depends on their ages [4] 2. Contemporary, popular and	Not necessary [6] Style of soundtrack: 1. Simple and easy-listening [3] 2. Contemporary, popular and

2013).	lifestyles [5] 3. Trendy music [5]	3. Traditional Thai song, but not pure 100 percent [3]	disabilities [8] 2. Simple and easy-listening [6] 3. Contemporary or popular music [3]	Trendy music [4] 3. Simple and easy-listening [3]	Trendy, not necessarily traditional Thai songs [2] 3. It depends on their ages [2]
10. Quality of media <i>What is the medium (e.g., mobile phones, TV or the Internet)? (Miller, 2004)</i>	1. Mobile devices [10] 2. Video games [5] 3. Social media [4] Recommendation: 1. They do not watch television [4] 2. Use only hi-tech devices [2]	1. Television [10] 2. Mobile devices [8] 3. Radio [3] Recommendation: 1. They are not familiar with hi-technology [3]	1. Television can cover many types of disabilities [7] 2. Mobile devices [3] 3. As many media as possible (many categories of people with disabilities) [4] Recommendation: - Too broad group. It depends on their ages and types of disabilities [6]	1. Mobile devices 2. As many media as possible (too broad and varied group) [4] 3. Social media [4] Recommendation: 1. This group is too broad and varied, using as many media as possible to cover all people [3]	1. Mobile devices [5] 2. As many media as possible [5] 3. Websites [4] Recommendation: 1. Focus on content, not presentation [3] 2. Love reading books and magazines [2]
11. Background and characters <i>What is the world and where is it set? (Shcafer, 2008)</i>	Background: 1. Fantasy, surreal, ideal or imagined world [8] 2. Real, beautiful and interesting locations, to create real experience [8] 3. The hi-tech or virtual world with new technology, such as the 4d movie [5] Characters: 1. Use characters that relate and are popular to this group [4]	Background: 1. The real world, locations, and characters only [13] 2. Set up location that the target group live in real life [3] 3. - Set up locations from the past to feel nostalgia [3] Characters: Use real older characters who are popular with this group [3]	Background: 1. The real world, locations, and characters only [9] 2. Real world that they cannot access in real life. [3] 3. Set up location that the target group live in real life [3] Characters: 1. Use real older characters who are popular with this group [3]	Background: 1. Real, beautiful and interesting locations [8] 2. A fantasy and surreal world [4] 3. The virtual world with new technology, such as the 4d movie [4] Characters: 1. Use real older characters who are popular with this group [3]	Background: 1. The real world and location [10] 2. Surreal, sci-fi or technological world [4] 3. A fantasy world, it can grab their attention [2] Characters: 1. Use real and professional presenters who are popular with each group to make them believe [3]

1. The storyteller's point of view

"What is the main point of the story and what is the perspective of the author?"
(Lambert, 2013)

Results: The majority of experts state that they prefer to use the first-person point of view for all groups. This technique can make the viewers feel that the storytellers are talking directly to them, easily connecting with members of all the groups. Furthermore, for youth, older adults, and disabled people, the storytellers should tell stories through characters who are the same age as the target groups. Youth in particular will believe a younger rather than an older character. In addition, regarding non-cultural tourists, the experts state that this group is too broad and large. Therefore, we should use movie stars or other famous people to attract them. Finally, established cultural tourists do not care about movie stars or celebrities. Hence, we should attract them by using famous travellers or academic persons in the field.

Discussion: The first-person point of view is the main factor in digital storytelling (Lambert, 2013; Ohler, 2008; Robin, 2008; Alcantud et al., 2014; Wexler et al., 2014; Sarica and Usluel, 2016). Lambert (2013) and Ohler (2008) consider this factor the first element of their guidelines. Moreover, Lambert (2013) states that digital storytelling initially focuses on personal lives and stories. It is originally used to help general people, not professionals, to tell their personal stories using their own voices. Robin (2008) states that the storyteller should present with his or her own perspective to create a strong connection with viewers. However, Ohler (2008) states in his book *Digital Storytelling in the Classroom: New Media Pathways to Literacy, Learning, and Creativity* that we should not restrict digital storytelling to the first-person perspective. This is because his guideline focuses on how to use digital storytelling in the classroom. Teachers and students can use different points of view to suit the classroom purposes. This means that use of the first- or third-person point of view depends on the purpose of the digital storytelling. However, the results of this study focus on cultural tourism, and the experts suggest that the first-person perspective is preferable.

2. A key question

“A key question...keeps the viewer's attention and will be answered by the end of the story” (Lambert, 2013).

Results: The most interesting issue arises regarding older adults and disabled people. Most experts recommend that we should design a concept and question related to religion, as members of these groups love going to temples to donate. Moreover, for older adults, storytellers can include the concept of the family trip and better physical health or better living, such as *“This is your personal reward”* or *“If your family asked you about these places, how would you answer?”* Moreover, for the disabled group, we should emphasise that cultural tourism is for all groups, including disabled people, accessibility or transportation, or dreams or something that they want to do but cannot, such as *“This is your personal reward”, “Are you ready to go travelling?”* or *“Travelling together?”*

However, for other groups, the results vary. For example, for established cultural tourists, most experts indicate that this group does not care about the concept or story. They just want an unseen, new experience, interesting locations, and unique information. However, if the storytellers need to set up a key question for this group, it should be challenging and unique, not just simple question, such as *“Do you know this place? Do you want to know more?”* or *“Increasing knowledge and experience”*.

Regarding non-cultural tourists, experts state that this group does not know much about cultural tourism, so we should create advertising about the benefits of being cultural tourists, such as *“How is cultural tourism good for us?”* Moreover, the question should relate to financial issues because cultural tourism is more expensive than general tourism. The youth group always seeks new experiences and perspectives and is interested in games, cartoons, superheroes, or movie stars. Therefore, we should stay updated about their latest tastes and trends to set up a key question, such as *“Do you want to know about new things, experiences, or perspectives?”*, *“Seeking a slow lifestyle?”*, or *“Getting away from the city?”*

Discussion: Robin (2008) states that a direct-to-the-point and interesting question matched to the viewers' interest can keep the audience throughout the story. Therefore, if we know what their interests and trends are, we can set up the key

question. For older adults and disabled people, this finding is supported by the first study, which indicates that these groups' drivers for cultural tourism is religion activities (going to temples and to donating to them). According to other studies, not including Thailand, this issue is not considered a significant driver. However, in Thailand, most people are Buddhists. In addition, donation is a popular tradition. Older adults and disabled people answered that donating to temples is the main activity that leads them to travel. Hence, the tourism industry should use this data to design programmes to attract Thai tourists, especially older adults, disabled people, and non-cultural tourists (Kasemsarn and Nickpour, 2016)

Youth and cultural tourists want new experiences or unseen places. This matches the first study, which shows that exposure to 'new experiences and different lifestyles' is an important driver for engaging with cultural tourism (Kasemsarn and Nickpour, 2016). Moreover, many studies support the notion that interests, enjoyment, and experiences are the main drivers to motivate tourists to engage in tourism (Crompton, 1979; Yau et al., 2004; Kim and Ritchie, 2014).

3. The purpose

"Establish a purpose early on and maintain a clear focus throughout" (Robin, 2008).

Results: The purpose factor is very interesting because experts agree that the term 'cultural tourism' is very new. Most Thai people are unfamiliar with it and do not understand its importance. Therefore, we should present the meaning and importance of cultural tourism for all groups as the initial purpose. However, regarding secondary purposes, there are different details for each group. For youth and non-cultural tourists, experts recommend that we present a story of seeking new experiences, friends, and perspectives and show them that the Thai culture is very interesting. This is because they consider cultural tourism boring and old-fashioned rather than interesting. For older adults, we should focus on reminding them about the past and spending time with their families. The disabled group is concerned about being a burden to others. Therefore, we should provide information about accessibility and disability. Finally, established cultural tourists want interesting and in-depth information or to visit unseen places.

Discussion: Robin (2008) states that this element is the most important and should be considered the first factor because the purpose can lead the whole story from beginning to end. Moreover, cultural tourism is considered a niche market compared to mass tourism. General tourists do not pay attention to it (UNESCO, 2003). Furthermore, most cultural tourism industries focus on cultural tourists, who comprise just 15 percent of all tourists (Silberberg, 1995; Lord, 1999). Hence, this is a good opportunity to present the meaning and importance of cultural tourism to all groups.

4. Emotional Content

“Good stories include essential elements such as conflict, transformation, and closure” (Salpeter, 2005).

Results: The findings of this factor can be separated into two groups. First, youth and non-cultural tourists prefer ‘high emotion’; youth in particular like exciting, positive emotional content with a lot of conflict, whereas older adults, disabled people, and established cultural tourists prefer ‘moderate emotion’ that is not too serious or stressful. Moreover, in terms of the type of emotion, all groups except older adults prefer comedy movies, optimism, and positive thinking. This is because Thai people are not too serious and they really love comedy shows. Some experts argue that, to attract Thai people, comedy is the best solution. However, to attract older adults, we should focus on reminding them of the past, nostalgia, or travelling into the past because this group prefers to think about the past.

Discussion: Lambert (2013), Porter (2004), and Ohler (2008) confirm that this element, emotional content, is a significant factor. This is because emotions (i.e., sadness, happiness, or pleasure) are a main part of all stories. Moreover, Lambert (2013) states that emotional content that comes from the true story of the storyteller can make an impact and touch the audience.

Furthermore, ‘developing creative tension’, derived from Porter’s guideline, can attract the audience’s attention. Porter also confirms that to build the right momentum for the story, the storyteller should know what the audience is interested in. Therefore, we can attract them to watch until the end (Porter, 2004; Alcantud et al., 2014; Wexler et al., 2014 Sarica and Usluel, 2016). However, Ohler (2008)

states in his book that, in some cases, digital storytelling does not require emotional content. This is because his book focuses on the educational purpose of digital storytelling, where the objective is not to raise feelings but to convey fact.

5. Story structure

“What are the major events or challenges during the narrative?” (Miller, 2012)

Results: Regarding older adults, disabled people, and established cultural tourists, experts recommend that this group does not like a complex story structure. They need a direct and simple story that is easy to understand. In contrast, youth need something new, innovative, and trendy in the story to attract their interest like trendy Hollywood movies, so we should study viral and trendy social media. Moreover, non-cultural tourists are not interested in cultural tourism. Therefore, we should try complex, strange stories with many peak points and climaxes to attract them. In terms of the types of story, for older adults and disabled people, we should focus on the ‘relationship of friends and family’ theme. Non-cultural tourists are interested in fun, amusing, and exciting stories and in finding out who they are. Youth are interested in the following themes: (1) fun, amusing, and exciting; (2) love, adventure, winners, and challenges; and (3) stories related to friends, not family.

Discussion: All groups prefer a different story structure. This matches Schafer’s (2008) observation that structure is about how actors, mood, tone, story, locations, and themes flow together. Therefore, good digital storytelling should have a very clear storyline with a starting point, middle, climax, and end. This means that the story for each group may have different structures. Storytellers should know what their target groups like and dislike or trends to create a story structure that matches their interests.

6. Economy

“Use just enough content to tell the story without overloading the viewer” (Lambert, 2013).

Results: Experts recommend that, because of the short form of digital storytelling, storytellers do not have enough time to include much information. Therefore, we should use just a small amount of concise information for all groups. Moreover, in terms of techniques to present data, they state that using a hidden story and

gimmick to attract them to learn more is the best trick for all groups except disabled people. This group needs specific information about accessibility.

Discussion: This finding is reflected in several guidelines for digital storytelling, including those for general, educational, and interactive purposes, which recommend using simple and sufficient messages (Porter, 2005; Salpeter, 2005; Lambert, 2013; Ohler, 2008; Robin, 2008). According to Salpeter (2005), digital storytelling should be short, concise, and simple without exaggerating. Moreover, the technology support should be minimal and escalate only the core idea of the story. Because of its short form, digital storytelling encourages the storyteller to eliminate unnecessary material and emphasise a simple story (Ohler, 2008). Furthermore, it should be short and simple with a meaningful message (Lambert, 2013; Porter, 2005).

Floch and Jiang (2015) suggest that, because of current technology, digital storytelling is mixed with audio, text, and video, and the latest interactive systems rapidly change. Therefore, many companies focus on high technology rather than content. Floch and Jiang (2015) recommend that storytellers should emphasise good and simple content reused in several technology formats. Many studies also support the finding that users need a simple, easy-to-understand, uncomplicated story structure (Wither et al., 2010; Pujol et al., 2012; Floch and Jiang, 2015).

7. The rhythm of the story

“The rhythm of the story and how slowly or quickly it progresses” (Lambert, 2013).

Results: For youth and non-cultural tourists, because of their characteristics – short concentration and love of excitement – we should present them with a fast rhythm, like that of Hollywood movies, music videos, or movie trailers they are familiar with. Older adults and disabled people are not familiar with the speed and rhythm of Hollywood movies. Therefore, we should use a slow rhythm, like that of a romantic or dramatic movie. Because established cultural tourists are not interested in watching movies, we should use a standard rhythm. However, because there is a wide range of disabilities, the criteria for rhythm for this group depend on their ages and types of disabilities.

Discussion: Lambert (2013) and Robin (2008) state that the storyteller should know when to pause, stop, and move the story to make it faster or slower. Furthermore, they should emphasise pacing to match the target audiences. Digital storytelling with the proper rhythm can attract the audience better.

8. The storyteller's voice

"The storyteller gives the narrative the appropriate amount of focus" (Ohler, 2008).

Results: Experts recommend that, for all groups, a narrative voice is necessary because Thai people are familiar with having a narrator while watching documentaries, short films, or movies. Moreover, the voice should have a positive or funny tone because Thai people always love comedy. However, they recommend that the storyteller should use voice when pictures cannot tell the detailed story; for example, the voice can present information about constructing temples. Moreover, for youth, we should use both a narrative voice and subtitles because they often turn the volume off when using mobile phones.

Discussion: This result is the same as that of many experts on digital storytelling who agree that the voice is a necessary factor, especially use of the storyteller voice (Ohler, 2008; Robin, 2008; Lambert, 2013; Pozzebon and Calamai, 2015). Lambert (2013) point, out that, when the storyteller presents his or her own story, the voice can attract and connect directly and emotionally to the audience. Moreover, the quality of the voice must be clear from the beginning to the end and illustrate the moods of the story (Robin, 2008; Pozzebon and Calamai, 2015). Ohler (2008) states that use of the voice is the original and traditional form of storytelling. However, though technology has enabled digital storytelling, the voice is still a significant aspect and universal element to connect storytellers and audiences.

9. Soundtrack

"Music or other sounds...support and embellish the story" (Lambert, 2013).

Results: Soundtracks are necessary for all groups except established cultural tourists. However, the soundtrack styles should be quite different. Youth love funny, contemporary, or popular music, such as pop or a style related to their age, taste, and lifestyle. Older adults and established cultural tourists like simple and easy-listening music; in particular, older adults love older or traditional Thai songs to feel

nostalgia. However, the groups of disabled people and non-cultural tourists are very broad. Therefore, the soundtrack depends on their age, educational background, and types of disabilities.

Discussion: Lambert (2006) illustrates that this element is necessary but not compulsory. Moreover, it can strengthen audience feelings by combining visuals and the narrative voice to attract people's interest in the story. However, he states that using an instrumental form without vocals is preferable (Lambert, 2006; Robin, 2008; Pozzebon and Calamai, 2015). Ohler (2008) states that music is second to narrative voice and must not be louder than the voice. Moreover, if we turn off the music, the story and content should still stand strong.

10. Quality of media

"What is the medium (e.g., mobile phones, TV or the Internet)?" (Miller, 2004)

Results: There are only two answers to this question: applications on mobile devices and television. For youth, non-cultural tourists, and established cultural tourists, experts recommend using only mobile devices. They state that, nowadays, most young people do not watch television. They prefer high-technology devices (i.e., smartphones and digital tablets). However, the group of non-cultural tourists is too broad and varied. Therefore, experts recommend using as many media as possible to cover all people in this group. Moreover, for older adults and disabled people, a majority of experts agree that television is still the main media they use. However, the disabled group is too broad, and the media they prefer depend on their ages and types of disabilities. For example, young disabled people may use smartphones or tablets, but older disabled people may prefer to watch television.

Discussion: The findings are similar to those of many studies stating that there is a trend of young people using the Internet through mobile devices (i.e., smart phones and handheld tablet devices) rather than via laptops and personal computers (Barnard, 2013; Rand et al., 2015). Users point out that it is easier than using a computers or laptops. Moreover, users can use touchscreens, with no more keyboards and mouses required.

Furthermore, in the case of older adults, several studies confirm that digital devices are still the most significant barrier for this group. They mostly state that the interface of digital devices is very hard to understand and use compared to what they are familiar with (i.e., television or radio) (Worden et al., 1997; Chadwick-Dias et al., 2003; Fox et al., 2004). This is the biggest barrier because all digital storytelling is done on digital platforms (i.e., mobile phones, digital mobile devices, computers, or laptops) (Christodoulakis, 2014).

11. Background and characters

“What is the world and where is it set?” (Schafer, 2008).

Results: The majority of experts agree that all groups prefer to watch the real world, locations, and characters only, not animation or surreal movies. They point out that this guideline focuses specifically on cultural tourism. Therefore, viewers would like to see interesting and real places, not just drawings. Moreover, only realistic pictures can attract them to travel. However, youth are also interested in fantasy, surreal, ideal, or imagined worlds. We can use both reality and fantasy to attract them. For characters, we should use real, popular characters for all groups. Experts state that most viewers will believe someone in the same age group, especially if they are popular or celebrities. Therefore, we should use these characters to make viewers believe.

Discussion: This result differs from those of studies that do not focus mainly on locations or stages of the story. Only Schafer (2004), presenting the ‘stage’ as the main element, and Miller’s (2012), ‘fictional work and setting’ emphasise this factor. This is because this research tries to attract people to be interested in cultural tourism. Therefore, presenting an interesting location is the best way to increase their interest. This could be supported by the result from the first study stating that ‘visiting a place that I have not visited before’ is the main driver for four groups. This driver is related to a finding from Crompton (1979), who states that some tourists go on vacation because of beautiful and interesting scenery to change their environment, no matter how comfortable their environments are.

In fact, the main purpose of movies is not to attract viewers to travel. However,

surprisingly, several studies throughout the world confirm that people are motivated to visit the locations they see in the movies. (Riley and Van Doren, 1992; Tooke & Baker, 1996; Busby and Klug, 2001; Connell, 2005; Iwashita, 2008; Bolan et al., 2011; Gjorgievski et al., 2012; Suni and Komppula, 2012).

Riley and Van Doren (1992) explain that this is because, when people watch movies, they are able to experience beautiful and interesting destinations without a hard sell. Movies can affect the motivation to visit locations seen in the movie. Croy (2010) states that movies can create awareness, motivations, and expectations among people about visiting the real locations.

Bolan et al. (2011) conducted a qualitative study in the UK, collecting from 161 respondents information about what factors from movies can lead viewers to travel. The data indicate that 'scenery' (43%) ranks as the first film factor, followed by 'narrative/story' (20%) and 'characters' (10%). These data are supported by a survey conducted in 2004 in the UK indicating that eight out of 10 British people decided to travel because of movies. Moreover, one out of five have plans to travel to the places featured in their favourite movies (Hudson & Ritchie, 2006). This point can be used to help in creating digital storytelling for cultural tourism as a significant motivational driver.

5.4 Summary

5.4.1 Research questions

This study starts with the problem that, in cultural places, most tourists have no motivation to read the story displayed. This issue can lead to a good opportunity to increase visitors' motivation to engage in cultural tourism using digital storytelling. Furthermore, it focused on addressing these research questions:

- **Research question 1:** What are the digital storytelling guidelines that focus specifically on cultural tourism?

This study centralises many general guidelines for digital storytelling into the single guidelines. As stated previously, there is no guideline for non-interactive digital storytelling focusing specifically on cultural tourism, especially for Thailand. Next, the proposed guidelines of digital storytelling, composed of 11 elements, were created

based on the work of eight experts (Porter, 2005; Schafer, 2004; Salpeter, 2005; Paul and Fiebich, 2005; Lambert, 2013; Ohler, 2008; Robin, 2008; Miller, 2012).

Table 5.7 The new digital storytelling guidelines composed of eight digital storytelling experts

1. Initial questions	1. The storyteller's point of view	What is the main point of the story and what is the perspective of the author? (Lambert, 2006)
	2. A key question	A key question that keeps the viewer's attention and will be answered by the end of the story. (Lambert, 2006)
	3. The core idea and purpose	Established a purpose early on and maintains a clear focus throughout. (Robin, 2008)
	4. Emotional Content	Good stories include essential elements such as conflict, transformation, and closure. (Salpeter, 2005)
2. Scripting	5. Story structure	What are the major events or challenges during the narrative? (Miller, 2012)
	6. Economy	Using just enough content to tell the story without overloading the viewer. (Lambert, 2006)
	7. The rhythm of the story	The rhythm of the story and how slowly or quickly it progresses. (Lambert, 2006)
3. Media choices	8. The storyteller's voice	Storyteller gives narrative the appropriate amount of focus in their story. (Ohler, 2008)
	9. Soundtrack	Music or other sounds that support and embellish the story. (Lambert, 2006)
	10. Quality of media	What is the media (e.g. mobile phones, TV or the Internet)?
4. Audience experience	11. Background and characters	What is the world and where is it set?

- **Research question 2:** How can the digital storytelling guidelines be used to motivate cultural tourism for five different groups in Thailand?

The guidelines were reviewed and interviewed by 17 Thai and international experts and presented in the Table 5.6. Some results are interesting. For example, regarding the first element, 'the storyteller's point of view', experts recommend that the first-person point of view should be used for all groups because telling stories via the storyteller's own perspective is the main issue in digital storytelling. For 'the purpose'

element, experts suggest that storytellers should inform all groups about basic information of cultural tourism, such as the meaning of cultural tourism. They state that the term 'cultural tourism' is very new to Thai people. Therefore, we should present to them what it is and why it is important. In regard to the 'economy', experts suggest that, because of the shortened form of digital storytelling, using small amounts of information will be enough for all groups. In terms of the 'storyteller's voice', this element is still necessary for all groups. This is because the storytellers use their own voices to tell the story from the beginning to the end. The next interesting point is that the 'quality of media' involves only two main types: mobile devices and television. This is the same as the results of other studies indicating that older adults are not familiar with the new technology, in contrast to young people. The last interesting issue is 'background and characters'; experts recommend that, for all groups, storytellers should present only real locations, not fantasy, to attract visitors because the story is about cultural tourism. They stated that most viewers need to see real, interesting, and beautiful locations, not fantasy or animation.

Based on the results, it is obvious that non-interactive digital storytelling for cultural tourism in Thailand is mainly about

- The first-person point of view
- Showing the meaning and importance of cultural tourism.
- Simplicity and brevity
- Using the storyteller's voice to narrate
- Presenting real locations, not fantasy

These keywords can inform recommendations about how to simplify information through storytelling. In particular, because of the rapid change in mobile device technology, some projects try to focus on the latest innovation instead of creating simple stories. Online visitors need a simple and easy story structure to understand. Therefore, the key issue in the guidelines is to create good stories and content that can be created by everyone, not just professionals and used on many technology platforms in the future.

In conclusion, this study could not claim that following the guidelines can guarantee the success of digital storytelling for cultural tourism for every target group.

Nevertheless, the digital storytelling guidelines are created, commented and reviewed by 17 experts systematically. If the storytellers, researchers and users aim to increase motivation for cultural tourism, then the guidelines could be appropriated and result in positive impact.

5.4.2 Implication of this study

- **Cultural places**

In the future, the tourism industry, museums and cultural sites will tend to develop more high technology to present the data more realistically in order to deliver a successful visitor experience. Therefore, digital storytelling in cultural tourism, guiding the user's experience and increasing motivation, seems to be the new trend in the field. However, the key is how to apply and integrate these technologies effectively with good, simple content that can be reused on many platforms, resulting in meaningful, desirable and effective cultural tourism experiences. Therefore, these guidelines are suitable for storytellers or researchers to use these data to understand digital storytelling guidelines that match each group in the context of Thailand. Finally, it creates new digital storytelling guidelines from expert interviews for five groups representing specifically the motivation for cultural tourism in Thailand.

- **User experience design (UX)**

In these days, many current digital applications apply user experience (UX) to design, evaluate and develop projects (Wither et al. 2010; Pujol et al. 2012; Floch and Jiang 2015). For example, in case of CHESS (www.chessexperience.eu 2011), the project starts by studying the user's profile, demographics, interests, cognitive or conceptual change, perception of value and inspiration. Finally, it creates a specific user model that links between social media and augmented reality (AR). Pujol et al. (2012) also recommend that the UX process should be tested with real users in real locations with real experiences.

However, Law et al. (2009) suggest that user experience is very subjective and dynamic over time. There are a number of factors, such as users, trends, society, period of time and countries. This is the main problem about using UX design. UX designers should be aware of this issue and test their works with each group.

Nevertheless, designers and storytellers can apply these guidelines into both non-interactive and interactive form. This is because the guidelines are composed of 11 elements focusing on creating the story to attract five groups (youth, older adults, disabled people, non-cultural tourists, established cultural tourists). Furthermore, these guidelines can illustrate recommendations from experts about how to create digital storytelling in the area of cultural tourism. As a result of this study, UX designers can use this data to adapt into many digital applications on many platforms.

- **Personalisation technique**

Previous digital storytelling in museums tried to focus on the content on a device as one content for all users. Nowadays, most cultural heritage museums adopt personalisation methods, illustrating what each group is interested in. This allows users to give feedback, age group, rate or answer questions about their interests, and they will then be presented with specific information matching their interests. The aim of the personalisation is to provide a smooth experience for each user visiting the museum (Pujol et al. 2012).

Floch and Jiang (2015) support users who have different interests and there are many stories and much information online. Most users would like to obtain, search, filter and personalise the information they are interested in easily. Therefore, in order to personalise the digital storytelling application, it is very important to understand their information, needs and history. Lastly, designers can use these guidelines to create personalisation data for all five groups presented with specific information.

- **Local engagement**

Based on the original purpose of digital storytelling that is low-budget and non-professional project, everyone could create their own digital stories. Moreover, creating digital storytelling does not require the hi-end equipment, only mobile phones, basic digital cameras and free editing programs are acceptable. There are several digital storytelling projects that support local people to create stories showing about their towns, lifestyles, social values and local identity. Hence, members in any local place could be trained in workshops by adapting these guidelines to create

simple digital stories from their personal ideas to attract people to go to cultural places or understand local lifestyles. The projects which adopted the guidelines could be personal presentations about their cities, historical places, daily life stories, cultural events or festivals that can connect outsiders with the local community. This is because cultural tourism originally does not emphasise on transportation, shopping or accommodation, but focus mainly on the understanding and connecting with local cultures, lifestyles and histories. Furthermore, digital storytelling can increase the relationships between people and historical places or festivals, the past and present through local story telling. As a result, this can lead to sustain community engagement for long term promoting and preserving cultural sites, local cultures and traditions and increase local economy in their own cities also.

5.4.3 Study limitations

1. Interviewees – a lack of academic background

This study interviewed 17 digital storytelling experts from both academic and industrial groups, with the topic of how to use 11 elements to increase motivation in cultural tourism. When the researcher interviewed two academic experts in the pilot tests, there was no problem. However, in the real study, some industrial digital storytelling experts did not understand the 11 elements clearly. They said they had never studied such an approach in the academic area and could not offer advice on how to make each element work. Therefore, the researcher had to change the style, from structured interviews to unstructured interviews, asking the interviewees to freely explain how to create digital storytelling for cultural tourism for each group.

Suggestion: The researcher recommends the use of a pilot test with all participant groups. For example, in this case, the researcher should test the interview with both academic and industrial experts before the real test in order to determine any problems.

2. Misunderstanding in digital storytelling

When the researcher contacted the interviewees by email and telephone, some of them refused to join the study, stating that they did not know the term 'digital storytelling'. Hence, the researcher had to explain the definition and give clear examples of digital storytelling. This also happened in the first study because the majority of participants had never heard the word 'cultural tourism' before.

Suggestion: As a way of increasing the acceptance rate, the researcher recommends providing the definitions of any technical terms in the email sent to interviewees.

3. Interviewees – a lack of experience with some groups

This interview set up the questions for five groups. Sometimes, experts refused to give suggestions for the groups they had never worked with (i.e. older adults and disabled people). However, the researcher presented the interviewees with the results from the first study, focusing in particular on the barriers (why they did not go) and drivers (why they did go) for each group.

Suggestion: The researcher recommends the provision of details, data and/or results for interviewees, especially when it comes to certain specific information. Disabled people and older adults are the groups that digital storytelling experts have the least experience working with.

4. Limited use with Thai users

These guidelines were originally created to target Thai audiences, based on the results of the previous study, which explored the barriers and drivers for Thai participants. Moreover, out of the 17 experts interviewed, 13 were Thai and 4 were international. As such, the findings might not be appropriate to other countries, especially when it comes to recommendations related to Thai culture.

Suggestion: The researcher recommends other studies to create their own guidelines for the specific topics they wish to use. If they need to target Thai users, this guideline is appropriate. However, if they plan to target international users, they should re-evaluate the guideline.

5.4.4 Detailing the framework

From the results of this chapter, the IDST framework was detailed on the link between digital storytelling and cultural tourism to increase motivation in cultural tourism. The detailed data presented with the top recommendation for each group is illustrated on the Figure 5.3.

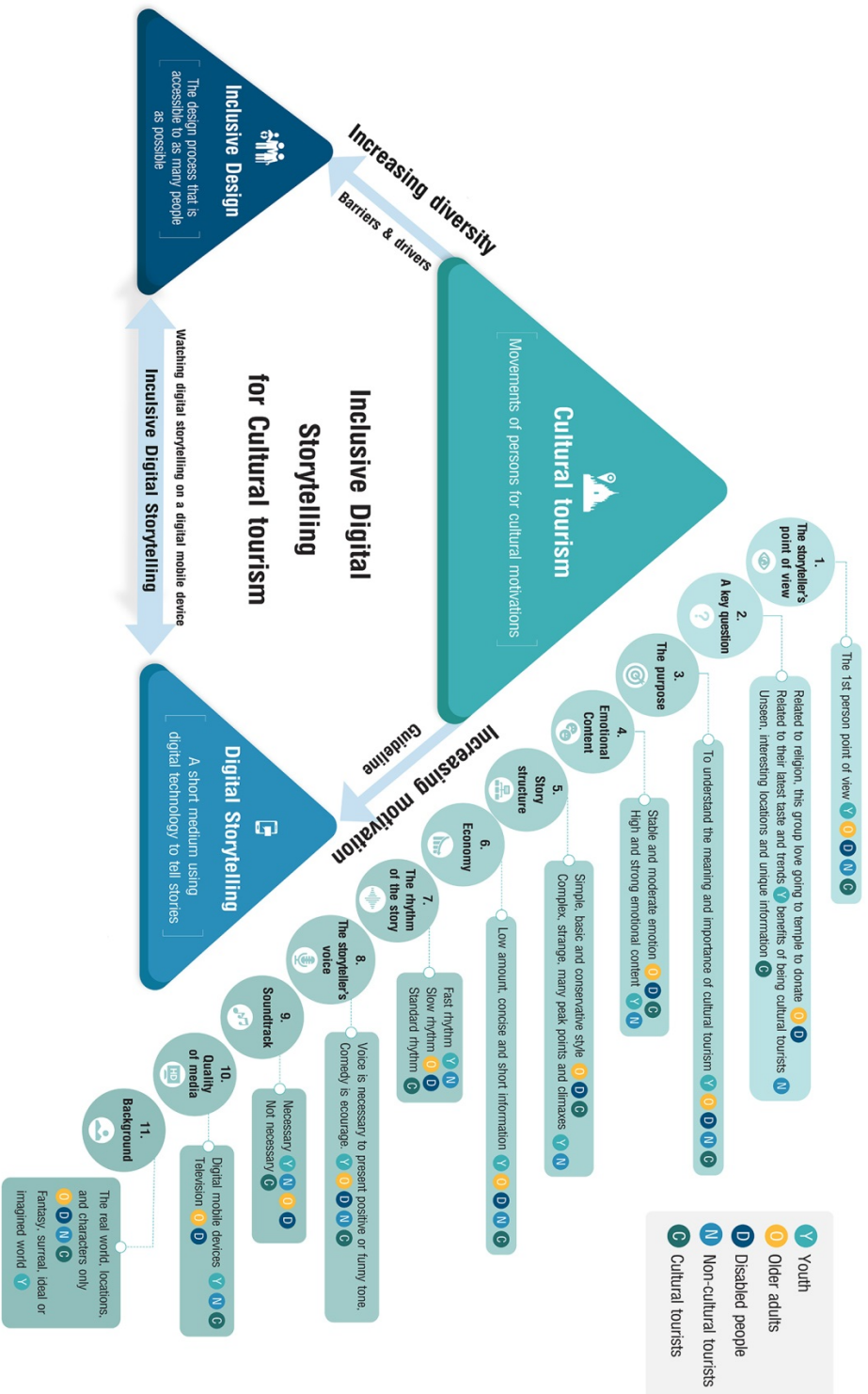


Figure 5.3 The results of the study presenting with the top recommendation for each group

Chapter 6: Inclusive digital storytelling to understand audiences' behaviour

6.1. Introduction

- 6.1.1 Definition of 'Inclusive digital storytelling'
- 6.1.2 Why using digital mobile devices to watch digital storytelling?

6.2 Research methods

- 6.2.1 The sample sizes
- 6.2.2 The observation plan
- 6.2.3 The criteria for choosing a short video and animation

6.3 Results

- 6.3.1 Demographic profile
- 6.3.2 Percentage and average time of participants who can complete the task and negative - positive comments in all stages
- 6.3.3 Results from all stages

6.4 Discussion

- 6.4.1 Reaching (accessibility and understanding)
- 6.4.2 Engaging (usefulness, usability, desirability)

6.5 Summary

- 6.5.1 Research question
 - Research question 1:** What are the diverse audiences' behaviour in terms of reaching with digital mobile devices
 - Research question 2:** What are the *diverse audiences' behaviour* in terms of engaging with digital mobile devices
- 6.5.2 Study Implications
 - Digital inclusion
 - Teaching older adults and disabled people
- 6.5.3 Study Limitations
 - 1. Internet connection
 - 2. Low educational levels for some groups
 - 3. The length of video and animation was too long
 - 4. Low acceptance rate for the observation
 - 5. Access
- 6.5.4 Detailing the framework

6.1. Introduction

In order to complete the final framework, this chapter was started by the link between inclusive design and digital storytelling. Watching digital storytelling on mobile devices is convenient and popular, but an issue arises if people (especially older adults and disabled people) cannot access or understand how to use this form of technology. Moreover, some groups of users have problems with and different experiences when using digital mobile devices. These problems in turn create opportunities to apply inclusive designs to digital technology to understand users' behavioural needs when watching digital storytelling.

The aim and objectives of this chapter are in the table 6.1. Moreover, this chapter aims to answer the research questions:

- **Research question 1:** What are the diverse audiences' behaviour in terms of reaching with digital mobile devices
- **Research question 2:** What are the diverse audiences' behaviour in terms of engaging with digital mobile devices

Table 6.1 Aim and objectives of the study

Aim	Objectives
1. to present the inclusive digital storytelling (IDST) principle to understand diverse audiences in terms of reaching (accessibility and understanding) and engaging with (usefulness, usability, desire) digital storytelling on digital mobile devices.	1.1 To understand users' ability to reach with digital storytelling on digital mobile devices 1.2 To understand users' ability to engage with digital storytelling on digital mobile devices

To achieve this aim, 50 observations divided into five groups (youths, older adults, disabled people, non-cultural tourists, and cultural tourists) were set up in Thailand.

The participants were asked to use a digital mobile device (an iPad mini 1) to visit YouTube and search for a short video and animation about tourism. They were asked to complete eleven user journey stages to test users' ability to access and understand the format, as well as engaging with usefulness, usability, and desirability when watching videos on a mobile device.

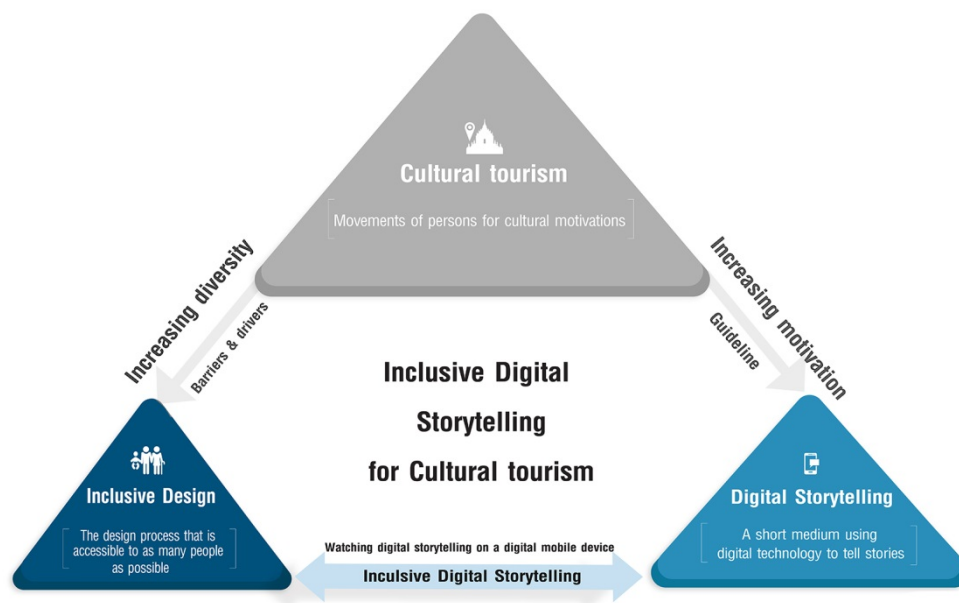


Figure 6.1 The link between inclusive design and digital storytelling in this chapter

6.1.1 Definition of 'Inclusive digital storytelling'

Nevertheless, digital storytelling is useful and popular, but one problem is that all content is on a digital format (i.e., digital mobile devices, smartphones, interactive systems, laptops, and computers). This leads to questions about whether people (especially older adults and disabled people) are unable to access and understand this form of technology (Gill & Perera, 2003; Russell et al., 2008; Fuglerud & Sloan, 2013; Orso et al., 2015; Tsai et al., 2015).

This means that this study adopts the concept of inclusive design for digital storytelling to understand the behaviours of all potential groups of people, especially older adults and disabled people. Inclusive design in this study is imperative to

ensure that everyone can follow digital storytelling. In order to adapt inclusive design with digital storytelling, this study will offers a definition of inclusive digital storytelling (IDST) as shown in the Table 4.2, postulating that IDST is narrative entertainment that reaches and engages as many audiences as reasonably possible via digital technology and media.

Table 6.2 Definition of ‘Inclusive digital storytelling’

Terms	Definitions
Inclusive design	The design of mainstream products and/or services that are <u>accessible</u> to, and <u>usable</u> by, as many people as reasonably possible ... without the need for special adaptation or specialised design.
Digital storytelling	Digital storytelling is narrative entertainment that <u>reaches</u> the audience via digital technology and media. Additionally, digital storytelling techniques can make a dry or difficult subject more alive and <u>engaging</u> to the viewers
Inclusive digital storytelling	Inclusive digital storytelling is narrative entertainment that reaches and engages as many audiences as reasonably possible via digital technology and media.

6.1.2 Why using digital mobile devices to watch digital storytelling?

There is a recent trend to access the Internet through digital mobile devices such as smartphones and handheld tablet devices, rather than laptops and desktop computers (Barnard et al., 2013). Touchscreen technology in tablet devices allows users to swipe, tap or pinch the screen directly. This is more naturalistic than using a computer mouse or a keyboard. Moreover, it is used as a self-training equipment for some disable people having problems in finger dexterity also (Barnard et al., 2013; Rand et al., 2015). Besides, this study tests some people who have never used the Internet or computers before. On a digital tablet, people can use a touchscreen, without the need for a keyboard or mouse, which could be easier than using a desktop computer or a laptop.

6.2 Research methods

6.2.1 The sample sizes

This qualitative study seeks to understand audiences' ability to reach and engage with digital storytelling on digital mobile devices, focusing on five groups in Bangkok, Thailand: youths (15-24 years); people with disabilities; older adults (those over 60), established cultural tourists, and people uninterested in cultural tourism (i.e., non-cultural tourists). To achieve this aim, 50 observations – 10 for each group – were set up in Bangkok from June to September 2016, in the following locations:

Table 6.3 Locations to set up observations for five different groups

Groups of people	Number of participants	Locations to set up the observations
1. Youth	10	The Siam Centre department store
2. Older adults	10	The Ban Bang Khae social welfare development centre
3 .Disabled people	10	The Baanphrapradaeng Disabled Foundation
4. Non-cultural tourists	10	Underground train stations
5 .Cultural tourists	10	Museum Siam

6.2.2 The observation plan

The observation schedule consisted of three parts. The first was eight questions to gain a demographic profile of respondents (gender, age, education, monthly income, type of disability; how many days/year spent on cultural and mass tourism; and experience with digital devices); the second part consisted of six stages of watching videos on an iPad; and the third was five stages of watching animation on an iPad.

Table 6.4 11 user journey stages to watch video and animation from iPad

	User journey stages	Activities
Round 1	1. Unlocking a mobile device	- Give an iPad mini 1 to the participants - Ask them to unlock the screen to access the home page
	2. Opening the 'YouTube' application	- Ask the users to find the Youtube icon on the first page of iPad - Click the icon to open the Youtube application
	3. Accessing the 'Search' icon	- Ask them to find the 'Search' icon to search for videos on Youtube - Click the 'Search' icon to open the search panel
	4. Typing the movie title	- Ask them to type the movie tile 'I hate Thailand' on the search panel
	5. Clicking on the 'Play' icon and watching the movie	- Ask them to click on the 'Play' icon and watch the video - Ask them to comment on every issue when watching (understand or not; like or dislike, etc.)
	6. Closing the movie window	- Ask them to find the 'Close' icon - Click the 'Close' icon to turn off the video window
Round 2	7. Accessing the 'Search' icon	- Ask them to find the 'Search' icon in Youtube again (round 2) - Click the 'Search' icon to open the search panel
	8. Typing the animation title	- Ask them to type the animation tile 'Jinxy Jenkins, Lucky Lou' on the search panel
	9. Clicking on the 'Play' icon and watching the animation	- Ask them to click on the 'Play' icon and watch the animation - Ask them to comment on every issue when watching (understand or not; like or dislike, etc.)
	10. Closing the animation window	- Ask them to find the 'Close' icon - Click the 'Close' icon to turn off the video window
	11. Closing the application	- Ask them to find the 'Close' icon - Click the 'Close' icon to turn off the Youtube application



Participants were asked to use a digital mobile device (the iPad Mini, version 1) to visit YouTube and search for and watch a short video and animation. They were asked to talk out loud about what they saw, their thoughts, and their feelings at every

stage. The time to complete all tasks varied from 30 to 60 minutes. During the observations, each participant was recorded by two video cameras and a voice-recording device. The first camera (a GoPro Hero4 Black) was set up in front of participants, recording with a super-wide-angle view to capture all their activities and actions. The second camera was a video camera zooming close up to the iPad screen. All participants were asked to complete 11 user journey stages to test their ability to reach (accessibility, understanding) and engage with (usefulness, usability, desirability) videos on a mobile device. The 11 stages consist of two rounds; watching videos (round 1) and animations (round 2). Round 1 was composed of: (1), unlocking a mobile device; (2), opening the application YouTube; (3), accessing the 'Search' icon on YouTube; (4), typing the video name 'I hate Thailand'; (5), finding the icon 'Play' to watch the video; (6), closing the video. Round 2 consisted of: (7), accessing the 'Search' icon on YouTube; (8), typing the video name 'Jinxy Jenkins, Lucky Lou'; (9), using the icon 'Play' to watch the animation; (10), closing the animation; (11), closing the application.

6.2.3 The criteria for choosing a short video and animation

The criteria for choosing a video and digital storytelling animation to test are: (1), its length should not exceed six minutes; (2), the total number of views on YouTube should be over one million, to reflect its popularity; (3), it should have received international awards for its good quality and acceptance; (4); it should be a story about tourism. The details about the videos are illustrated in Table 6.5.

Table 6.5 Details of videos and animations on YouTube presented to participants

Title	I hate Thailand	Jinxy Jenkins, Lucky Lou
		
A film by	The Tourism Authority of Thailand (TAT)	Michael Bidinger and Michelle Kwon
Types of digital storytelling	Video	Animation
Published	18 Nov., 2014	31 Jul., 2014
Time	5.21 minutes	3.51 minutes
Views	3,650,547 views (15 May 2016)	1,129,618 views (15 May 2016)
Awards	4 international awards (http://www.tatnews.org , 2016)	14 international awards (https://www.youtube.com/watch?v=Ouj4BBQ0nhc , 2016)

6.3 Results

6.3.1 Demographic profile

The results indicate that the average age of the young people was 19.6, while for older adults it was 83.2 years; for disabled people the average was 39.4 years, for non-cultural tourists 28.1 years, and established cultural tourists, 22.1 years. The majority of young people (10 respondents), non-cultural tourists (8 respondents), and established cultural tourists (10 respondents) had an undergraduate level of education. However, the majority of older adults (5 respondents) had a primary/secondary level education, and disabled people (5 respondents) had no education. In term of the disabled participants, the group was composed of five people with a mobility-based disability and five people with intellectual functioning or cognitive/learning difficulties. In terms of experience in using digital mobile devices (smart phones and digital tablets), the most experienced group was established

cultural tourists (5.4 years), following by non-cultural tourists (4.75 years), young people (4.5 years), disabled people (0.7 years), and older adults (0.1 year).

Table 6.6 Demographic information for all five groups

Factor	Youths	Older adults	Disabled people	Non-cultural tourists	Established cultural tourists
1. Gender					
• Male	5	-	4	4	3
• Female	5	10	6	6	7
2. Average age					
	19.6	83.2	39.4	28.1	22.1
3. Education					
• Primary/Secondary		5	2		
• High school		2	1	1	
• Diploma/ Certificate			2	1	
• Undergraduate	10	2		8	10
• Post-graduate or above					
• Others (no education)		1	5		
4. Type of disability			5 Mobility		
			5 Intellectual functioning or cognitive/learning		
5. Experience using digital mobile devices					
	4.5 years	0.1 year (9 persons have no experience)	0.7 year (7 persons have no experience)	4.75 years	5.4 years



Figure 6.2 this study set up two cameras; 1.) a super-wide-angle view (GoPro Hero4 Black); 2.) a video camera zooming close up to the iPad screen

6.3.2 Percentage and average time of participants who can complete the task and negative - positive comments in all stages

The results obtained regarding the number of participants who completed the task and the average time (in seconds) are illustrated in Table 6.7 In addition, negative and

positive comments from participants coded by two coders are presented in Tables 6.8 and 6.9.

Table 6.7 Percentage of participants who can complete the task and their and average time (seconds)

User journey stages		Youths		Older adults		Disabled people		Non-cultural tourists		Cultural tourists	
Experience with digital mobile devices		4.5 years		0.1 year		0.7 year		4.75 years		5.4 years	
		%	Time	%	Time	%	Time	%	Time	%	Time
Round 1	1. Unlocking mobile devices	100	1.6	20	10.5	60	17.2	100	4.3	100	1.9
	2. Opening the application 'YouTube'	100	1.6	30	34	50	14.9	100	2.7	100	2
	3. Accessing the 'Search' icon	90	5.6	20	26.6	30	30.9	100	2.2	100	2.2
	4. Typing the movie title 'I hate Thailand'	100	20.6	0	63.2	20	31.6	100	23.3	100	21.3
	5. Clicking on the 'Play' icon and watching the movie	100	1.1	30	4	60	2.6	100	1.8	100	1.9
	6. Closing the movie window	100	1.6	30	12.3	50	2.8	100	4.3	100	1.7
Round 2	7. Accessing the 'Search' icon	100	1.2	50	10.4	60	10.3	100	1.6	100	1.7
	8. Typing the animation title 'Jinxy Jenkins, Lucky Lou'	100	29.8	10	60.7	30	45.7	100	33.6	100	16.8
	9. Clicking on the 'Play' icon and watching the animation	100	1.4	50	3.4	60	10.4	100	1.6	100	1.6
	10. Closing the animation window	100	1.4	50	8.8	70	5.6	100	2.7	100	1.4
	11. Closing the application	100	1.4	50	10.4	70	29.9	100	2.2	100	1.7
Mean		99	6.1	30	22.2	50	18.3	100	7.3	100	4.9

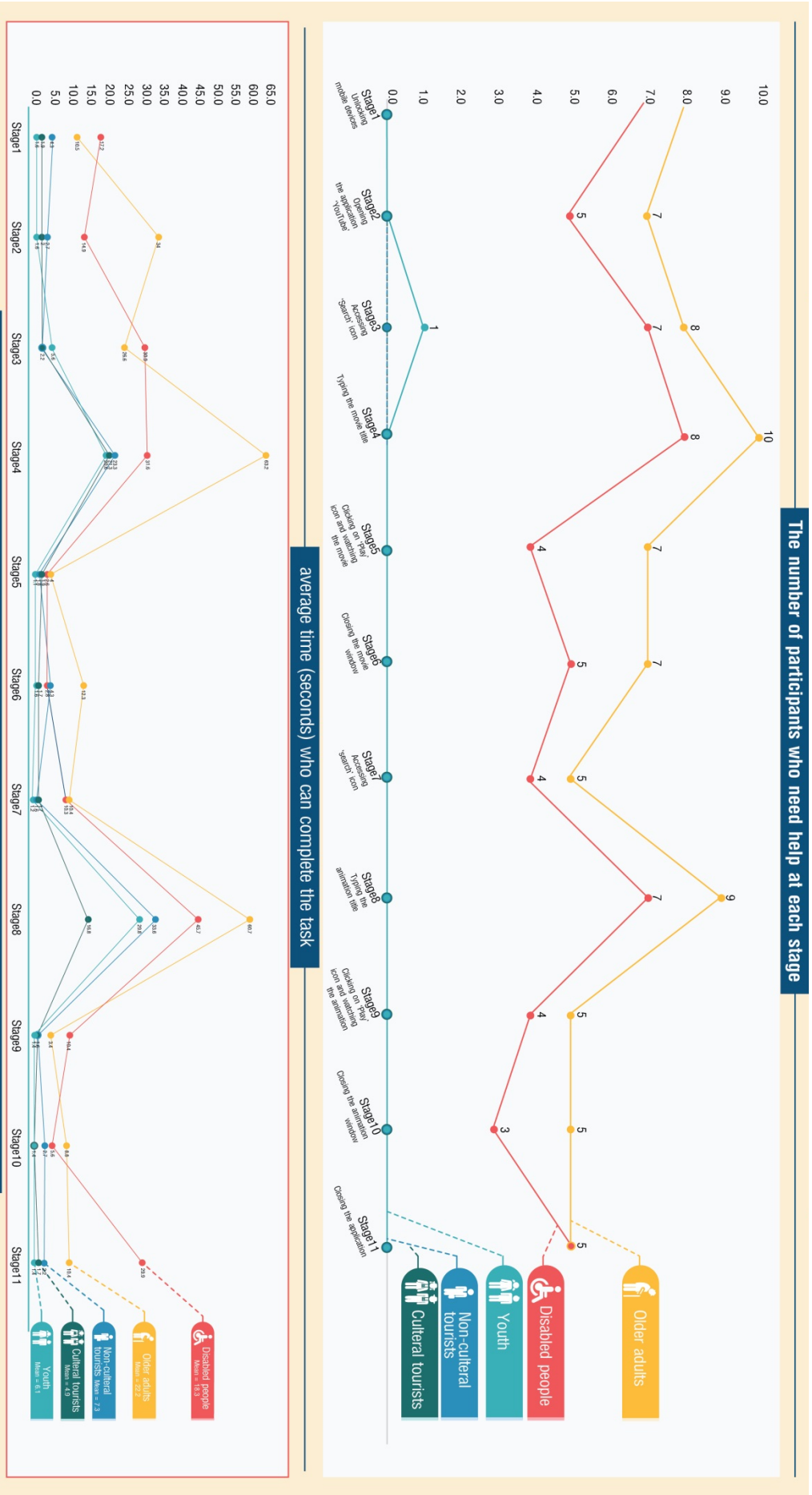


Figure 6.3 The number of participants who need help and their average time to complete the task

Table 6.8 Negative comments during all stages from all participants and the number, of people who made them

	User journey stages	Youth	Older adults	Disabled people	Non-cultural tourists	Cultural tourists
Round 1	1. Unlocking mobile devices	Not suitable for complicated work [2]	Fear of new technology [5]	Knowledge barrier [5] Lack of familiarity [5]	Health problems [2] Addiction concerns [2]	Addiction concerns [8]
	2. Opening the application 'YouTube'	iPad/iOS unfamiliarity [3]	Usability issue – touchscreen [4]	Usability issue – touchscreen [5]	Lack of experience – YouTube [2]	N/A
	3. Accessing 'Search' icon	N/A	Interface unfamiliarity [5]	Usage constraint – physical condition [6]	Lack of experience – YouTube [2]	N/A
	4. Typing the movie title 'I hate Thailand'	N/A	English language barriers [5]	Typing difficulties [3]	English language barriers [2]	N/A
	5. Clicking on 'Play' icon and watching the movie	Horizontal frame preference [4]	Usage constraint – physical condition [4]	Usability issue – touchscreen [5]	Horizontal frame preference [3]	Internet signal problem [2]
	6. Closing the movie window	N/A	Usage constraint – physical condition [4]	Size of icons [4]	Size of icons [2]	Size of icons [1]
Round 2	7. Accessing 'search' icon	N/A	Poor memory [3]	Size of icons – too small [3]	Size of icons – too small [1] No icon hint [1]	N/A
	8. Typing the animation title 'Jinxy Jenkins, Lucky Lou'	Complicated title [2]	English language barriers [3]	English language barriers [2]	Complicated title [2]	Complicated title [2]
	9. Clicking on 'Play' icon and watching the animation	N/A	Speaker problem [3]	Usability issue – touchscreen [3]	Internet signal problem [2]	Internet signal problem [2]

10.	Closing the animation window	N/A	Usage constraint – physical condition [3]	Size of icons – too small [3]	Size of icons – too small [4]	N/A
11.	Closing the application	N/A	Interface unfamiliarity [5]	Interface unfamiliarity [2]	N/A	N/A

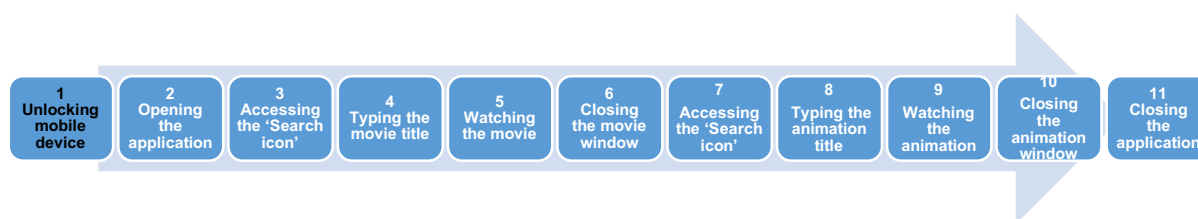
Table 6.9 Positive comments during all stages from all participants, and the number of people who made them

	User journey stages	Youths	Older adults	Disabled people	Non-cultural tourists	Cultural tourists
Round 1	1. Unlocking mobile devices	Convenience – format [3]	Convenience – watching video [2]	Convenience – similar to smartphone [3]	Convenience – size [3]	Convenience – anytime, anywhere [5]
	2. Opening the application ‘YouTube’	Ease of accessing application [2]	Ease of accessing application [2]	Ease of accessing application [1]	N/A	Ease of accessing application [3]
	3. Accessing ‘Search’ icon	Familiarity – similar to Android [2]	N/A	Meaning of icon [2]	N/A	N/A
	4. Typing the movie title ‘I hate Thailand’	Keyboard usability – size [3]	N/A	N/A	N/A	N/A
	5. Clicking on ‘Play’ icon and watching the movie	Convenience – big screen [2]	N/A	Convenience – anytime, anywhere [2]	Convenience – anytime, anywhere [2]	Convenience – big screen [1]
	6. Closing the movie window	Familiarity – similar to Android [2]	N/A	N/A	N/A	N/A
Round 2	7. Accessing ‘Search’ icon	N/A	Remembered instructions [3]	N/A	Remembered instructions [2]	N/A
	8. Typing the animation title ‘Jinxy Jenkins, Lucky Lou’	N/A	N/A	N/A	N/A	N/A

9.	Clicking on 'Play' icon and watching the animation	N/A	Remembered instructions [2]	Convenience – anytime, anywhere [1]	N/A	N/A
10.	Closing the animation window	Convenience – size [2]	Remembered instructions [2]	Remembered instructions [3]	N/A	N/A
11.	Closing the application	N/A	N/A	Remembered instructions [2]	N/A	N/A

6.3.3 Results from all stages

- **Stage 1: 'Unlocking a mobile device.'**



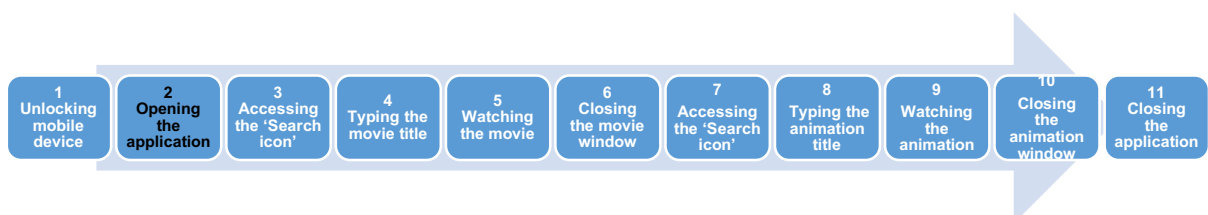
The task of this stage is to let participants try to unlock the iPad's screen, without any help from staff. All youths, non-cultural tourists, and cultural tourists can unlock the screen. However, only 20 percent of the older adults and 60 percent of disabled people were able to finish this task. Moreover, for older adults, the reason why they were unable to do so is the factor 'fear of new technology' (*'I have never used this kind of digital device before and am afraid to use it because I have never used it before'*), which received the highest number of all negative comments. For disabled people, both a 'knowledge barrier' (*'No one has taught me; I need someone to teach how to use it and if someone teaches me, maybe I will use it'*) and 'unfamiliarity' (*'If it is not too complicated – so many icons and interfaces – I would like to try it; I would prefer it to be smaller, lighter, and involving buttons, like TV remote control; I would prefer it to be cheaper and involving buttons, not a touchscreen; I prefer buttons, like the old versions of mobile phones'*) received the highest number of negative comments.

Table 6.10 Negative and positive comments during stage 1 from all participants

Negative comments during stage 1			
	Themes	Comments	Mentions
Y	1. Not suitable for complicated work [2]	- It cannot be used seriously like laptops or computers for working	1
		- I can use to use the Internet only, not for working	1
O	1. Fear of new technology [5]	- I never used this kind of digital devices	3
		- I am afraid to use it because I never used this before	2
	2. Knowledge barrier [3]	- No one gives me to try	1
		- If someone teach me, I would try	1
		- No one teaches me	1
	3. Usability issue – size [6]	- This device is too heavy.	1
		- It is too small	1
		- the alphabet and keyboards are too small	1
	4. Not interested [2]	- It is interesting device, but I have no reason to use.	1
		- I do not play games, watch movies or social media. So, I do not need this.	1
	5. Self-perception barrier [2]	- I am too old to learn how to use	1
		- I am too old to try using digital devices	1
	6. Usability issue – touchscreen [5]	- Significantly, I do not know how to use touchscreen	2
		- If there are buttons, I would like to try.	3
D	1. Lack of familiarity [5]	-If it is not too complicated (so many icons and interfaces), I would like to try.	1
		- If it is smaller, lighter and using buttons, like TV remote, I will prefer to use.	1
		- If it is cheaper and using buttons, not touchscreen, I will prefer to use.	1
		- I prefer button, like the old version of mobile phone.	1
		- I prefer using buttons rather than touchscreen	1
	2. Fear of new technology [3]	- I am not used to this technology	1
		- It is an electronic digital device. I am afraid to use.	1
		- I am afraid to use touchscreen	1
3. Financial barrier [2]	- iPad is very expensive.	2	
N	1. Health problem [2]	- It can make your eyesight worse. Moreover, you will not have good relationship with others	2
	2. Addiction concerns [2]	- I can be addicted, if I cannot manage my time	2
C	1. Addiction concerns [8]	- The negative point is that you will be addicted.	1
		- The bad point is that you might become socially addicted.	1
		- However, it can make you addicted.	1
		- However, we mostly spend a lot of time to use social media from this device.	1
		- I spend a lot of time too long in a day to use it [2]	1
		- However, I can be addicted, if I cannot manage my time.	1
		- However, some people are addicted. They use tablets	1

		or smart phone all days.	
	2. Convenience – anytime anywhere [5] (other comment)	- I can search and access information I need very fast. Convenience – anytime anywhere	1
		- I can update news or any information I am interested.	1
		- It is very easy to use and work also.	1
		- The good point is that it is very easy to connect to the Internet.	1
		- I think tablets are very useful. You can use social media or upload files anytime in anyplace.	1
Positive comments during stage 1			
	Themes	Comments	Mentions
Y	1. Convenience – format [3]	- I can use it instead of computers and laptops	1
		- It is very light weight and handy, compared to laptop. Moreover, it is bigger than smart phones. So when I read many texts, it is easier.	1
		- iPads or tablets are in the middle between computers and smartphones. This is a good point.	1
C	1. Convenience- watching video [2]	- If it is more convenient to watch movie or TV series, I would like to try.	2
D	1. Convenience – similar to smart phone [3]	- It is a very convenient device [2]	2
		- For me, it is quite easy to use because I have used smart phone.	1
N	1. Convenience – size [3]	Tablets are something that is in between laptops and smart phones. So, it is lightweight and handy. It is very convenient to use outside and inside [2]	2
		The good point is very convenient to use	1
		I can search and access information I need very fast.	1
C	1. Convenience – anytime anywhere [5]	- I can search and access information I need very fast. Convenience – anytime anywhere	1
		- I can update news or any information I am interested.	1
		- It is very easy to use and work also.	1
		- The good point is that it is very easy to connect to the Internet.	1
		- I think tablets are very useful. You can use social media or upload files anytime in anyplace.	1
	2. Usefulness - features [2]	- There are so many functions and features, such as calculator, games, email.	1
		- I love the technology. This device can make us call with camera and many high technology features.	1

- **Stage 2: Opening the application YouTube**



This stage required participants to click on the iPad screen to open the application

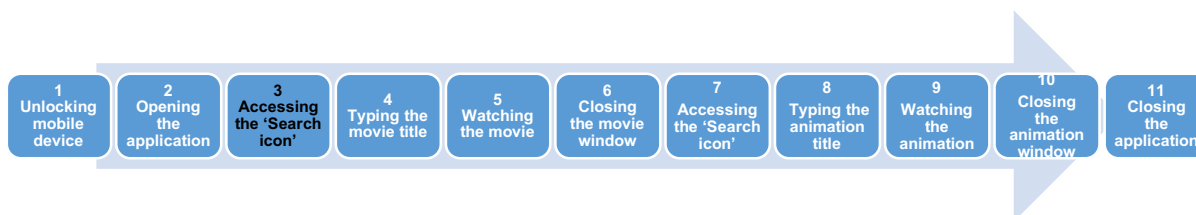
YouTube. All young people, non-cultural tourists, and cultural tourists were able to do so. However, only 30 percent of older adults and 50 percent of disabled people could do the same. The reason why older adults were unable to complete is ‘usability issue – touchscreen’ (*‘This is my first time using a touchscreen. So, I am afraid to use it – please help me; I do not know how heavily I have to press on the icon’*). For disabled people, ‘usability issue – touchscreen’ (*‘I do not know how to press the icon (how much pressure to apply) on the touchscreen; I never use touchscreens. So, I do not want to try; I cannot control the touchscreen and how hard I must press my finger to slide the screen’*) was also the main barrier.

Table 6.11 Negative and positive comments during stage 2 from all participants

Negative comments during stage 2			
	Themes	Comments	Mentions
Y	1. iPad/iOS unfamiliarity [3]	- Some icons are quite different because I mostly use Android.	1
		- I am not familiar with Mac OS system and interface. I use Android.	2
O	Usability issue – touchscreen [4]	- This is my first time to use touchscreen. So, I am afraid to use, please help me.	3
		-- I do not know how heavy I have to press on the icon	1
	Usage constraint – physical condition [2]	- The icon is too small. I need eyeglasses [2]	2
	English language barriers [1]	- The screen is full of English language. I cannot read [1]	1
D	Usability issue – touchscreen [5]	- I do not know how to press icon on (how much pressure) touchscreen.	2
		- I never use touchscreen. So, I do not want to try.	2
		- I cannot control touchscreen and how hard of my finger to slide the screen.	1
	Interface unfamiliarity [2]	- I do not know where the icon is .	1
		- I do not know how to click.	1
	Usage constraint – physical condition [2]	- My fingers are not good in typing something small.	1
		- I cannot control it well.	1
	English language barriers [1]	- There is no Thai language, only in English [1]	1
N	Lack of experience – YouTube [2]	- I am not sure which application. Normally, I never used Youtube	2
C	N/A	N/A	
Positive comments during stage 2			
	Themes	Comments	mentions
Y	Ease of accessing application [2]	- It is more convenient to click just an icon rather than type the full address	2
O	Ease of accessing application [2]	- It is easier than I thought, just one click [2]	2
	Familiarity [1]	- I have experience to use (games and chat). So, it is	1

		easy to click Youtube icon	
D	Ease of accessing application [1]	- It is very easy to click on the icon Youtube rather than typing full address on the website.	1
N	N/A	N/A	
C	Ease of accessing application [3]	It is very easy to click on icon.	3
	Familiarity [1]	- I have used this for a very long time, Youtube. I am familiar with the icon.	1

- **Stage 3: Accessing the ‘Search’ icon on YouTube**



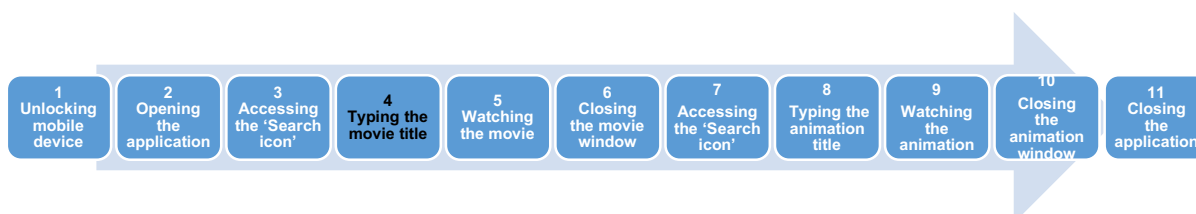
This task requires participants to find the ‘Search’ icon on YouTube and click on the icon. All non-cultural tourists and cultural tourists were able to do so. However, only 90 percent of youths, 20 percent of older adults, and 30 percent of disabled people could. The main reason older adults could not complete the task was ‘interface unfamiliarity’ (*‘I cannot find it. I do not understand about icons; I mostly use the iPad to play games. So, I do not know where the search icon is’*). For disabled people, the highest score was for ‘usage constraint – physical condition’ (*‘My eyes are not good; I cannot see it clearly; my fingers are not good at typing something small; it needs to be bigger’*).

Table 6.12 Negative and positive comments during stage 3 from all participants

Negative comments during stage 3			
	Themes	Comments	Mentions
Y	N/A	N/A	
O	Interface unfamiliarity [5]	- I cannot find it. I do not understand about icon.	2
		- For the new users, they cannot find it at the first time.	1
		- Mostly, I use iPad to play games. So, I do not know where the search icon is.	1
		- In my case, I never used it before. So, I do not know where it is.	1
	English language barriers [2]	- There is only English, not Thai.	2
	Usage constrain - physical condition [1]	- I need eyeglasses.	1
D	Usage constraint – physical condition [6]	- my eyes are not good	1
		- I cannot see it clearly.	1
		- I cannot see something small.	1

		- It is too small	1
		- My fingers are not good in typing something small	1
		- It should be bigger.	1
	Interface unfamiliarity [4]	- I cannot find icon 'search'. Where is it? Do I need to go back to the main page?	1
		I cannot find. It is very difficult for me.	1
		- It is too difficult for me. I am afraid to try.	1
		- I do not know where it is.	1
N	Lack of experience – Youtube [2]	- I never used Youtube. So, I am not used to it.	2
	Size of icon [2]	The icon is too small.	2
Positive comments during stage 3			
	Themes	Comments	Mentions
Y	Familiarity – similar to Android [2]	- The interface of Youtube on iPad is the same as in Android. So, I have no problem to use.	1
		- The same as Android.	1
C	N/A	N/A	
D	Meaning icon [2] other comment	I like the meaning of icon 'magnifying glass'. It is easier to understand.	2
N	N/A	N/A	
C	N/A	N/A	

- **Stage 4: Typing the movie title 'I hate Thailand'**



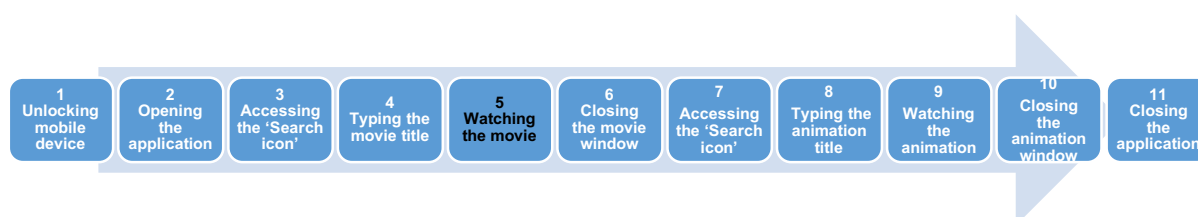
This stage requires participants to type the video title 'I hate Thailand' on the iPad keyboard. All youth, non-cultural tourists and cultural tourists were able to do so, but no older adults and 20 percent of disabled people completed the task. The highest scoring barrier for older adults is 'English language barriers' (*'I do not know English; I have never typed in English before'*). For disabled people, 'typing difficulties' (*'I am good in typing in Thai rather than in English; I am better at typing in Thai'*) received the highest score.

Table 6.13 Negative and positive comments during stage 4 from all participants

Negative comments during stage 4			
	Themes	Comments	mentions
Y	N/A	N/A	
O	English language barriers [5]	- I do not know English [3]	3
		- There is English only	1

		- I have never typed English before	1
	Keyboard usability – size [2]	- Keyboard is too small	2
D	Typing difficulties [3]	- I am good in typing Thai rather than English	2
		- I am better in typing Thai	1
	Keyboard usability – size [2]	- My fingers are bigger than these keyboard buttons	1
		- Keyboard is too small, I could not see it clearly	1
	English language barriers [2]	- I have a problem to spell English vocabulary	2
N	English language barriers [2]	- English title is quite difficult to type [2]	2
C	N/A	N/A	
Positive comments during stage 4			
	Themes	Comments	Mentions
Y	Keyboard usability – size [3]	- Keyboard on iPad is different from Android.	1
		- Typing on iPad keyboard is easier than smartphones because it is bigger.	2
O	N/A	N/A	
D	N/A	N/A	
N	N/A	N/A	
C	N/A	N/A	

- **Stage 5 (round 1, the video): Using the ‘Play’ icon to watch the video**

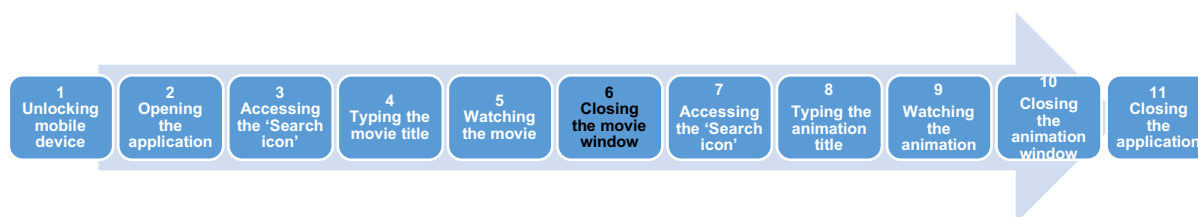


This task required participants to click on the ‘Play’ icon on YouTube to start watching the video. All youth, non-cultural tourists, and cultural tourists were able to do so, while only 30 percent of older adults and 60 percent of disabled people could. The highest scoring barrier for older adults is ‘usage constraint – physical condition’ (*‘When I watch something small for a long time, I have a headache; my hearing is not good enough. I cannot listen to it well’*). For disabled people, ‘usability issue – touchscreen’ (*‘I prefer the ‘play’ button rather than a touchscreen; I am not sure if I am pressing the touchscreen enough’*) received the highest score.

Table 6.14 Negative and positive comments during stage 5 from all participants

Negative comments during stage 5			
	Themes	Comments	mentions
Y	Horizontal frame preference [4]	I prefer watching by horizontal frame. So, I need to use two hands to hold it.	4
	Screen brightness [2]	When watching movie outdoor, the screen is not bright enough.	2
	Not familiarity – format [2]	Mostly, I watch video by smart phone and computer, not iPad.	2
	Speaker problem [1]	Speaker is not too loud enough for outdoor watching.	1
	No subtitle [1]	There should be subtitle because sometimes I watch video in the train or bus. I do not want other people know what I am watching	1
O	Usage constrain – physical condition [4]	When I watch something small for a long time, I will have an headache.	2
		My hearing is not good enough. I cannot listen it well.	2
D	Usability issue – touchscreen [5]	I prefer ‘play’ button rather touchscreen.	4
		I am not sure I press touchscreen enough.	1
	Usability issue – size [2]	It is quite heavy because I have been watching for almost 5 minutes.	2
	Usage constrain – physical condition [1]	My fingers cannot touch it properly.	1
N	Horizontal frame preference [3]	I need to enlarge the screen by changing into horizontal frame.	3
	Internet signal problem [2]	Internet signal is not good enough for watching video on Youtube.	2
	Usability issue – sound [1]	I need earphone. I cannot listen well outdoor.	1
C	Internet signal problem [2]	When watching movie outdoor, it depends on the Internet signal also.	2
	Familiarity [1]	I already watched it before.	1
Positive comments during stage 5			
	Themes	Comments	mentions
Y	Convenience – big screen	The screen is larger than smart phone. It is really good for watching movies.	2
O	N/A	N/A	
D	Convenience – anytime anywhere [2]	So, I can watch movie anytime anywhere.	1
		This means that I can watch movies or news later.	1
N	N/A	N/A	
C	Convenience – big screen [1]	It is easier to watching compared to smart phones.	1

- **Stage 6 (round 1, the video): Closing the movie**

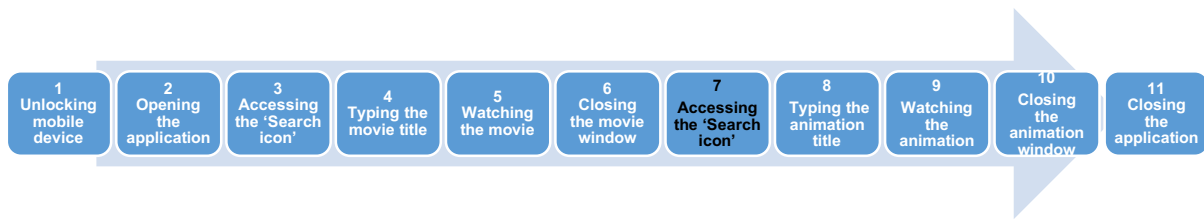


This stage required participants to click on the ‘Close’ icon to close the video titled ‘I hate Thailand’ on YouTube. All youth, non-cultural tourists, and cultural tourists were able to do so, while 30 percent of older adults and 50 percent of disabled people completed the task. For older adults, ‘usage constraint – physical condition’ (*‘I need to use eyeglasses. The icon is very small; I have a problem with my eyesight. I cannot see details or small things well’*) received the highest score. For disabled people, ‘size of icons’ (*‘The icon ‘close’ is very small size; my finger is bigger than this button’*) received the highest score.

Table 6.15 Negative and positive comments during stage 6 from all participants

Negative comments during stage 6			
	Themes	Comments	mentions
Y	N/A	N/A	
O	Usage constraint – physical condition [4]	- I need to use eyeglasses. The icon is very small	3
		- I have a problem with my eyesight. I cannot see details or small things well.	1
D	Size of icons [4]	- The icon ‘close’ is very small Size of icons	3
		- My finger is bigger than this button.	1
	Interface unfamiliarity [3]	- I do not know where it is.	2
		- I never used it. So, I do not know how to close.	1
N	Size of icons [2]	- I cannot find the icon to close.	1
		- My finger is bigger than this icon.	1
C	N/A	N/A	
Positive comments during stage 6			
	Themes	Comments	mentions
Y	Familiarity – similar to Android [2] (other comments)	- The interface system is the same as Android. It is easy because I am used to it.	2
O	N/A	N/A	
D	N/A	N/A	
N	N/A	N/A	

- **Stage 7 (round 2, animation): Accessing the ‘Search’ icon on YouTube**

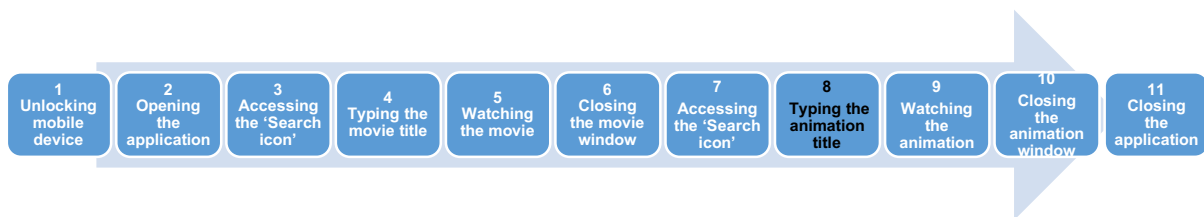


All youths, non-cultural tourists, and cultural tourists were able to complete this task, but only 50 percent of older adults and 60 percent of disabled people could. For older adults, ‘poor memory’ (*‘I cannot remember how to do this’*) is the main reason they could not complete the task. For disabled people, ‘size of icons – too small’ (*‘The icon ‘Search’ is very difficult to find. It should be bigger’*) received the highest score.

Table 6.16 Negative and positive comments during stage 7 from all participants

Negative comments during stage 7			
	Themes	Comments	mentions
Y	N/A	N/A	
O	Poor memory [3]	- I cannot remember how to do.	3
	Size of icons [1]	- It is too small to see.	1
D	Size of icons [3]	- Icon ‘search’ is very difficult to find out. It should be bigger.	1
		- Icon is too small.	2
	Poor memory [2]	- I cannot remember where the search is.	2
N	Size of icons [1]	- The icon is too small, not clear.	1
	No icon hint [1]	- There should be explanation how to use about each icon.	1
Positive comments during stage 7			
	Themes	Comments	mentions
Y	Meaningful icon [1]	- Magnifying glass is very good icon because it is very easy to understand its meaning.	1
O	Remembered instructions [3]	- Let me try again. Oh, it is over here (the icon).	2
		- This time, I can remember it	1
D	Remembered instructions [2]	- This time, after I know how to do and where the icon is. It is easier [2]	2
N	N/A	N/A	
C	N/A	N/A	

- **Stage 8 (round 2, animation): Typing the movie title ‘Jinxy Jenkins, Lucky Lou’**

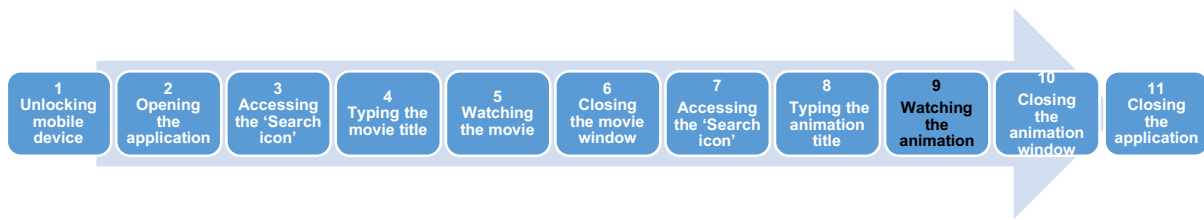


All young people, non-cultural tourists, and cultural tourists were able to type on the keyboard. However, only 10 percent of older adults and 30 percent of disabled people completed the task. The reason why older adults could not complete is the same factor as mentioned in round 1 – ‘English language barriers’ (*‘I cannot understand the English language, alphabet, or vocabulary; I have a problem spelling English words’*). For disabled people, ‘English language barriers’ (*‘I have a problem spelling English words; I cannot understand the English alphabet’*) also received the highest score.

Table 6.17 Negative and positive comments during stage 8 from all participants

Negative comments during stage 8			
	Themes	Comments	mentions
Y	Complicated title [2]	- Could you please pronounce the title again? I never heard this.	1
		- This title is not English. It is very difficult to remember to type.	1
O	English language barriers [3]	- I cannot understand English language.	1
		- I cannot understand English alphabets and vocabularies.	1
		- I have a problem to spell English alphabets.	1
D	English language barriers [2]	Moreover, I have a problem to spell English words also.	1
		I cannot understand English alphabets.	1
	Usage constraint – physical condition [1]	- My fingers are not good in typing something small. I cannot control it well.	1
	Complicated title [1]	- The title is too complicated and long.	1
	Interface unfamiliarity [1]	I am not used to iPad. Usually I use Android	1
N	Complicated title [2]	This English title is too long and difficult to type.	1
C	Complicated title [2]	- Personally, if you need to create a clip for Thai, you should name the title easier.	1
		- Is this English or French? I cannot remember, please write down on the paper.	1

- **Stage 9 (round 2, animation): Using the ‘Play’ icon to watch the animation**

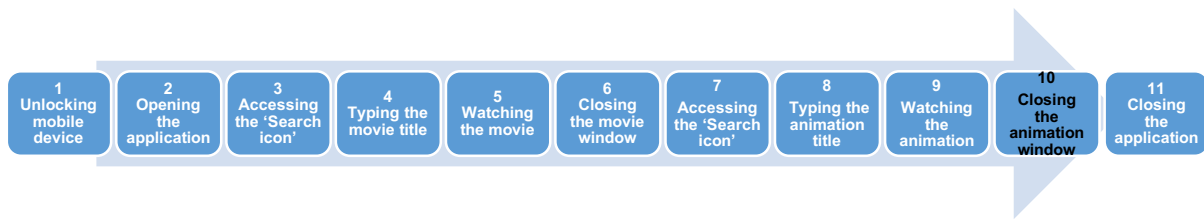


All youths, non-cultural tourists, and cultural tourists were able to complete this task, while only 50 percent of older adults and 60 percent of disabled people could do so. For older adults, ‘speaker problem’ (*‘The speaker is not loud enough’*) received the highest score in terms of negative comments. For disabled people, ‘usability issue – touchscreen’ (*‘I prefer to use a ‘play’ button, rather than a touchscreen’*) received the highest score.

Table 6.18 Negative and positive comments during stage 9 from all participants

Negative comments during stage 9			
	Themes	Comments	mentions
Y	Horizontal frame preference [3]	I prefer watching by horizontal frame. So, I need to use two hands to hold it.	3
	Screen brightness [2]	When watching movie outdoor, the screen is not bright enough.	2
	Speaker problem [1]	Speaker is not too loud enough for outdoor watching, especially in this animation. There is no sound.	2
	No subtitle [1]	There should be character’s voice.	1
O	Speaker problem [3]	Speaker is not loud enough.	3
	Usage constrain – physical condition [2]	When I watch something small for a long time, I will have an headache.	2
	Usability issue – size [2]	The screen is quite small compared television.	2
D	Usability issue – touchscreen [3]	I prefer ‘play’ button rather touchscreen.	3
	Usage constrain – physical condition [1]	My fingers cannot touch it properly.	1
N	Internet signal problem [2]	Internet signal is not good enough for watching video on Youtube.	2
	Usability issue – sound [1]	I need earphone. I cannot listen well outdoor.	1
C	Internet signal problem [2]	When watching movie outdoor, it depends on the Internet signal also.	2
Positive comments during stage 9			
	Themes	Comments	mentions
Y	N/A	N/A	
O	Remembered instructions [2]	This time I can remember the play button.	2
D	Convenience – anytime anywhere [1]	So, I can watch movie anytime anywhere.	1
N	N/A	N/A	
C	N/A	N/A	

- **Stage 10 (round 2, animation): Closing the animation**

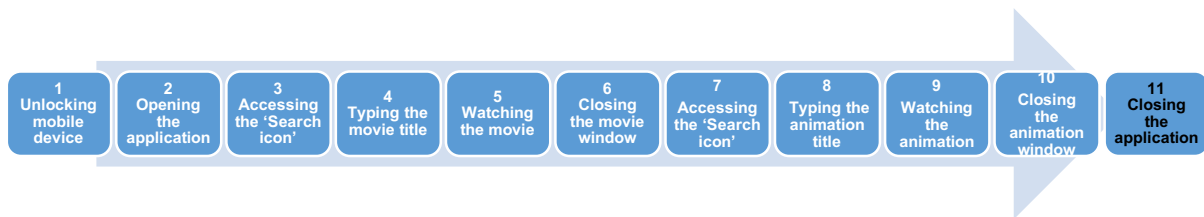


All youths, non-cultural tourists, and cultural tourists were able to close the video, but only 50 percent of older adults and 70 percent of disabled people could. The comment ‘usage constraint – physical condition’ (*‘It is too small. I have problems with my eyesight’*) received the highest score for older adults. For disabled people, ‘size of icons – too small’ (*‘It is still difficult for me, the icon is very small’*) received the highest score.

Table 6.19 Negative and positive comments during stage 10 from all participants

Negative comments during stage 10			
	Themes	Comments	mentions
Y	N/A	N/A	
O	Usage constraint – physical condition [3]	- It is too small. I have a problem with my eyesight	2
	Poor memory [2]	- I cannot remember again	2
	Interface unfamiliarity [1]	- I am not used to it. I would like to use buttons, like TV remote control.	1
D	Size of icons – too small [3]	- The icon is too small.	2
		- It is still difficult for me, icon is very small.	1
N	Size of icons – too small [4]	The icon should be bigger	2
		Interface unfamiliarity	1
		I need times to find where it is.	1
C	N/A	N/A	
Positive comments during stage 10			
	Themes	Comments	mentions
Y	Convenience – size [2]	- Very easy for me. iPad is bigger than smart phones.	1
		- Sometimes when I close some features on smart phones, I always did the wrong one. However, icons and texts on iPad are bigger, I really love it.	1
O	Remembered instructions [2]	This time, I can remember.	2
D	Remembered instruction [3]	- This time, after I know how to do and where the icon is. It is easier.	2
		- It is easier, not too difficult like the first time.	1
N	N/A	N/A	
C	N/A	N/A	

Stage 11: Closing the application



This stage required participants to close the YouTube application. All youths, non-cultural tourists, and cultural tourists were able to close Youtube, but only 50 percent of older adults and 70 percent of disabled people completed the task. For older adults, ‘interface unfamiliarity’ (*‘I have never closed any website or video; I do not know where it is’*) received the highest score. For disabled people, ‘interface unfamiliarity’ (*‘I cannot find the icon to close it’*) was also the main reason.

Table 6.20 Negative and positive comments during stage 11 from all participants

Negative comments during stage 11			
	Themes	Comments	mentions
Y	N/A	N/A	
O	Interface unfamiliarity [5]	- I do not know where it is	4
		I have never closed any website and video	1
	Size of icons [2]	- It is too small.	2
	Usage constraint – physical condition [2]	- I have a problem with my eyesight	2
D	Interface unfamiliarity [2]	- I cannot find the icon to close.	2
N	N/A	N/A	
C	N/A	N/A	
Positive comments during stage 11			
	Themes	Comments	mentions
Y	N/A	N/A	
O	N/A	N/A	
D	Remembered instructions [2] (other comment)	- After you teach me, it is easier.	2
N	N/A	N/A	
C	N/A	N/A	

6.4 Discussion

6.4.1 Reaching (accessibility and understanding)

Table 6.7 shows that only three groups (youths, non-cultural tourists, and cultural tourists) were able to complete the tasks with an almost 100-percent success rate

(99 percent for youths, and 100 percent for non-cultural tourists and cultural tourists) and with very fast timing (the mean for all 11 stages: youth = 6.1 seconds; non-cultural tourists = 7.3 seconds; cultural tourists = 4.9; compared to older adults = 22.2 and disabled people = 18.3). This could be because of their lengthy experience using digital mobile devices (youth = 4.5 years; non-cultural tourists = 4.7 years; cultural tourists = 5.4 years), compared to older adults (0.1 years) and disabled people (0.7 years).

Relatively few older adults and disabled people were able to do complete the tasks, and with very slow timing. In Stage 4, in particular, typing the movie title 'I hate Thailand' received the lowest percentages (0 percent for older adults and 20 percent for disabled people). The low rate of accessibility for older adults and disabled people when using digital mobile devices in this study is the same finding as that of many other studies. Most research states that older adults try to avoid using digital devices, are slower to complete tasking using them, and make more errors than young people (Rogers et al., 2005; Czaja et al., 2006; Kang & Yoon, 2007; Orso et al., 2015). The research by Kang and Yoon (2007) tested young (20-29 years) and older (46-59 years) people attempting to complete a series of tasks on digital devices. They were asked to perform the same tasks, and were monitored. The results indicated that older adults were slower at completing all tasks and committed more errors than young people, which is corroborated by the results of this study.

Table 6.8 reveals that the reason why they were unable to complete the tasks is that they did not understand how to use the device. For older adults, 'fear of new technology' received the highest score in Stage 1, while 'interface unfamiliarity' received the highest score in Stages 3 and 11. For disabled people, 'knowledge barrier' and 'unfamiliarity' received the highest score in Stage 1, while 'interface unfamiliarity' was the main reason in Stage 11. The reason why they were unable to complete most tasks could be because they do not understand mobile digital devices.

Furthermore, Table 6.8 shows that for older adults and disabled people, most negative comments for each stage concern 'physical accessibility.' Only 'fear of new technology' and 'poor memory,' as stated by older adults, and the 'knowledge barrier' for disabled people are 'psychosocial issues.' 'Physical accessibility,' related to the

issue of interface design, was the main problem found during observations. In comparison, youths, non-cultural tourists, and cultural tourists were able to complete almost all tasks, with a big gap between them and the older adults (30 percent) and disabled people (50 percent). This result can be explained by other research. Interface design for older adults is very difficult, due to the large cultural and experience gap between young designers and senior people (Eisma et al., 2003; Orso et al., 2015).

Moreover, Gill and Perera (2003) write that the industry aims to create stylish, enhanced digital platforms with a high return on investment, and digital platforms with inclusive designs are still a nascent idea without a firm market position. Moreover, from the business perspective, different groups of disabled users have different needs to be met; many ageing people and people with disabilities, especially visually impaired people, want minimum confusion when using practical systems or designs. This is the main problem between business and the inclusive design concept, and leads to conflict between the industry and some users' desires (Dong et al., 2006; Fuglerud et al., 2015). By adopting an inclusive design approach and finding out what people want and their problems, the mission of the industry could be enhanced. Dong et al. (2006) and Fuglerud et al. (2015) also support the idea that inclusive design can be applied for commercial use to raise long-term profits and enhance companies' competitive edge, and help to produce better products for all customers.

6.4.2 Engaging (usefulness, usability, preferences)

- **Usefulness**

Table 6.9 shows participants' positive comments, indicating that all groups believe the iPad is a very useful product in terms of 'convenience.'

For youths, it is convenience in terms of 'format' (*'I can use it instead of computers and laptops; it is very lightweight and handy, compared to a laptop. Moreover, it is bigger than a smartphones, so when I read a lot of text, it is easier. iPads or tablets are in the middle between computers and smartphones. This is a good point'*) and 'big screen' (*'The screen is larger than that of a smartphone. It is really good for watching movies'*).

Older adults mostly state that it is convenient for 'watching videos' (*'It is more convenient to watch movie or TV series, so I would like to use it'*) and 'anytime, anywhere' (*'I can watch news and TV programmes from this device, anytime, anywhere'*).

For disabled people, it is convenient in terms of being 'similar to a smartphone' (*'It is quite easy to use because I have used smartphones'*) and 'anytime, anywhere' (*'So, I can watch a movie anytime, anywhere'*).

For non-cultural tourists, it is convenient because of the 'size' (*'Tablets are something in between laptops and smartphones. So, they are lightweight and handy. They are very convenient to use outside and inside; I can search and access information I need very faster than on a computer'*) and 'anytime, anywhere' (*'I can watch any movie anytime, anywhere. This is a good point of the iPad'*).

For cultural tourists, it is convenient because of the 'anytime, anywhere' factor (*'I think tablets are very useful. You can use social media or upload files anytime, anyplace; I can search and access information I need very fast, anytime, anywhere'*) and 'big screen' (*'It is easier to watch on, compared to smartphones'*).

From this, it could be implied that all groups consider digital mobile devices to be useful and convenient product in terms of 'format,' 'big screen,' 'watching videos,' 'anytime, anywhere,' 'similar to smartphone,' and 'size.'

- Usability

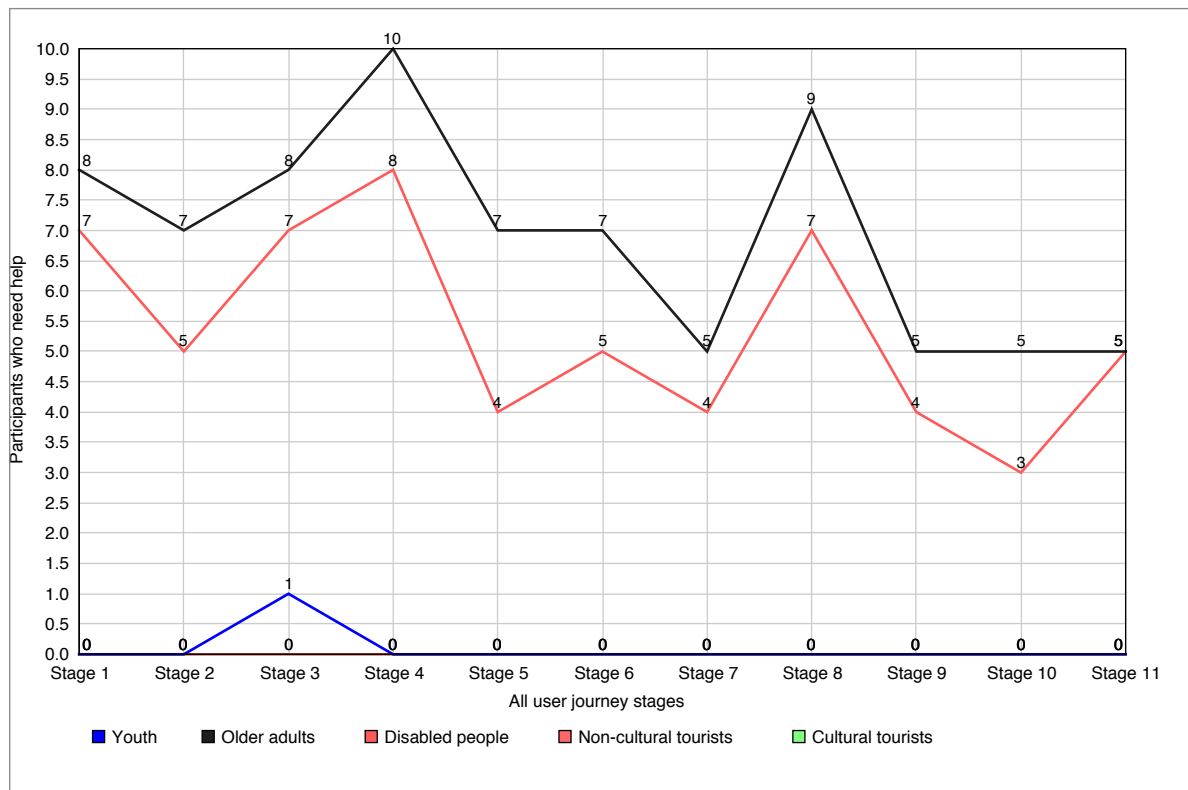


Figure 6.4 The number of participants who need help at each stage

During the observation, participants were asked to complete all tasks without instruction. However, if they could not finish them and needed help, they could ask staff to teach them. This table illustrates the number of participants who could not complete the tasks and needed more instruction. From Figure 1, it can be seen that only two groups (older adults and disabled people) had more usability problems than all other groups at all stages. Moreover, most older adults and disabled people stated that their main problems were ‘usability issues – touchscreen’; ‘usage constraint – physical condition’; ‘typing difficulties’; ‘English language barriers’; ‘poor memory’; and ‘size of icons – too small.’

In Stage 4 in particular, ‘typing the movie title’ (rounds 1 and 2 on video and animation), three groups (youths, non-cultural tourists, and cultural tourists) had completion rates of 100 percent. However, no older adults (average time = 63.2 seconds) and two disabled people (31.6 seconds) finished it in the first round, and one older adult (60.7 seconds) and three disabled people (45.7 seconds) completed it in the second round. This means that typing is the most difficult task for these two

groups.

In addition, older adults and disabled people had a problem not only with typing, especially using an English keyboard, but also with the English language. Designers or directors should be aware of the name of the movie title. If they need to target older or disabled people, they should try to avoid using the English name. Moreover, older and disabled people complained that the keyboard was too small. If interface designers can develop or enlarge the keyboard, this could attract the attention of these groups.

- **Desirability**

Desire to learn how to use iPad

However, there is a considerable misconception about older adults' attitude, compared to the result of this study. Table 6.8, depicting the negative comments, reveals that 'fear of new technology' (*'I am afraid to use it because I never used such a device before'*) received the highest score, followed by knowledge barriers (*'If someone teach me, I would try; no one gives me to try'*). Older adults commented that the reason why they are afraid is because no one helps them to try; however, if someone were to teach them, they would try. This issue is similar to the issues affecting disabled people, who also commented that no one teaches them, but would try, if someone were to do so. This indicates that some older adults and disabled person are willing to learn how to use such devices.

Of the reasons why older adults and disabled people prefer not to use an iPad, the answer 'No one teaches me' ranks highly for both older adults and disabled people. This is similar to some studies, which state that older adults would like to try digital devices to remain engaged with modern society (Kurniawan, 2008; Tsai et al., 2015). Moreover, Goddard and Nicolle (2012) support the idea that older people are interested in modern devices, but they are not designed with their abilities in mind.

Many studies confirm that inappropriate interface designs, both in the past and in the present, are still the most significant barrier preventing older adults from trying digital devices without learning. The studies indicate that the standard interface is much harder to use for older people, which can force them into digital exclusion (Worden et

al., 1997; Tsai et al., 2015). Some older people who have no experience with technology are considered to suffer from “technological alienation” (Morris, 1992; Hill et al., 2015; Tsai et al., 2015). An absence of experience with digital technology not only causes digital exclusion, but also increases social exclusion (Valentine et al., 2002; Hill et al., 2015). It is important to find an effective solution to include this group in current technological trends.

Negative experiences when using technology are caused by a lack of experience and support (Todman & Drysdale, 2004). Nevertheless, encouraging older people to try digital devices can lead them to more positive attitudes (Danowski & Sacks, 1980; Morris, 1992; Hill et al., 2015; Tsai et al., 2015). Besides, Orso et al., (2015) tested how older adults were able to successfully use software programme for interactive television. After training, they presented several positive opinions and are positively engaged with the interactive system and contents. This could be summarised that older adults are willing to learn, adapt the technology to their everyday life and are favourable for the benefit of new technology (Russell et al., 2008; Orso et al., 2015)

Orso et al. (2015) and Roque and Boot (2016) state that there is a big gap between young and older people in the use of digital devices, especially mobile devices. Training and teaching them is one way to ensure that this group can receive the benefits of this technology. For this, Holzinger et al. (2012) suggest that designers should focus not only on technological and physical aspects, but also psychological and sociological facets. They also confirm that the aim is to let designers – and especially young designers – grapple with the problems faced by older people at every user stage.

The success of digital mobile devices depends on end-user friendly interface design; this is the most significant factor (Peischl et al., 2012). This study also claims that useful, usable, and accessible navigation is the key to concern. Hence, designers should develop a system or platform that can encourage older people and disabled people to use digital devices, make them understand the devices easily, and help them to pursue more sophisticated skills. Moreover, beginners’ classes should be provided for some groups who are unfamiliar with digital mobile devices.

6.5 Summary

6.5.1 Research questions

This study integrated the principles of inclusive design and digital storytelling as inclusive digital storytelling (IDST). The aim of IDST is to understand diverse audiences in terms of reaching (accessibility and understanding) and engaging with (usefulness, usability, preferences) digital mobile devices. Furthermore, it focused on addressing these research questions:

- **Research question 1: What are the diverse audiences' behaviour in terms of reaching with digital mobile devices**

In terms of accessibility and understanding, youths, non-cultural tourists, and cultural tourists completed all tasks at a rate of almost 100 percent (100 percent for cultural tourists and non-cultural tourists; 99 percent for youth), while few older adults and disabled people were able to do so (50 percent for disabled people and 30 percent for older adults). Moreover, in terms of understanding, there are only disabled people and older adults who spend time slower than average as presented in the Table 6.24. This could be summarised as that only these two groups have problems using digital mobile devices in terms of accessibility and understanding. Most negative comments at all stages by these two groups concerned 'physical accessibility.' However, in terms of 'psychosocial issues,' these two groups stated that they were willing to learn, if someone were to teach them. Furthermore, in terms of understanding, 'interface unfamiliarity,' 'knowledge barrier,' and 'unfamiliarity' are the main barriers for older adults and disabled people.

Table 6.21 Percentage and average time of all participants who can complete all tasks

Percentage of participants who can complete all tasks (accessibility)		Average time of participants to complete all tasks (understanding)		
Diversity	Percentage	Diversity	Average time (seconds)	Faster or slower than average
1. Cultural tourists	100%	1. Cultural tourists	4.9	Faster than average 58.4%
2. Non-cultural tourists	100%	2. Youth	6.1	Faster than average 48.2%
3. Youth	99%	3. Non-cultural tourists	7.3	Faster than average 38%
4. Disabled people	50%	4. Disabled people	18.3	Slower than average 55%
5. Older adults	30%	5. Older adults	22.2	Slower than average 55%

- **Research question 2 : What are the *diverse audiences' behaviour* in terms of engaging with digital mobile devices**

Usefulness

As for the usefulness factor, all groups considered digital mobile devices to be useful and convenient products because of the 'format,' the ability to 'watch videos,' 'similar to smartphone,' 'bigger size' and 'anytime, anywhere' as shown in the Table 6.25

Table 6.22 Usefulness from all participants

Diversity	Themes	Comments
1. Youth	Convenience – format	<i>I can use it instead of computers and laptops; it is very lightweight and handy, compared to a laptop. Moreover, it is bigger than a smartphones, so when I read a lot of text, it is easier. iPads or tablets are in the middle between computers and smartphones. This is a good point'</i>
2. Older adults	Convenience – watching video	<i>It is more convenient to watch movie or TV series, so I would like to use it</i>
3. Disabled	Convenience –	<i>It is quite easy to use because I have used</i>

people	similar to smartphone	<i>smartphones</i>
4. Non-cultural tourists	Convenience – bigger size	<i>Tablets are something in between laptops and smartphones. So, they are lightweight and handy. They are very convenient to use outside and inside; I can search and access information I need very faster than on a computer</i>
5. Cultural tourists	Convenience – anytime, anywhere	<i>I think tablets are very useful. You can use social media or upload files anytime, anyplace; I can search and access information I need very fast, anytime, anywhere</i>

Usability

For usability, it could be summarised that only two groups (older adults and disabled people) have usability problems at all stages. In Stage 4 in particular, for ‘typing the movie titles,’ no older adults and only two disabled people finished the task in the first round, and one older adult and three disabled people completed it in the second round. This means that typing is the most difficult task for these two groups. They also had problems typing with the English keyboard, in addition to with the English language. Additionally, most older adults and disabled people stated that their main problems were ‘usability issue – touchscreen,’ ‘usage constraint – physical condition,’ ‘typing difficulties,’ ‘English language barriers,’ ‘poor memory,’ and ‘size of icons – too small.’

Table 6.23 Usability problems from all participants

Diversity	Results
Older adults	Problems with all tasks, especially ‘typing’ and ‘English language barriers’
Disabled people	
Youth	No problem with any task
Non-cultural tourists	
Cultural tourists	

Desirability

In terms of desirability, older adults and disabled people pointed out that they would like to learn how to use a digital device because of its usefulness. However, they

commented that no one had taught them and that if someone were to teach them, they would try to use them. This shows that some older adults and disabled people are willing to learn how to use digital devices. After teaching older adults and disabled people in the first round, they were more skilled when attempting the task in the second round. The older adults who completed tasks from round 1 to round 2 increase from eight to 16. The equivalent figure for disabled people rose from 16 to 22. This means that older adults and people with disabilities are able to develop their digital skills – in this case, using an iPad – if they are taught properly.

Table 6.24 Values and benefits of use from all participants

Diversity	Values/ benefits of use
Older adults	Prefer to use, if already taught
Disabled people	
Youth	
Non-cultural tourists	Prefer to use
Cultural tourists	

Digital storytelling is powerful means of increasing interest in every area, especially in the field of cultural tourism. However, this media is available on digital platforms only. This might be a barrier for some groups who are not familiar with the new technology; hence, an inclusive digital storytelling (IDST) is necessary to cater to diverse users' needs. The outcomes of this study are: (1), to provide insights about diverse audiences in terms of reaching and engaging with digital mobile devices, and (2), to inform the industry, designers, and researchers who would like to understand diverse users' preferences and needs and create a system that supports all groups.

Table 6.25 Summary of reaching and engaging with digital storytelling from all five groups

	Youth	Older adults	Disabled people	Non cultural tourists	Cultural tourists
1. Accessibility	99%	%30	%50	%100	%100
2. Understanding	Faster than average 48.2%	Slower than average 55%	Slower than average 55%	Faster than average 38%	Faster than average 58.4%
3. Usefulness (convenience in terms of...)	Format	Watching video	Similar to smartphone	Bigger size	Anytime, anywhere
4. Usability	No problem with any task	Problems with all tasks, especially 'typing' and 'English language barriers'	Problems with all tasks, especially 'typing' and 'English language barriers'	No problem with any task	No problem with any task
5. Desirability	Prefer to use	Prefer to use, if already taught	Prefer to use, if already taught	Prefer to use	Prefer to use

6.5.2 Study Implications

- **Digital inclusion**

Nowadays, digital mobile devices are very popular throughout society and for a number of different activities (updating news, online banking, checking weather forecast, pay online bills, etc.). However, for older adults and those with disabilities, this technology is a significant barrier, which often prevents them from trying. Without digital mobile devices, they could be locked out of the advantages of digital technology. Moreover, inexperience with digital mobile devices not only leads older adults and disabled people to become digitally excluded, it also decreases social inclusion. This point is a very serious issue, and a solution to include these groups into the realm of digital technology is needed. Some studies argue that these groups would actually like to learn digital devices as a way of remaining involved in the digital society, but these devices are not designed to support them. Based on the

results of this study, it is apparent that these groups would be better equipped to learn new technology if they had been taught how to do so properly. Therefore, if digital companies or organisations decided to support some projects to help users have a positive experience with this technology, such users could become more confident when using these devices in the future. Furthermore, the evidence suggests that disadvantaged users are willing to learn and use such technology in their everyday lives as a way of maintaining digital inclusion.

- **Increased usability**

From the findings of this study, older adults and disabled people faced usability problems in every stage of the technological process, in particular: 'usability issues – touchscreen'; 'usage constraint – physical condition'; 'typing difficulties'; 'English language barriers'; 'poor memory'; and 'size of icons – too small.' This is because the digital mobile device (iPad) was not designed for these groups to watch storytelling. In fact, many of the users consider the visual decorations, animated icons and sophisticated interactive systems as useless systems. Ultimately, they need bigger, less colourful, simpler and easier to understand icons and interface. This type of decorated high technology causes them a number of difficulties in using and selecting the icons they need. Therefore, UX designers or interface designers should use the information from this study to attract disadvantaged users to use and easily understand digital mobile devices. For example, many participants commented that the icons were too small. Therefore, designers should revise the icons, making them bigger and easier to understand with a brief description (simple; not too complicated or colourful). Moreover, another significant barrier is typing on an English keyboard. If they wish to target older Thai adults and disabled people, designers and/or directors should try to avoid using English title when watching the story. However, it is impossible for the digital industry to produce a digital mobile device version for these groups only. This study recommends adding more interface options for older adults or disabled people, so they can choose and customise the format themselves. In conclusion, designers should apply the findings of this study to improve and increase usability rate in digital mobile device for these groups; not only for watching videos, but also for everyday life uses.

- **Teaching older adults and disabled people**

The total number of older adults who completed the tasks from round 1 was only 8 (average time: 106.1 seconds). This increase to 16 older adults in the second round, with the time reduced to 83.3 seconds. Moreover, for disabled people, the total number of participants completing all tasks was 16 (151.2 seconds) in the first round. This increased to 22 people (72 seconds) in the second round. However, the task that gave them problems, even in the second round, remained typing the movie title. In round 2 in particular, the title was too long and complicated.

This relates to the results of Micaela et al. (2014), who conducted the research to train 54 older adults who were computer novices to use a tablet (iPad) for 15 hours per week for three months. The study found that training can improve cognitive skills and help adults engage in social and everyday activities, such as banking. Moreover, after training, older people can complete many tasks necessary for their daily living. This is very significant point because nowadays, people live in a digital society. We complete everyday life activities through the Internet and mobile devices, so connectivity could help older adults improve their quality of life.

Dickinson, et al. (2005) set up the study to teach 15 older adults to use email for two weeks. They found that after learning, the amount of problems that participant faced and needed help with decreased significantly.

From this data, it can be summarised that older adults and people with disabilities are able to develop their digital skills – in this case, using an iPad to watch videos– if we teach them properly. Moreover, the positive experience from being taught properly how to use digital devices can make participants more confident in using computers and the Internet. In addition, they can become capable of further digital exploration; meaning that the industry can develop appropriate systems for inexperienced users who are unlikely to use digital devices.

6.5.3 Study Limitations

1. Internet connection

Based on time spent observing participants watching videos on Youtube in five locations, the researcher and staff had to use an iPad mini with an internet SIM card. However, some older adults (The Ban Bang Khae Social Welfare Development Centre) and disabled people (The Baanphrapradaeng Disabled Foundation) lived in the suburbs of Bangkok; an area with an unstable internet connection when compared to the city centre. Consequently, the iPad screen was generally choppy and occasionally froze for a while when the participants were watching the video.

Suggestion: For this issue, the researcher recommends that all participants be observed in controlled areas that have Wi-Fi (i.e. in a university, office or department store with high-speed internet), as this would result in the factor of high or low signal of internet becoming less of an issue.

2. Low educational levels for some groups

This study recruited disabled people from The Baanphrapradaeng Disabled Foundation, and older adults from The Ban Bang Khae Social Welfare Development Centre. Both are foundations established by the government to help poor people. The demographic profiles reveal that five of the disabled people and one of the older adults had received no education. Moreover, there were five older adults who had only reached primary or secondary school. This factor may lower the overall observation scores for these two groups. This also highlights an interesting issue in Thailand, where disabled people generally have a lower chance of reaching higher education. This is in part due to the lack of facilities (i.e. a ramp, disabled toilet, automatic door), especially in the schools or universities.

Suggestion: The researcher recommends contacting schools or part-time courses for disabled people and older adults rather than the government foundation.

3. The length of video and animation was too long

This study used a video that was 5.21 minutes in length and an animation that lasted 3.51 minutes to test how users reacted to watching videos on an iPad. However, some participants, especially older adults and disabled people, suggested that the videos were too long. This was particularly the case for the animation, which was considered somewhat boring by the majority of those asked. Moreover, some participants (cultural tourists, the youth, non-cultural tourists) refused to join the observation on the basis that the length of the whole process was too long.

Suggestion: The researcher recommends choosing videos and/or animations that are as short as possible when observing older adults and disabled groups. Moreover, older adults prefer to watch videos with real actors rather than animations.

4. Low acceptance rate for the observation

Before the observation, the researchers and staff asked participants to sign up for the £10 gift voucher of a Thai department store. However, when they knew that the whole process would take around 30 to 60 minutes, and that they would be recorded by two video cameras, the majority refused. Therefore, the acceptance rate of joining the observation was too low (around 10%), especially for the youth, as well as cultural and non-cultural tourists.

Suggestion: The researchers should set up the whole process so that it takes as little time as possible in order to attract as many participants to join in. Another option is to increase the amount of vouchers offered.

5. Access

This study set up the observation in a number of official government locations: 1.) The Ban Bang Khae Social Welfare Development Centre for older adults; 2.) The Baanphrapradaeng Disabled Foundation for disabled people and 3.) The Museum Siam, which is frequented by cultural tourists. The researcher contacted these

offices and sent the observation plan and questions to be approved. However, the process was too long, and took around two months to be approved.

Suggestion: If the research has to contact official offices (i.e. government offices, public organisations, foundations) rather than private companies in Thailand when dealing with vulnerable groups, disabled people and older adults, they should be prepared to wait at least one to two months for the process to be approved.

6.5.4 Detailing the framework

From the results of this study, the IDST framework was detailed on the link between inclusive design and digital storytelling to understand diverse audiences' behaviour in terms of reaching and engaging with digital mobile devices. The detailed data presented with the five factors for all groups is illustrated on the Figure 6.4.

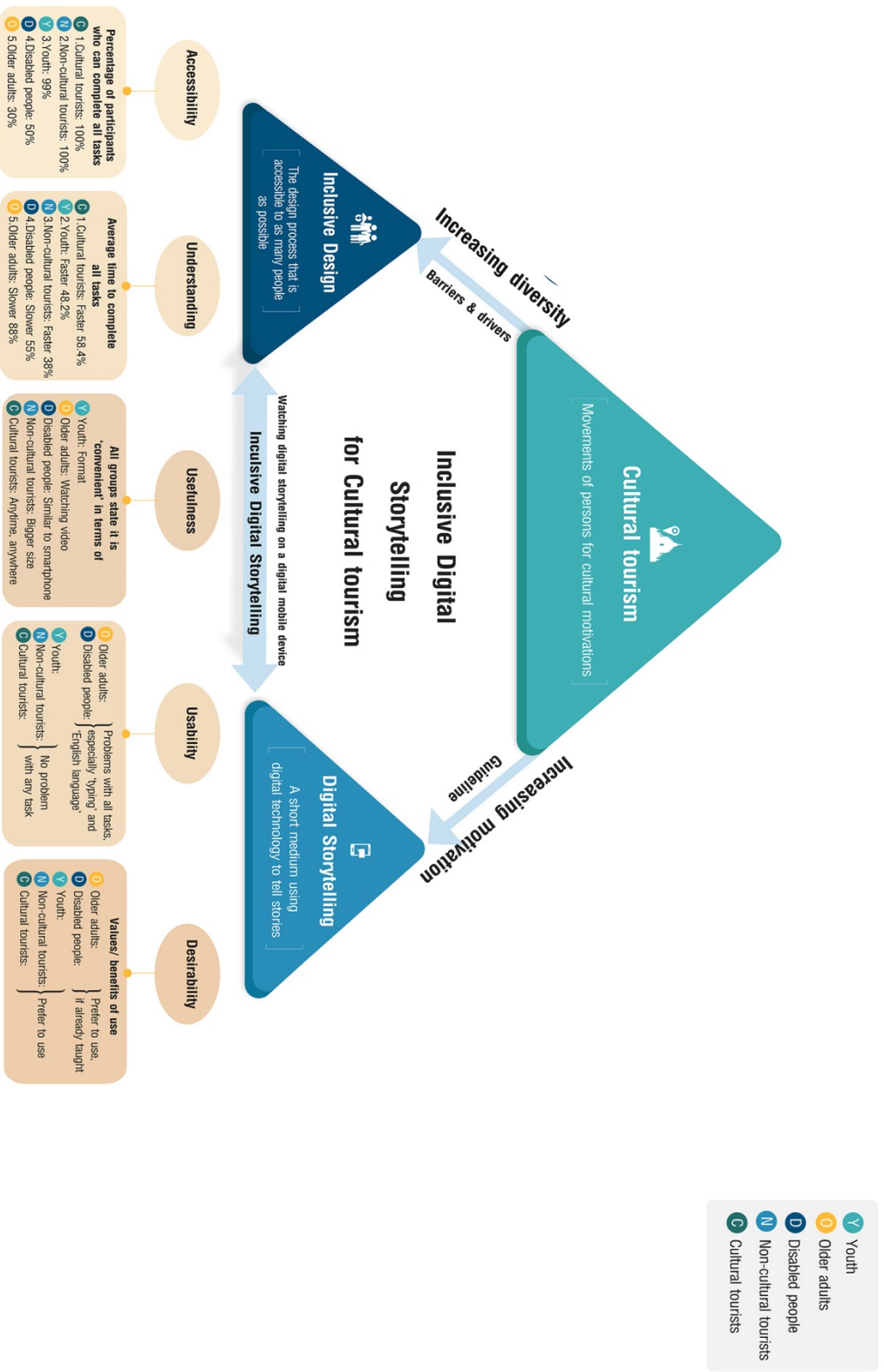


Figure 6.5 The results of the study presenting with diverse audiences' behaviour in terms of reaching and engaging with digital mobile devices

Chapter 7: Evaluation of the Inclusive Digital Storytelling for Cultural Tourism (IDST for CT) Framework

7.1 Introduction

7.1.1 Presenting the framework for inclusive digital storytelling for cultural tourism (IDST for CT) in Thailand

7.1.2 Creating an interactive framework

7.2 Research method

7.2.1 Identifying participants in the study

7.2.2 Questionnaire development

7.2.3 Pilot test

7.3 Results

7.3.1 Demographic results

7.3.2 Evaluation of the framework

7.3.3 Open-ended responses

7.4 Discussion

7.4.1 RQ1: How usable is the IDST for CT framework?

7.4.2 RQ2: How desirable is the IDST for CT framework?

7.4.3 RQ3: Are there statistically significant differences in answers between the four expert groups?

7.4.4 RQ4: What changes or additions should be made to improve IDST for CT framework?

7.4.5 RQ5: What do participants like and dislike in the IDST for CT framework?

7.5 Summary

7.5.1 Research question

7.5.2 Study limitations

7.1 Introduction

In the Descriptive Study 1 (DS1) stage, the initial framework was constructed from a literature review, analysis and synthesis. Next, in the Prescriptive Study (PS) stage, three studies were carried out to detail the framework by three research methods (500 questionnaires, 17 interviews and 50 observations). Regarding Descriptive Study 2 (DS2) as evaluation stage, the fourth study was set up by using an online questionnaire as the research method to collect quantitative data from the end-users of this framework. This study targets four groups of experts (academia, industry) and students: 1.) Thai cultural tourism; 2.) Thai inclusive design; 3.) Thai digital storytelling, and 4.) International inclusive design, digital storytelling and cultural tourism. Total expected respondents from all four groups are 120 samples (30 for each group). The aim and objectives of this chapter are in Table 7.1. Moreover, this chapter aims to answer five research questions presented in Table 7.2:

Table 7.1 Aim and objectives of the study

1. To evaluate the usability and desirability within the framework for inclusive digital storytelling for cultural tourism	1. To evaluate the framework in terms of reaction, learning, behaviour, results and desirability
	2. To identify statistically significant differences in answers between four groups for the framework
	3. To identify opinions (open-ended answers) of four groups regarding the framework?

Table 7.2 Research questions of this study related to objectives

1. How usable is the IDST for CT framework?	1.1
2. How desirable is the IDST for CT framework?	1.1
3. Are there statistically significant differences in answers between the four groups of participants?	1.2
4. What changes or additions should be made to improve IDST for CT framework?	1.3
5. What do participants like and dislike in the IDST for CT framework?	1.3

7.1.1 Presenting a framework for inclusive digital storytelling for cultural tourism (IDST for CT) in Thailand

Previous chapters have reported and detailed results of the framework from three empirical studies through Chapters 4, 5 and 6. They were based on the prescriptive stage from Design Research Methodology (DRM) to develop and strengthen the initial framework. The details and results of this framework were composed of three studies below:

Table 7.3 Three empirical studies in this framework

1.	Barriers and Drivers in Cultural Tourism for Five Groups in Thailand	Inclusive design and cultural tourism (500 Questionnaires)	Results about barriers and drivers for five groups	4
2.	Constructing the Digital Storytelling: Guideline to Increase Motivation in Cultural Tourism for Five Groups in Thailand	Digital storytelling and cultural tourism (17 experts' interviews)	The digital storytelling guideline for five groups	5
3.	Inclusive digital storytelling to understand audiences' behaviour	Inclusive design and digital storytelling (50 observations)	Data for five groups in terms of reaching for and engaging with digital storytelling	6

Both IDST for CT frameworks in English and Thai versions have been constructed and presented in Figure 7.1 and 7.2.

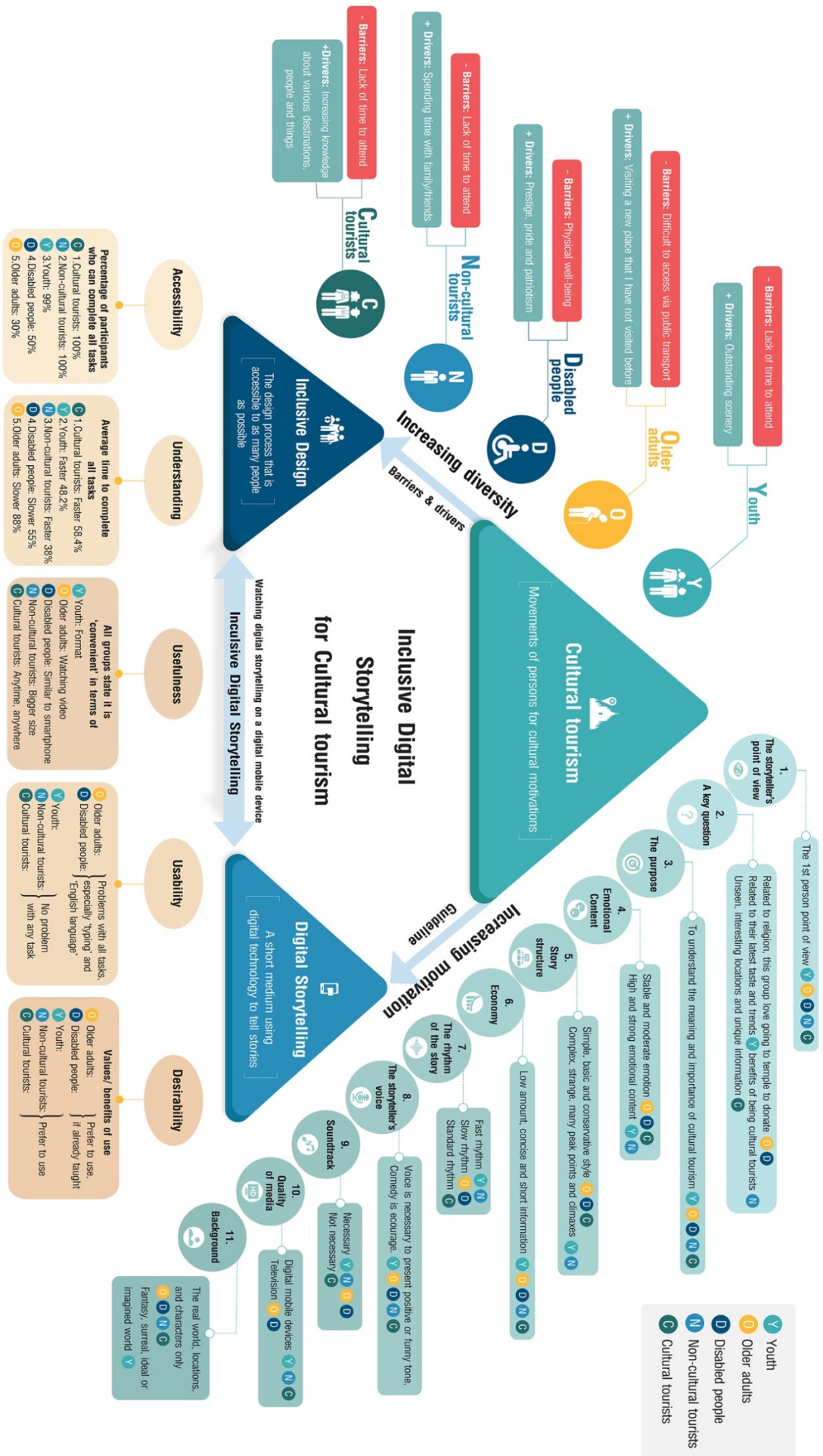


Figure 7.1 A framework for inclusive digital storytelling for cultural tourism (IDST for CT) in English

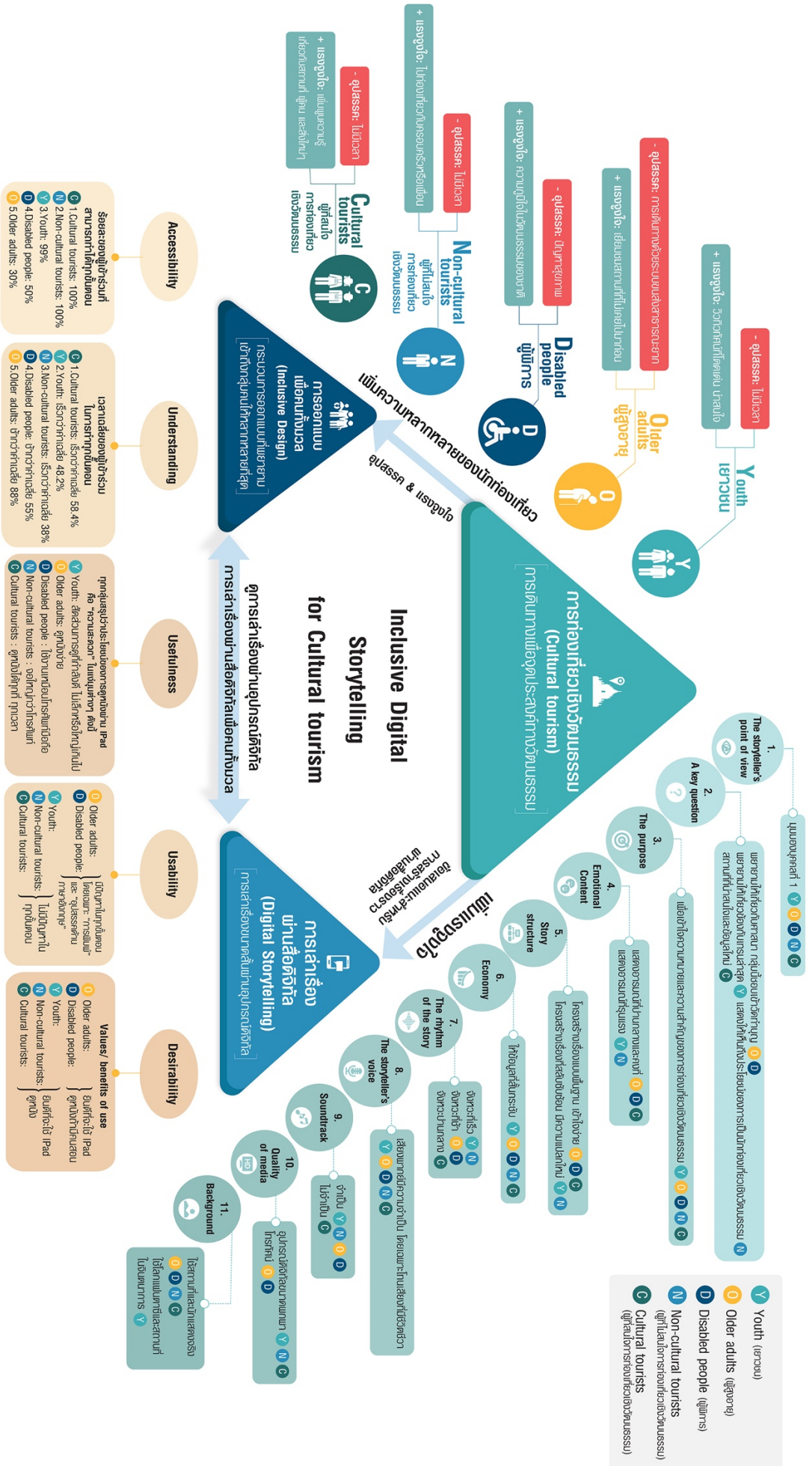


Figure 7.2 A framework for inclusive digital storytelling for cultural tourism (IDST for CT) in Thai

7.1.2 Creating an interactive framework

Regarding the research method adopted in this study, namely online questionnaires, this thesis creates the interactive framework in English and Thai versions to allow users to click on ‘elements’, ‘results’ and ‘view large’, presented on the left of the monitor screen. When users click on ‘elements’, they can view factors from every study (i.e. five potential groups of tourists, 11 elements of digital story guideline, and five factors to understand user behaviours). While clicking on ‘results’, users can read details of the findings from three studies. However, there are a lot of details and small texts. Thus, the ‘view large’ button can allow users to read the graphic clearly. The English and Thai interactive framework can be accessed at the following link:

English version: <http://joekasemsarn.comeze.com/>

Thai version: <http://thaiframework.comeze.com/>

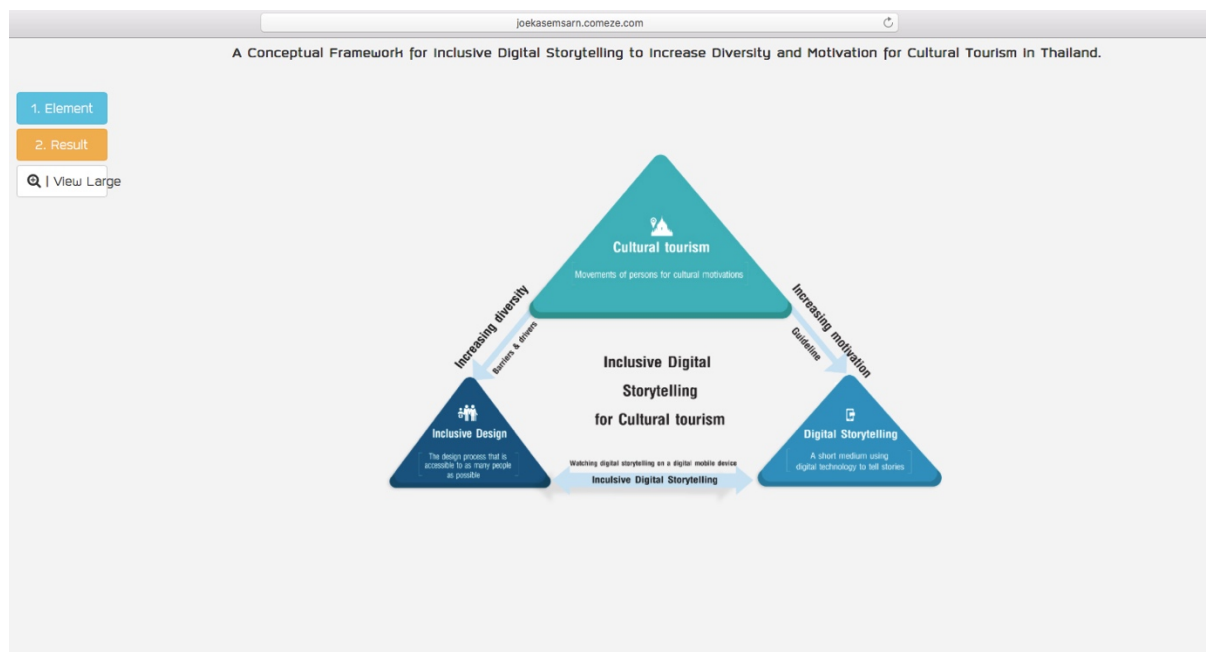


Figure 7.3 An interactive framework — basic version

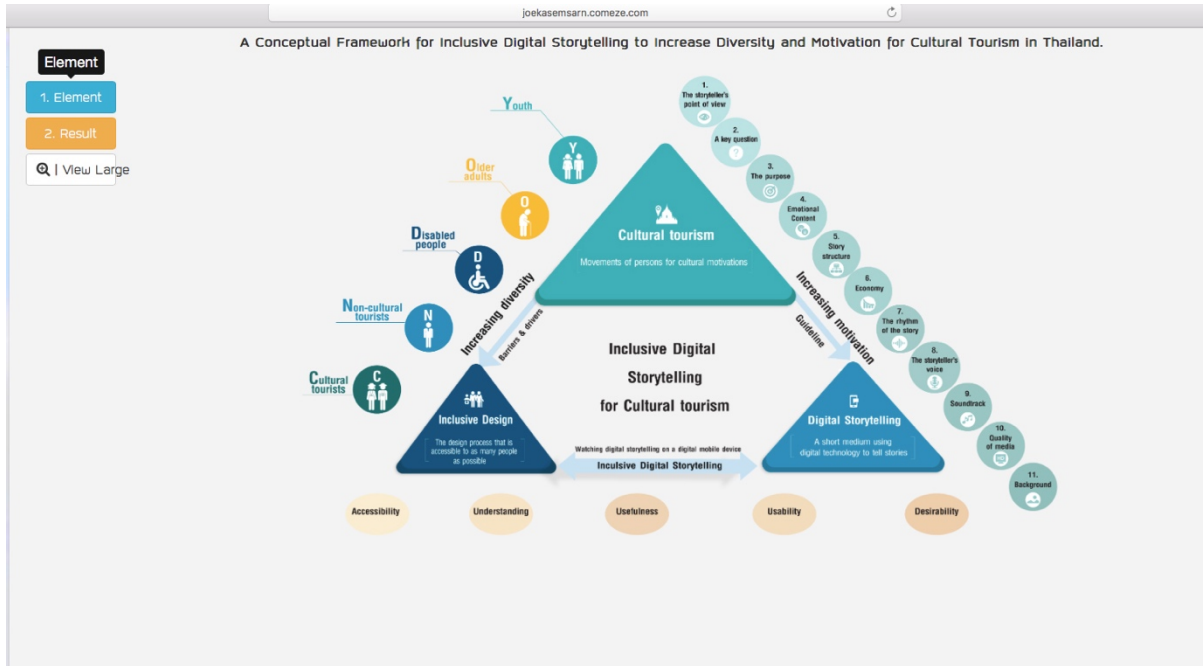


Figure 7.4 An interactive framework when users click on the 'elements' button

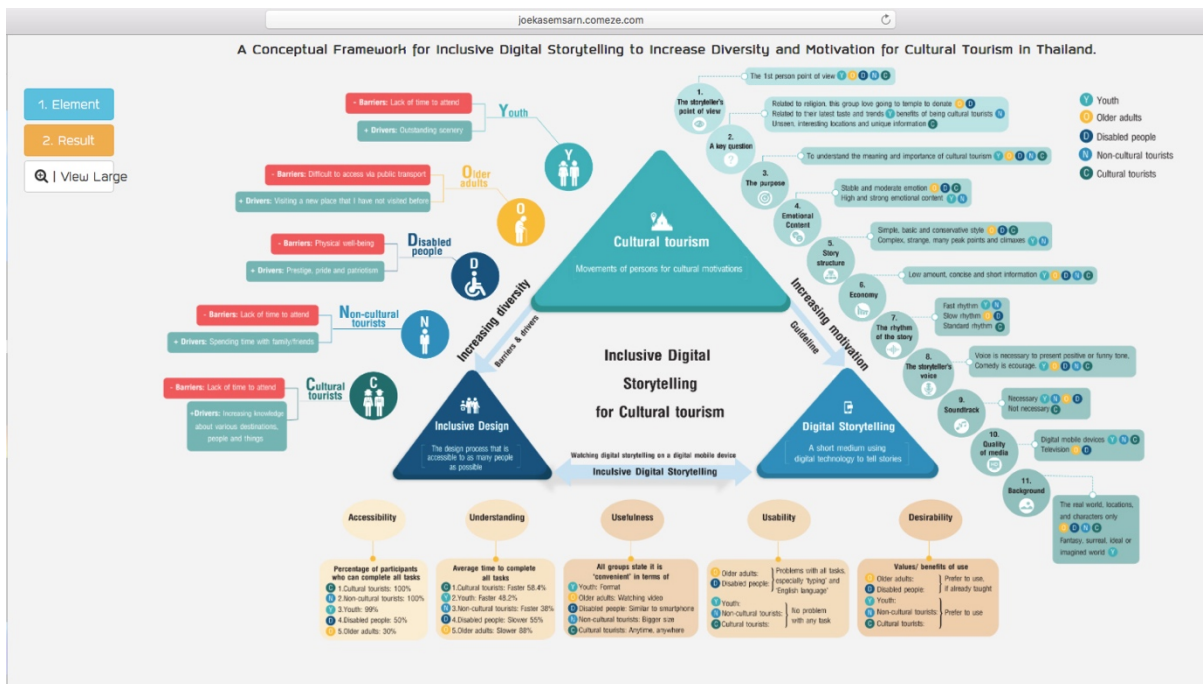


Figure 7.5 An interactive framework when users click on the 'results' button

7.2 Research method

7.2.1 Identifying participants in this study

The total expected number of respondents from all four groups are 120 samples (30 for each group), presented in Table 7.5. The aim of this survey is to evaluate the usability and desirability within the framework. This study uses an online questionnaire from Google documents dated from 15 April to 15 May 2017, which was distributed across the four groups as follows:

Table 7.5 Four groups of participants in this study

1.	Thai cultural tourism experts (academia, industry) and students	30
2.	Thai inclusive design experts (academia, industry) and students	30
3.	Thai digital storytelling experts (academia, industry) and students	30
4.	International inclusive design, digital storytelling and cultural tourism experts (academia, industry, and students)	30

This survey is a web-based survey that everyone can visit. An online survey has many advantages over conventional surveys such as: cheaper than other types, easily analyses data, reducing time and resources, and reducing human errors leading to increasing reliability (Robson, 2012). However, the reason this study adopted an online survey is to contact international inclusive design, digital storytelling and cultural tourism experts (academia, industry) and students from many countries, especially for experts interviewed in the second study (i.e. experts from University of Sarajevo, University of Surrey, University Utara Malaysia, Malaysia, and many experts from the USA). To gather data, online questionnaires were sent via email to these four groups.

1.) Thai cultural tourism users (academia, industry, students).

The criteria for both academic and industrial experts require that they have more than 5 years' experience working in tourism or cultural tourism. Students were required to be studying cultures, tourism or tourism management as their major. To gather information, online questionnaires were distributed by email to staff and students at the Museum Siam (<https://www.museumsiam.org/>), Rattanakosin Exhibition Hall Museum (nitasratthanakosin.com).

2.) Thai inclusive design users (academia, industry, students).

The criteria for both academic and industrial users were to have more than 5 years' experience working in graphic, product or inclusive design. Students must be majoring in design. Online questionnaires were distributed by email to staff and students at the Graphic design, Communication Art and Design Department, KMITL (www.arch.kmitl.ac.th).

3.) Thai digital storytelling users (academia, industry, students).

The criteria for both academic and industrial users were to have more than 5 years' experience working in film, animation or advertising. Students must be majoring in film, communication design or photography. Online questionnaires were distributed by email to staff and students at the Photography, Film and Digital Media Department, KMITL (www.arch.kmitl.ac.th), Anya Animation (www.anya.co.th/), and The Monk studio (www.themonkstudio.com).

4.) International inclusive design, digital storytelling and cultural tourism users (academia, industry, students).

The criteria for both international academic and industrial experts were to have more than 5 years' experience working abroad in inclusive design, digital storytelling and cultural tourism. Students must be studying these three majors. Online questionnaires were distributed by email to staff and students at the Broadcast Design Department, the University of Sarajevo (Bosnia and Herzegovina) (www.etf.unsa.ba), the Digital World Research Centre, the University of Surrey (UK) (www.surrey.ac.uk/dwrc/), the University Utara Malaysia, Malaysia (www.umk.edu), Matthew Luhn Studio (matthewluhnstory.com), the Cartoon Saloon (Republic of Ireland) (www.cartoonsaloon.ie/contact/), and the Department of Design, Brunel University London (<https://www.brunel.ac.uk/design>).

7.2.2 Questionnaire development

1. Kirkpatrick evaluation model (1975) (citation 7135)

This is a well-established model for evaluating new processes or tools in both academia and industry (Phillips, 1990; Ahmed, 2000; McGinley, 2012; Lockton, 2013), providing a conceptual framework for evaluation criteria and data collection.

This model has been used originally for evaluating training programmes. However, it

has been adopted for design research. For example, Dong and Clarkson (2005) used this model to evaluate the impact of i-design inclusive design toolkits. Moreover, McGinley (2012) and Lockton (2013) used this model to evaluate their design toolkits in their PhD dissertations.

This thesis adds one more design factor into the evaluation stage – ‘desirability’. The logic for using this design factor is that the Kirkpatrick evaluation model is a general evaluation model, not a design proposed model. In many cases, usability, usefulness and accessibility are tested systematically and theoretically with good results, but the users do not want to use it in reality. Hence, desirability is added to indicate this framework is perceived as effective in practical works.

Table 7.6 Definition of Kirkpatrick evaluation model

1. Reaction	“[H]ow those who participate in the program react to it. . . a measure of customer satisfaction”	What participants think of the proposition
2. Learning	“[T]he extent to which participants change attitudes, improve knowledge, and/or increase skill as a result of attending the program.”	What participants learn from the proposition
3. Behaviour	“[T]he extent to which change in behaviour has occurred because the participant attended the training program.”	The impact of the proposition
4. Results	“[T]he results that occurred because the participants attended the program.”	Fitness for purpose of the proposition
5. Desirability (McGinley, 2012)	N/A	Was the proposition perceived as appropriate

7.2.3 Pilot test

Table 7.7 Time to read and complete the survey from participants in the pilot test stage (minutes)

	Inclusive designer			Cultural tourism users			Digital storytelling users			Average time
	1.	2.	3.	4.	5.	6.	7.	8.	9.	
	Female (23-25)	Female (26-34)	Female (26-34)	Female (26-34)	Male (35-45)	Male (35-45)	Male (35-45)	Male (35-45)	Female (36-34)	
Time to ‘read’ Framework	2.2	6.4	5.5	4.2	6.5	5.5	5.7	3.2	4.5	4.85
Time to ‘fill out’ survey	18.37	10.3	10.1	13.1	14.2	13.8	12.3	14.3	15.2	13.51
Total time (minutes)	20.57	16.7	15.6	17.3	20.7	19.3	18	17.5	19.7	18.36

The initial questionnaire was reviewed by three experts (one design expert, one language expert and one statistics expert). Many recommendations were received during this stage, such as revision of wording and aim, deleting some questions and parts (i.e. usability test), and adding definitions of three factors.

Next, for the pilot test, nine participants (inclusive designers, cultural tourism users and digital storytelling users) took part in this pilot test to develop the final version of the questionnaire. First, the author used a stopwatch to measure how long participants took to complete the survey. In addition, respondents were asked to share comments about user-friendliness, confusion and suggestion. Subsequently, the survey was revised based on participants' comments by reducing the total number of items from 26 to 18 items, revising wording, and deleting the introduction page.

In terms of 'user-friendliness', most participants stated, "Not smooth, I have to open and re-read the framework on the first page so many times" (n=4) and "Introduction page is too long" (n=2). In the section 'confusion', most participants stated, "*You do not explain the definition of 'IDST'*" (n=3) and "*Types of career in the items 'industry' and 'academic' is so confusing*" (n=2). Lastly, regarding 'suggestion', they pointed out that "*The framework is quite difficult to understand*" (n=3). Following revisions based on pilot test comments, the final version of questions is presented below:

Table 7.8 Improved questions after pilot tests

1. Reaction (What participants think of the proposition)	1. This framework is engaging	(Kirkpatrick, 1975; Lockton, 2013)
	2. This framework is relevant to my job or experience	(Kirkpatrick, 1975)
	3. This framework is useful in terms of information	(McGinley, 2012; Gonzalez, 2016)
2. Learning (What participants learn from the proposition)	4. I can understand the diagram and concept of the framework	(Kirkpatrick, 1975; McGinley, 2012; Lockton, 2013)
	5. After reading this framework, I have a better understanding of the importance of Inclusive Design and Digital Storytelling for Cultural Tourism	(Kirkpatrick, 1975; Lockton, 2013; Gonzalez, 2016)
	6. This framework can solve some of the problems of Cultural Tourism I thought before	(Kirkpatrick, 1975; McGinley, 2012)
3. Behaviour (The impact of the proposition)	7. This framework can answer questions I had not thought in terms of increasing diversity and motivation in Cultural Tourism	(McGinley, 2012)
	8. I would like to apply this framework to my work	(Kirkpatrick, 1975)

	9. I would like to introduce the concept of this framework to others	(Kirkpatrick, 1975; Lockton, 2013)
	10. I can use this framework in my work	(Kirkpatrick, 1975)
4. Results (Fitness for purpose of the proposition)	11. I think Inclusive Design could be used to increase diversity in Cultural Tourism	
	12. I think this framework could be used to increase motivation in Cultural Tourism	
	13. This framework can help increase diversity and motivation in Cultural Tourism	
5. Desirability (McGinley, 2012) Was the proposition perceived as appropriate	14. I would like to use this framework to increase diversity and motivation for Cultural Tourism	(McGinley, 2012)
6. Open-end questions	15. What changes or improvements would you suggest in order to make this framework more useful?	(McGinley, 2012)
	16. What pieces of knowledge or factors would you suggest being included in this framework to increase diversity and motivation to Cultural Tourism?	(McGinley, 2012)
	17. Please mention top three things you dislike about this framework?	(Lund, 2001)
	18. Please mention top three things you like about this framework?	(Lund, 2001)

The final questionnaire was separated into three sections. The first section included the study's aim which is "to evaluate the usability and desirability of a framework for increasing diversity and motivation in cultural tourism", target groups of the survey (cultural tourism experts and students, inclusive design expert and students and digital storytelling experts and students), and definitions of three factors. Section two included 14 Likert's scaling items from the Kirkpatrick evaluation model (reaction, learning, behaviour, results) (Kirkpatrick, 1975), desirability (McGinley, 2012), and four open-ended questions. The final section included eight items about demographic information.

Next, online questionnaires in both English and Thai languages were uploaded online via Google forms, available at:

English version: <https://goo.gl/forms/v2qKISn853VvRI033>

Thai version: <https://goo.gl/forms/oUfLeCcnxRqDg5aJ2>

Table 7.9 Questionnaire structure

Section 1	Introduction, the target audience of this survey, the aim and definitions of three factors
Section 2	14 Likert's scaling questions from the Kirkpatrick evaluation model <ul style="list-style-type: none"> • Reaction • Learning • Behaviour

	<ul style="list-style-type: none"> • Results • Desirability 4 open-ended questions
Section 3	Nominal scale: demographic information (i.e. education, type of career, year of experience, the country they currently live in – for international users)

7.3 Results

7.3.1 Demographic results

Table 7.10 demographic results from four groups (123 respondents)

Factor	Thai cultural tourism experts and students	Thai inclusive design experts and students	Thai digital storytelling experts and students	International experts and students
Total participants	37	22	38	27
1. Gender				
Male	6	5	18	14
Female	31	17	20	13
2. Age				
18-22	6	3	6	-
23-25	13	3	7	-
26-34	12	12	5	6
35-45	4	2	13	18
46-59	2	2	7	3
60-65	-	-	-	-
66-75	-	-	-	-
76-85	-	-	-	-
85+	-	-	-	-
3. Education				
Primary/Secondary	-	-	-	1
High school	-	-	-	-
Diploma/Certificate	10	6	18	3
Undergraduate	26	14	18	7
Post-graduate	1	2	2	13
PhD degree	-	-	-	3
4. Type of career				
Experts (academic & industry)	24	19	29	18
Students	13	3	9	9
5. Experience				
1-5 years	33	8	16	10
6-10 years	-	7	4	6
11-15 years	2	5	12	8
16-20 years	2	-	2	-
Above 20 years	-	2	4	3
6. Monthly income for a month (Thai baht) (1 USD = 35 baht)				
Below 5,000 baht	-	3	3	
5,000 – 10,000 baht	6	-	3	
10,001 – 25,000 bath	22	3	9	
25,001 – 50,000 baht	7	7	12	
50,001 – 100,000	-	7	9	

baht				
Above 10000 baht		2	2	
7. Monthly income for a month (USD) (for international participants only)				
Below 500 USD				6
500-1150 USD				8
1151 – 3000 USD				6
3001-5000 USD				1
5001 -10000 USD				5
Above 10000 USD				
8. What is the country you currently live in? (for international participants only)				
Thailand				4
UK				10
European countries				-
USA				4
Asian countries				7
Others				2

Table 7.10 illustrates the demographic information for the four groups. This data indicates that most Thai cultural tourism experts and students (83.8% - 31 respondents); 77.3% of Thai inclusive design experts and students (17 respondents); and 52.6% of Thai digital storytelling experts and students (20 respondents) were female while 51.9% of the International experts and students (14 respondents) were male.

Moreover, most Thai cultural tourism experts and students (35.1% - 13 respondents) were aged twenty-three to twenty-five years; 54.5% of Thai inclusive design experts and students (12 respondents) were aged twenty-six to thirty-four years; 34.2% of Thai digital storytelling experts and students (13 respondents) and 66.7% of International experts and students (18 respondents) were aged thirty-five to forty-five years. The largest group of Thai cultural tourism (64.9% - 24 respondents); Thai inclusive design (86.4% - 19 respondents); Thai digital storytelling (76.3% - 29 respondents); and International participants (66.7% -18 respondents) were experts (academic & industry).

7.3.2 Evaluation of the framework

The data obtained from the respondents regarding five evaluation factors was presented below. The scale ranges from “strongly disagree” (1) to “strongly agree” (7), with mean scores indicated below:

- 1.00-1.49 = Strongly disagree
- 1.50-2.49 = Disagree
- 2.50-3.49 Somewhat disagree
- 3.50-4.49 = Neutral
- 4.50-5.49 = Somewhat agree
- 5.50-6.49 = Agree
- 6.50-7.00 = Strongly agree

Reaction

Reaction means “what participants think of the proposition” (McGinley, 2012, pp. 244). In terms of ‘reaction’, the mean of all four groups is 5.33 (somewhat agree) and SD. = 1.08. This section explored the participant’s opinions to the IDST for CT framework through three questions (Q1-3): 1). this framework is engaging; 2). this framework is relevant to my job or experience; and 3). this framework is useful in terms of information. Participants were asked to rate the scaling answers from 1 (strongly disagree) to 7 (strongly agree). The mean score for each group was ranked in the following table:

Table 7.11 Results in ‘reaction’ from four groups

1.	Thai digital storytelling group	5.95	0.84
2.	Thai inclusive design group	5.31	0.86
3.	International group	5.37	1.19
4.	Thai cultural tourism group	4.68	0.98
	Total	5.33 (somewhat agree)	1.08

ANOVA

Reaction

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	30.349	3	10.116	10.629	.000
Within Groups	114.206	120	.952		
Total	144.555	123			

Figure 7.6 One-way ANOVA of ‘reaction’ for the four groups

A one-way between subjects ANOVA was conducted to compare a significant difference between the mean of ‘reaction’ for the four groups. From Figure 7.6, there was a statistically significant effect of ‘reaction’ at the $p < .05$ level for the four groups [$F(3,120) = 10.63, p = .000$]

Since Figure 7.6 illustrated a statistically significant result, this study needed to compute a Scheffe post hoc test. The post hoc test was compared each group to every other group of participants. The results of the Scheffe post hoc test were reported in Figure 7.7

Multiple Comparisons

Dependent Variable: Reaction
Scheffe

(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Thai cultural tourism group	Thai inclusive design group	-.63350	.26264	.127	-1.3782	.1113
	Thai digital storytelling group	-1.27146*	.22532	.000	-1.9104	-.6326
	International group	-.68569	.24692	.057	-1.3859	.0145
Thai inclusive design group	Thai cultural tourism group	.63350	.26264	.127	-.1113	1.3782
	Thai digital storytelling group	-.63796	.26135	.120	-1.3790	.1031
	International group	-.05219	.28019	.998	-.8467	.7423
Thai digital storytelling group	Thai cultural tourism group	1.27146*	.22532	.000	.6326	1.9104
	Thai inclusive design group	.63796	.26135	.120	-.1031	1.3790
	International group	.58577	.24555	.134	-.1105	1.2820
International group	Thai cultural tourism group	.68569	.24692	.057	-.0145	1.3859
	Thai inclusive design group	.05219	.28019	.998	-.7423	.8467
	Thai digital storytelling group	-.58577	.24555	.134	-1.2820	.1105

*. The mean difference is significant at the 0.05 level.

Figure 7.7 Scheffe post hoc analysis of 'reaction' for the four groups

Post hoc analyses using the Scheffe post hoc criterion for significance indicated that the Thai digital storytelling group was significantly higher ($M=5.95$, $SD.=0.84$) than in Thai cultural tourism group ($M=4.68$, $SD. =0.98$).

This data suggests that in 'reaction', there was no statistically significant difference between the three groups (Thai digital storytelling, Thai inclusive design, and international group). However, the Thai digital storytelling group ($m=5.95$) ranked this factor significantly higher than the Thai cultural tourism group ($m=4.68$).

Learning

McGinley (2012) explains the terms 'learning' in design research as "what participants learn from the proposition" (McGinley, 2012, pp. 244). The mean of learning from all four groups is 5.20 (somewhat agree) and SD. = 1.06. This section explored the participant's opinions to the IDST for CT framework through three questions (Q4-6) which are: 1). I can understand the diagram and concept of the framework; 2). after reading this framework, I have a better understanding of the importance of inclusive design and digital storytelling for cultural tourism; and 3). this framework can solve some of the problems of Cultural Tourism I thought before. The mean score for each group was ranked in the following table:

Table 7.12 Results in 'learning' from the four groups

1.	Thai digital storytelling group	5.50	1.31
2.	Thai inclusive design group	5.24	1.00
3.	International group	5.08	0.90
4.	Thai cultural tourism group	4.96	0.85
	Total	5.20 (somewhat agree)	1.06

ANOVA

Learning

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.066	3	2.022	1.822	.147
Within Groups	133.177	120	1.110		
Total	139.243	123			

Figure 7.8 One-way ANOVA of 'learning' for the four groups

A one-way between subjects ANOVA was conducted to compare a significant difference between the mean of 'learning' for the four groups.

From Figure 7.8, there was no statistically significant effect of 'learning' at the $p > .05$ level for the four groups [$F(3,120) = 1.82, p = .147$]. This data suggests that in 'learning', there was no statistically significant difference between the four groups.

Behaviour

'Behaviour' in case of design research is "The impact of the proposition" (McGinley, 2012, pp. 244). The mean of behaviour from all four groups is 4.85 (somewhat agree) and SD. = 1.17. This section explored the participant's opinions to the IDST for CT framework through four questions (Q7-10) which are: 1). this framework can answer questions I had not thought in terms of increasing diversity and motivation in Cultural Tourism; 2). I would like to apply this framework to my work; 3). I would like to introduce the concept of this framework to others; and 4). I can use this framework in my work. The mean score for each group was ranked in the following table:

Table 7.13 Results in 'behaviour' for the four groups

1.	Thai digital storytelling group	5.55	1.08
2.	Thai inclusive design group	4.86	1.20
3.	International group	4.78	0.911
4.	Thai cultural tourism group	4.18	1.04
	Total	4.85 (somewhat agree)	1.17

ANOVA

Behaviour

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	35.357	3	11.786	10.513	.000
Within Groups	134.530	120	1.121		
Total	169.887	123			

Figure 7.9 One-way ANOVA of 'behaviour' for four groups

A one-way between subjects ANOVA was conducted to find if there was a significant difference between the mean of 'behaviour' for the four groups. From Figure 7.9, there was a statistically significant effect of 'behaviour' at the $p < .05$ level for the four groups [$F(3,120) = 10.51, p = .000$].

Since Figure 7.9 illustrated a statistically significant result, this study needed to compute a Scheffe post hoc test. The post hoc test was compared each group to every other group of participants. The results of the Scheffe post hoc test were reported in Figure 7.10

Multiple Comparisons

Dependent Variable: Behaviour
Scheffe

(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Thai cultural tourism group	Thai inclusive design group	-.68120	.28506	.133	-1.4895	.1271
	Thai digital storytelling group	-1.37020*	.24454	.000	-2.0636	-.6768
	International group	-.60460	.26799	.171	-1.3645	.1553
Thai inclusive design group	Thai cultural tourism group	.68120	.28506	.133	-.1271	1.4895
	Thai digital storytelling group	-.68900	.28366	.123	-1.4933	.1153
	International group	.07660	.30410	.996	-.7857	.9389
Thai digital storytelling group	Thai cultural tourism group	1.37020*	.24454	.000	.6768	2.0636
	Thai inclusive design group	.68900	.28366	.123	-.1153	1.4933
	International group	.76559*	.26650	.046	.0099	1.5213
International group	Thai cultural tourism group	.60460	.26799	.171	-.1553	1.3645
	Thai inclusive design group	-.07660	.30410	.996	-.9389	.7857
	Thai digital storytelling group	-.76559*	.26650	.046	-1.5213	-.0099

*. The mean difference is significant at the 0.05 level.

Figure 7.10 Scheffe post hoc analysis of 'behaviour' for the four groups

Post hoc analyses using the Scheffe post hoc criterion for significance indicated that the Thai digital storytelling group was significantly higher ($M=5.55$, $SD.=1.08$) than in Thai cultural tourism group ($M=4.18$, $SD. =1.04$) and international group ($M=4.78$, $SD.=0.911$).

This data suggests that for 'behaviour', there was no statistically significant difference between the two groups (Thai digital storytelling and Thai inclusive design). However, the Thai digital storytelling group ($M=5.55$) ranked this factor significantly higher than Thai cultural tourism group ($M=4.18$) and international group ($M=4.78$).

Results

Results are defined as "fitness for purpose of the proposition" (McGinley, 2012, pp. 244). The mean of results from all four groups is 5.67 (agree) and $SD. = 1.01$. This section explored the participant's opinions to the IDST for CT framework through three questions (Q11-13) which are: 1). I think inclusive design could be used to

increase diversity in cultural tourism; 2). I think this framework could be used to increase motivation in cultural tourism; and 3). this framework can help increase diversity and motivation in cultural tourism. The mean score for each group was ranked in the following table:

Table 7.14 Results in 'results' for the four groups

1.	Thai digital storytelling group	6.19	0.65
2.	Thai inclusive design group	5.39	1.04
3.	Thai cultural tourism group	5.61	0.89
4.	International group	5.25	1.26
	Total	5.67 (agree)	1.01

ANOVA

Results

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16.676	3	5.559	6.051	.001
Within Groups	109.321	119	.919		
Total	125.996	122			

Figure 7.11 One-way ANOVA of 'results' for the four groups

A one-way between subjects ANOVA was conducted to compare a significant difference between the mean of 'results' for the four groups. From Figure 7.11, there was a statistically significant effect of 'results' at the $p < .05$ level for the four groups [$F(3,119) = 6.05, p = .001$].

Since Figure 7.11 illustrated a statistically significant result, this study needed to compute a Scheffe post hoc test. The post hoc test was compared each group to every other group of participants. The results of the Scheffe post hoc test were reported in Figure 7.12

Multiple Comparisons

Dependent Variable: Results
Scheffe

(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Thai cultural tourism group	Thai inclusive design group	.21867	.25804	.869	-.5131	.9505
	Thai digital storytelling group	-.58559	.22284	.081	-1.2175	.0464
	International group	.35335	.24260	.550	-.3346	1.0413
Thai inclusive design group	Thai cultural tourism group	-.21867	.25804	.869	-.9505	.5131
	Thai digital storytelling group	-.80426*	.25804	.025	-1.5360	-.0725
	International group	.13468	.27528	.971	-.6460	.9154
Thai digital storytelling group	Thai cultural tourism group	.58559	.22284	.081	-.0464	1.2175
	Thai inclusive design group	.80426*	.25804	.025	.0725	1.5360
	International group	.93894*	.24260	.003	.2510	1.6269
International group	Thai cultural tourism group	-.35335	.24260	.550	-1.0413	.3346
	Thai inclusive design group	-.13468	.27528	.971	-.9154	.6460
	Thai digital storytelling group	-.93894*	.24260	.003	-1.6269	-.2510

*. The mean difference is significant at the 0.05 level.

Figure 7.12 Scheffe post hoc analysis of 'results' for the four groups

Post hoc analyses using the Scheffe post hoc criterion for significance indicated that Thai digital storytelling group was significantly higher ($M=6.19$, $SD.=0.65$) than in Thai inclusive design group ($M=5.39$, $SD. =1.04$) and international group ($M=5.25$, $SD.=1.26$).

This data suggests that in 'results', there was no statistically significant difference between the two groups (Thai digital storytelling and Thai cultural tourism group). However, the Thai digital storytelling group ($M=6.19$) ranked this factor significantly higher than the Thai inclusive design group ($M=5.39$) and international group ($M=5.25$).

Desirability

Desirability means "was the proposition perceived as appropriate?" (McGinley, 2012, pp. 244). The mean of results from all four groups is 5.11 (somewhat agree) and $SD. = 1.38$. This section explored the participant's opinions to the IDST for CT framework through one questions (Q14) which is: I would like to use this framework to increase

diversity and motivation for cultural tourism. The mean score for each group was ranked in the following table:

Table 7.15 Results in 'desirability' for the four groups

1.	Thai digital storytelling group	6.00	0.92
2.	Thai inclusive design group	4.86	1.39
3.	Thai cultural tourism group	4.72	1.40
4.	International group	4.59	1.33
	Total	5.11 (somewhat agree)	1.38

ANOVA

Desirability

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	44.013	3	14.671	9.246	.000
Within Groups	190.407	120	1.587		
Total	234.419	123			

Figure 7.13 One-way ANOVA of 'desirability' for the four groups

A one-way between subjects ANOVA was conducted to compare a significant difference between the mean of 'results' for the four groups. Figure 7.13 illustrates there was a statistically significant effect of 'results' at the $p < .05$ level for the four groups [$F(3,120) = 9.246, p = .000$].

Since Figure 7.13 illustrates a statistically significant result, this study needed to compute a Scheffe post hoc test. The post hoc test was compared each group to every other group of participants. The results of the Scheffe post hoc test were reported in Figure 7.14.

Multiple Comparisons

Dependent Variable: Desirability
Scheffe

(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Thai cultural tourism group	Thai inclusive design group	-.13391	.33913	.984	-1.0955	.8277
	Thai digital storytelling group	-1.27027*	.29093	.000	-2.0952	-.4453
	International group	.13714	.31883	.980	-.7669	1.0412
Thai inclusive design group	Thai cultural tourism group	.13391	.33913	.984	-.8277	1.0955
	Thai digital storytelling group	-1.13636*	.33746	.012	-2.0933	-.1795
	International group	.27104	.36179	.905	-.7548	1.2969
Thai digital storytelling group	Thai cultural tourism group	1.27027*	.29093	.000	.4453	2.0952
	Thai inclusive design group	1.13636*	.33746	.012	.1795	2.0933
	International group	1.40741*	.31705	.000	.5084	2.3064
International group	Thai cultural tourism group	-.13714	.31883	.980	-1.0412	.7669
	Thai inclusive design group	-.27104	.36179	.905	-1.2969	.7548
	Thai digital storytelling group	-1.40741*	.31705	.000	-2.3064	-.5084

*. The mean difference is significant at the 0.05 level.

Figure 7.14 Scheffe post hoc analysis of 'desirability' for the four groups

Post hoc analyses using the Scheffe post hoc criterion for significance indicated that the Thai digital storytelling group was significantly higher ($M=6.00$, $SD.=0.92$) than in the Thai cultural tourism group ($M=4.72$, $SD. =1.40$), Thai inclusive design group, ($M=4.86$, $SD. =1.39$) and international group ($M=4.59$, $SD.=1.33$).

This data suggests that in 'desirability', there was a statistically significant difference between all four groups. However, the Thai digital storytelling group ($M=6.00$) ranked this factor significantly higher than the Thai cultural tourism group ($M=4.72$), Thai inclusive design group ($M=4.86$), and international group ($M=4.59$).

7.3.3 Open-ended answers

- **What changes or improvements would you suggest in order to make this framework more useful?**

Table 7.16 Open-ended answers from the four groups

1. Presenting more details [20]	Providing more details	8
	Providing additional information through relevant links, references, etc.	5
	Each group's details	3
	Presenting research methods and sampling	2
	More groups of people	2
2. Improving graphics and style [13]	Providing a more stylish layout	7
	Providing a better interactive system	6
3. Simplifying the framework [12]	Reducing texts in the framework	9
	Clarifying diversity	3
4. Linking with mixed media [10]	Using offline and online media	7
	Media link	3
5. Testing the framework [9]	Setting up the workshop	5
	Setting a prototype digital storytelling	4

Table 7.16 illustrates the participants' comments to the open-ended question in part 1. These comments were in response to the question "What changes or improvements would you suggest in order to make this framework more useful?" Open-ended answers were analysed using thematic coding analysis (Saldaña, 2015) by three coders (one senior and two junior researchers) in order to increase the reliability of data analysis.

First, most participants need to improve this framework by 'presenting more details' (n=20) (providing more details, providing additional information through relevant links, references, etc., each group's details, presenting research methods and sampling, more groups of people). Some comments on this theme state that "*There should be conclusion, recommendation parts*", "*This is too general presentation. You should present more details of each group*". Moreover, some interesting comments point out that "*I need to know in-depth information and conclusion just one group of people. I do not need to know general results for all groups*".

Next, most participants need ‘improving graphics and style’ (n=13) (providing more stylish layout, providing a better interactive system). Some interesting comments state that “*Graphics should be animated or moved or change artwork to be more stylish*”. The following ranks are ‘simplifying the framework’ (n=12), ‘linking with mixed media’ (n=10) and ‘testing the framework’ (n=9).

From these comments, it could be summarised that participants want to change this framework by adding more details, improving graphics to be more stylish, simplifying the framework, linking with both online and offline media, and testing this framework.

- **What pieces of knowledge or factors would you suggest being included in this framework to increase diversity and motivation to Cultural Tourism?**

Table 7.17 Open-ended answers from four groups

1. Elements of framework with working examples [15]	More barriers and drivers for cultural tourism	4
	Cultural tourism taxonomy	3
	Providing practical examples of how to use the framework	3
	Details about digital storytelling	3
	Including user journey stages	2
2. Including more target groups [12]	New target groups (kids, family, pregnant women, patients)	7
	Increasing international diversity of tourists	5
3. Factor descriptions [12]	More descriptions of factors	7
	Description and criteria for each group	2
	Presenting research problems	3
4. Cultural tourism and digital storytelling examples [5]	Cultural tourism examples	3
	Digital storytelling examples	2

Table 7.17 presents comments in response to the question “What pieces of knowledge or factors would you suggest to be included in this framework to increase diversity and motivation to Cultural Tourism?”

For the first factor, participants would have liked ‘elements of the framework with working examples’ (n=15) (more barriers and drivers for cultural tourism, cultural tourism taxonomy, providing practical examples of how to use the framework, including user journey stages) to be included. Some comments state “*Present user*

journey stages for each group as a part of inclusive design”, “Adding barrier-free design principles” or “Showing how to adapt the framework in reality”.

Next, most participants would have liked ‘more target groups’ (n=12) (new target groups (kids, family, pregnant women, patients), international diversity of tourists) to be included. Some interesting comments state “Add Western/Eastern people since they might have different backgrounds and may have a different point of view in IDST”. Other factors are ‘factor descriptions’ (n=12) and ‘cultural tourism and digital storytelling’ (n=5).

- **Please mention the top three things you ‘like’ in this framework?**

Table 7.18 Open-ended answers from four groups

1. Understanding diversity [41]	Diversity and inclusion of tourist groups	15
	Rare information on diverse target groups	11
	The importance of diversity in cultural tourism	7
	Grouping tourists by demographics	5
	Usefulness of information in diversity	3
2. Clarity of information [38]	Easy for all to understand	32
	Clarity of graphics and design	3
	Making formal data understandable	3
3. Increasing knowledge [24]	Better understanding of CT	12
	New knowledge in digital storytelling	11
	New knowledge in cultural tourism	7
	New knowledge in inclusive design	4
4. Innovative and inclusive framework [21]	Innovative framework	11
	Informative framework	9
	Multilingual	1

Table 7.18 illustrates open-ended answers in response to the question “Please mention the top three things you like in this framework?” The first point is ‘understanding diversity’ (n=41) (diversity and inclusion of tourist groups, rare information in diverse target groups, the importance of diversity in cultural tourism, grouping tourists by demographics, usefulness of information in diversity). Some comments state “*I like the idea that you separated many target groups*” and “*This framework focuses on disabled people and older adults that are very rare information*”.

The next good point is ‘clarity of information’ (n=38) (easy for all to understand, clarity of graphics and design, making formal data understandable). Some interesting comments are *“The framework is very easy to understand”* and *“I can understand problems with each group easily”*. The next points are ‘Increasing knowledge’ (n=24) and ‘innovative and inclusive framework’ (n=21).

- **Please mention top three things you ‘dislike’ in this framework?**

Table 7.19 Open-ended answers from four groups

1. Complex and confusing– not for everyone [38]	Complexity of framework	17
	Not for general users	10
	A lot of technical terms	4
	Not sure where to start	4
	Difficult to understand	3
2. Lack of information and explanation [35]	Lack of clear explanation	14
	Lack of details	14
	Lack of introduction	7
3. Design and graphics problems [26]	Confusing graphics	12
	Lacks simplicity	8
	Too small fonts and too much text	6
4. Framework – requiring improvement [25]	Lack of explanation of research methodology	10
	Lacking practical examples — how to use	4
	Too long to read	4
	Needs additional target groups	4
	Unclear – process of digital storytelling	3
5. Needs testing and improvement [22]	Too theoretical and impractical	11
	Technical and financial issues of digital storytelling	8
	Need for validation	3

Table 7.19 presents the participants’ comments in response to the question “Please mention top three things you dislike in this framework?”

The first issue is ‘complex and confusing– not for everyone’ (n=38) (complexity of framework, not for general users, a lot of technical terms, not sure where to start, difficult to understand). Some comments included *“This framework requires educated people to understand, not for everyone”* and *“Usability, usefulness, accessibility and desirability, these are not common words”*.

The next issue is 'lack of information and explanation' (n=35) (lack of clear explanation, details and introduction). Some participants state "*Some technical terms should be explained*" and "*I would like to know the different between tourism and cultural tourism*".

The next issues participants do not like are 'design and graphics problems' (n=26), 'framework – requiring improvement' (n=25), 'needs testing and improvement' (n=22).

7.4 Discussion

7.4.1 RQ1: How usable is the IDST for CT framework?

This framework was evaluated through four factors, such as reaction, learning, behaviour, and results (Kirkpatrick, 1975). Overall, the framework was evaluated positively as presented below:

Reaction: Four groups of participants rate the framework in terms of 'reaction' at 5.33 (somewhat agree). This means that most participants considered this framework engaging, related to their experience, and useful in information.

Learning: Four groups of participants rate the framework in terms of 'learning' at 5.20 (somewhat agree). Most participants considered this framework as understandable, increase their understanding of cultural tourism, inclusive design and digital storytelling. Moreover, participants somewhat agree that this framework can solve problems in cultural tourism.

Behaviour: Four groups of participants rate the framework in terms of 'behaviour' at 4.85 (somewhat agree). This means that the majority of participants somewhat agree that this framework can increase diversity and motivation. Moreover, they would like to apply and introduce this framework in their work.

Results: This factor is about setting up tangible results or goals and evaluating if the framework can achieve these set goals. In this study, the goals are to increase diversity and motivation in cultural tourism. Four groups of participants rated the

framework in terms of 'results' at 5.67 (agree). The majority of participants agree that inclusive design and digital storytelling principles applied in this framework can increase diversity and motivation in cultural tourism.

The mean for the Thai digital storytelling group is the highest in every factor: reaction = 5.95 (agree); learning = 5.50 (agree); behaviour = 5.55 (agree); and results = 6.19 (agree). This means that this group considered the framework related to their work, was understandable, and that they would like to introduce this to others.

However, the Thai cultural tourism group received the lowest mean in reaction = 4.68 (somewhat agree); learning = 4.96 (somewhat agree); and behaviour = 4.18 (neutral). This means that this group is the group who least considered this framework related to their experience, cannot increase their understanding and do not recommend this framework to others.

Moreover, the International group received the lowest mean in results (5.25 = somewhat agree). This means that they are the group that least agrees this framework can increase diversity and motivation and least agrees with the statement they 'prefer to use it'.

Table. 7.20 Total mean for usability test for the four groups

Rank	Groups	Mean	SD.
1.	Thai digital storytelling group	5.95 (agree)	0.84
2.	Thai inclusive design group	5.31	0.86
3.	International group	5.37	1.19
4.	Thai cultural tourism group	4.68 (somewhat agree)	0.98
	Total	5.33 (somewhat agree)	1.08
Rank	Groups	Mean	SD.
1.	Thai digital storytelling group	5.50 (agree)	1.31
2.	Thai inclusive design group	5.24	1.00
3.	International group	5.08	0.90
4.	Thai cultural tourism group	4.96 (somewhat agree)	0.85
	Total	5.20 (somewhat agree)	1.06
Rank	Groups	Mean	SD.
1.	Thai digital storytelling group	5.55 (agree)	1.08
2.	Thai inclusive design group	4.86	1.20
3.	International group	4.78	0.911
4.	Thai cultural tourism group	4.18 (neutral)	1.04
	Total	4.85 (somewhat agree)	1.17
Rank	Groups	Mean	SD.

1.	Thai digital storytelling group	6.19 (agree)	0.65
2.	Thai inclusive design group	5.39	1.04
3.	Thai cultural tourism group	5.61	0.89
4.	International group	5.25 (somewhat agree)	1.26
	Total	5.67 (agree)	1.01
	Total for all usability test	5.26 (somewhat agree)	1.08

7.4.2 RQ2: How desirable is the IDST for CT framework?

This factor is a significant variable in design research since it can indicate if participants prefer to use this framework in reality. Four groups of participants rated the framework in terms of 'desirability' at 5.11 (somewhat agree). This means that they somewhat agree to use the framework.

The mean for the Thai digital storytelling group is the highest in desirability = 6.00 (agree). This means that this group considered the framework related to their works, was understandable, and that they would like to introduce and use this framework in reality. However, the International group received the lowest mean in desirability (4.59 = somewhat agree). This means that they are the group least likely to prefer to use it.

Table. 7.21 Total mean for desirability test for the four groups

Rank	Groups	Mean	SD.
1.	Thai digital storytelling group	6.00 (agree)	0.92
2.	Thai inclusive design group	4.86	1.39
3.	Thai cultural tourism group	4.72	1.40
4.	International group	4.59 (somewhat agree)	1.33
	Total for desirability test	5.11 (somewhat agree)	1.38

7.4.3 RQ3: Are there statistically significant differences in answers between the four groups of participants?

A one-way ANOVA between subjects was conducted to compare a significant difference between means for the four groups. Table 7.22 shows there were statistically significant effects of 'reaction, behaviour, results, and desirability' at the $p < .05$ level for the four groups. There was only one factor, 'learning', that was not statistically significant.

After using a Scheffe post hoc test to compare each group to every other group of participants, the results indicated that the Thai digital storytelling group ranked significantly higher than 1.) the Thai cultural tourism group in 'reaction'; 2.) the Thai cultural tourism group and international group in 'behaviour'; 3.) the Thai inclusive design group and international group in 'results'; and 4.) all groups in 'desirability'. This could imply that in every evaluation stage, the Thai digital storytelling group considered this framework as an important, interesting and understandable framework. Especially, in desirability, there was a statistically significant difference between all three groups. This means that the Thai digital storytelling group prefer to use this framework in reality.

Table 7.22 A one-way ANOVA to compare for significant differences between means for the four groups

Reaction	.000	p< .05	Yes
Learning	.147	p>.05	No
Behaviour	.000	p< .05	Yes
Results	.001	p< .05	Yes
Desirability	.000	p< .05	Yes

Table 7.23 Results from a Scheffe post hoc test

Reaction	Thai digital storytelling group (m=5.95) > Thai cultural tourism group (m=4.68)
Learning	-
Behaviour	Thai digital storytelling group (M=5.55) > Thai cultural tourism group (M=4.18) and international group (M=4.78)
Results	Thai digital storytelling group (M=6.19) > Thai inclusive design group (M=5.39) and international group (M=5.25)
Desirability	Thai digital storytelling group (M=6.00) > Thai cultural tourism group (M=4.72), Thai inclusive design group (M=4.86) and international group (M=4.59).

7.4.4 RQ4: What changes or additions should be made to improve IDST for CT framework?

Table 7.24 Open-ended answers about changes and additions for the IDST for CT framework

Changes or improvements	<ol style="list-style-type: none"> 1. Presenting more details [n=20] 2. Improving graphics and style [n=13] 3. Simplifying the framework [n=12] 4. Linking with mixed media [n=10] 5. Testing the framework [n=9]
New pieces of knowledge or factors	<ol style="list-style-type: none"> 1. Elements of framework with working examples [n=15] 2. Including more target groups [n=12] 3. Factor descriptions [n=12] 4. Cultural tourism and digital storytelling examples [n=5]

Regarding changes, from the first question, participants want to change this framework by adding more details, improving graphics to be more stylish, simplifying the framework, linking with both online and offline media, and testing this framework. In the future, this framework could be improved by adding details and results (i.e., demographic information, results and conclusion of the five groups from the three studies) in the additional link. Moreover, in terms of simplifying and improving graphics, it could be simplified by presenting only the basic version of the framework with animation and an interactive system. People can click on the icons to know details of what they are interested later. Furthermore, this interactive framework could be presented in a booklet as mixed media. Lastly, this study should set up a workshop to create a prototype of digital storytelling to test its practical application.

With regards to additions, from these comments, new factors that should be included are 'elements of framework' (i.e. more barriers and drivers, user journey stages, examples on how to use this framework, etc.). Some participants pointed out that they need to know more about barriers and drivers, but the framework only presents the top barriers and drivers. In addition, there should be a part to explain how to adapt the framework in reality in both academic and industry sectors. This issue matches to the previous answer that participants need to improve the framework by 'presenting more details' [n=20].

Additionally, this framework should add new target group (i.e. kids, family or international tourists, etc.) and provide descriptions of technical terms. Cultural

tourism, digital storytelling, and inclusive design are very new, academic terms. Moreover, people need to know the criteria to choose participants from the five groups.

Lastly, there should be examples of cultural tourism and digital storytelling. This is because these two terms are quite new. Many people are confused about the difference between tourism and cultural tourism. This could be better explained by using short movies and digital storytelling works. There should be an additional link or icon to click and provide real-life examples.

7.4.5 RQ5: What do participants like and dislike in the IDST for CT framework?

Table 7.25 Open-ended answers about like and dislike for the IDST for CT framework

Like in this framework	<ol style="list-style-type: none"> 1. Understanding diversity [n=41] 2. Clarity of information [n=38] 3. Increasing knowledge [n=24] 4. Innovative and inclusive framework [n=21]
Dislike in this framework	<ol style="list-style-type: none"> 1. Complex and confusing– not for everyone [n=38] 2. Lack of information and explanation [n=35] 3. Design and graphics problems [n=26] 4. Framework – requiring improvement [n=25] 5. Needs testing and improvement [n=22]

The first positive aspect is ‘understanding diversity’ received the highest mention [n=41]. This is the strong point of this framework that categorises target group of cultural tourists into five groups, especially data about disabled people and older adults. However, in terms of ‘clarity of information’ [n=38], many participants stated that it is easy to understand in both data and graphics. This contrasts with the previous question where they state that the framework is ‘complex and confusing– not for everyone’ [n=38]. Interestingly, the number of people who mention both negative and positive issues are the same [n=38]. This could suggest that some of them can understand the framework clearly, but some cannot fully understand this concept. Furthermore, people like ‘increasing knowledge’ because they can understand the definition and knowledge of three keywords, especially regarding diversity and motivation in cultural tourism. Lastly, the reason they like this is because the ‘innovative and inclusive framework’ tries to present complicated data into graphics and illustrates the links between the three areas.

In conclusion, the majority of participants need to know more details in every target group, but in a simple form.

In terms of negative aspects, the first rank relates to the complicated framework - not everyone can use it. Most of them explain that they are not familiar with the academic framework and the technical terms, especially the PhD framework. This is because some participants are from industry and students. Thus, they need simple guidelines that could be easily adapted into practical works. This issue matches the answer about improving and simplifying the framework. Moreover, from the issue 'lack of information', this study has tried to simplify the framework by avoiding adding too much data. However, due to a large amount of information in the framework, there are consequently 'design and graphics problems' that make this framework too complicated regarding the layout. Moreover, in terms of 'framework – requiring improvement' and 'needs testing and improvement', some participants need to read more details and examples on how to adapt and use it. However, a one-page framework cannot present all the information that participants require.

Thus, this framework should be improved by presenting a basic version, but hiding in-depth information in the icons. People can click to read additional details in what they are interested. Moreover, the improved future version should be a simple and clear framework, but hiding in-depth details and information in the icons.

7.5 Summary

7.5.1 Research question

RQ1: How usable is the IDST for CT framework?

RQ2: How desirable is the IDST for CT framework?

The IDST for CT framework was evaluated through five factors and received total means for:

- **Usability at 5.26 of out 7 (somewhat agree)**
- **Desirability at 5.11 out of 7 (somewhat agree)**

Furthermore, means in the five stages for all groups were: 'reaction' (5.33 = somewhat agree); 'learning' (5.20 = somewhat agree); 'behaviour' (4.85 = somewhat agree); 'results' (5.67 = agree); and 'desirability' (5.11 = somewhat agree).

The mean for the Thai digital storytelling group received the highest in every factor, especially in 'results' (6.19 = agree) and 'desirability' (6.00 = agree). However, the Thai cultural tourism group received the lowest mean in reaction (4.68 = somewhat agree), learning (4.96 = somewhat agree), and behaviour (4.18 = neutral). Moreover, the International group received the lowest mean in results (5.25 = somewhat agree) and desirability (4.59 = somewhat agree).

RQ3: Are there statistically significant differences in answers between the four groups of participants?

From the results, there were statistically significant differences for 'reaction (.000), behaviour (.000), results (.001), and desirability' (.000) at the $p < .05$ level for the four groups, but not for 'learning' (.147).

The results from the Scheffe post hoc test indicated that the Thai digital storytelling group was significantly higher than 1.) the Thai cultural tourism group in 'reaction'; 2.) the Thai cultural tourism group and international group in 'behaviour'; 3.) the Thai inclusive design group and international group in 'results'; and 4.) all groups in 'desirability'.

RQ4: What changes or additions should be made to improve IDST for CT framework?

In terms of changes, participants want to change this framework by 'presenting more details' [n=20], 'improving graphics and style' [n=13], 'simplifying the framework' [n=12], 'linking with mixed media' [n=10], and 'testing this framework' [n=9].

Regarding additions, new factors that should be included are 'elements of framework with working examples' [n=15] (i.e. more barriers and drivers, user journey stages, example of how to use this framework, etc.), 'including more target groups' [n=12] (i.e. kids, family or international tourists, etc.), providing 'factor descriptions' [n=12] and 'cultural tourism and digital storytelling examples' [n=5].

RQ5: What do users like and dislike in this framework?

The first positive aspect is ‘understanding diversity’ [n=41], ‘clarity of information’ [n=38], ‘increasing knowledge’ [n=24], and ‘innovative and inclusive framework’ [n=21].

Overall, most participants recommended having more in-depth details and data for every target group in every study, but in a simple form. The framework could be developed into a basic version, but hiding information in the icons. Therefore, users can click further information to read more about what they are interested in.

The first negative aspect is about ‘complex and confusing – not for everyone’ [n=38], followed by ‘lack of information and explanation’ [n=35], ‘design and graphics problems’ [n=26], ‘framework – requiring improvement’ [n=25], and ‘needs testing and improvement’ [n=22].

7.5.2 Study limitations

A gender imbalance

In this study, online questionnaires were sent to all participants. As a result, there was a gender imbalance in the two groups: Thai inclusive design experts and students (male: 5 and female: 17) and Thai cultural tourism experts and students (male: 6 and female: 31). Due to the limitations of an online survey, the researcher could not choose gender and couldn’t foretell who would fill out the survey, as compared to a face-to-face survey. This led to the existing male/female imbalanced ratio in the two groups.

Suggestion: further research should consider controlling the gender ratio, especially in an online survey.

Low rate of response

One of the main problems in this study was the low rate of responses in every group, especially in the Thai cultural tourism group. Robson (2011) addressed this issue by stating that a drawback of online surveys is poor response rates compared to other methods. However, Robson (2011) also suggests that researcher should apply strategies to attract a greater number of responses and improve the rate of

responses. In this study, the period of data collection was extended from one month to two months due to the low rate of survey responses, namely less than 40%.

Suggestion: To solve this problem, researchers should increase the period of time to collect online data and increase the number of participants being sent surveys.

Type of career imbalance

Due to the drawback of online surveys, there was an imbalance in type of career in every group: Thai cultural tourism group (experts: 24 and students: 13), Thai inclusive design group (experts: 19 and students: 3), Thai digital storytelling group (experts: 29 and students: 9), and International group (experts: 18 and students: 9). Although the online survey was sent to both experts and students at the same rate, the ratio was too different. However, this study sent online surveys to many groups with profiles. As a result, the researcher could not predict how many experts and students would fill out the form.

Suggestion: researchers should control some demographic data from online surveys by selecting only one target group at a time. Thus, the researcher can monitor the number of participants to match the expected rate of response.

Mobile phone format preference

This study presented an interactive framework on the website format designed to fit computer screens only. However, many participants stated that they preferred to watch the framework and fill out the online survey on their mobile phone. The majority of participants also suggested that they do not work on a computer screen all the time. In addition, some participants worked outside, not in an office. Some of them refused to complete this survey due to their limitation regarding the use of computers. Maybe the reason this study received a low rate of responses was due to these issues.

Suggestion: Further research should consider designing a framework for mobile phone format since most people prefer to use mobile phones. This could increase the rate of response to online surveys.

Chapter 8: Conclusion and further work

8.1 Key conclusion

Addressing the research question

8.2 Research aims and objectives

8.2.1 Research objective 1: To provide a better understanding of the current situation and relevant applications for three main areas: 1) cultural tourism, 2) inclusive design and 3) digital storytelling.

8.2.2 Research objective 2: To create an initial inclusive digital storytelling for cultural tourism framework.

8.2.3 Research objective 3: To develop and detail an initial inclusive digital storytelling for cultural tourism framework from three empirical studies

8.2.4 Research objective 4: To evaluate the usability and desirability of the inclusive digital storytelling for cultural tourism framework that embodies the findings from three empirical studies

8.2.5 What is known now that was not known prior to this PhD research?

8.3 Contribution to knowledge

8.3.1 Suggesting and establishing links between digital storytelling, inclusive design and cultural tourism

8.3.2 Devising and detailing a framework for inclusive digital storytelling to facilitate cultural tourism for Thai visitors in Thailand

8.3.3 Providing the tourism industry and researchers with an understanding of the trends of cultural tourism and preparing them to face new challenges by applying digital storytelling and inclusive design.

8.3.4 Academic contribution to knowledge

8.4 Implications of this thesis

8.4.1 How to use this PhD research to benefit Thailand

8.4.2 Supporting the government, tourism industry, designers, and researchers on how to use the IDST for CT framework.

8.4.3 Impacts of this framework on international tourists

8.5 Limitations

8.5.1 General limitations

8.5.2 Specific limitations

8.6 Further works

8.7 Summary

This chapter summarises the conclusions made in this PhD research addressing the research question, aim and objectives, contributions to knowledge, implications and limitations. The research aim and objectives (Section 8.2) are restated and each objective is addressed based on the key conclusions.

8.1 Key conclusion

Addressing the research question

This PhD research started by focusing on lack of diversity and motivation as one of the main problems in cultural tourism in Thailand. To address this problem, the following research question was proposed:

- **Research question:** How could inclusive design and digital storytelling principles be applied to facilitate cultural tourism in Thailand?

In this PhD research, inclusive design was applied as ‘understanding and designing for diversity’ (Waller et al., 2015). In terms of ‘understanding diversity’, this PhD research focused on a wide range of potential cultural tourists, from ‘fully able users’ to minority users with disabilities and categorised them into five different groups (youth, older adults, people with disabilities, non-cultural tourists, and cultural tourists). With regards to ‘designing for diversity’, this PhD research applied inclusive design into all studies and illustrated results in the framework, to increase diversity and inclusion in cultural tourism.

Digital storytelling was adopted as ‘a guideline to create motivation in cultural tourism’. This PhD research has centralised many general guidelines for digital storytelling into a single set of guidelines composed of 11 elements, and interviewed Thai and international experts on how to use them to increase motivation for all five groups.

To answer the research question in this PhD research, a framework for inclusive digital storytelling (IDST) for cultural tourism (CT) in Thailand was created, developed and detailed. This framework is original, since it for the first time, combines three areas, cultural tourism, inclusive design and digital storytelling.

Moreover, this framework is interdisciplinary, since it combines empirical knowledge from three studies using diverse methods (500 questionnaires, 17 expert interviews, and 50 observations), converged into one framework.

8.2 Research aims and objectives

This PhD research aimed to create, develop and evaluate a framework for inclusive digital storytelling to increase diversity and motivation for cultural tourism in Thailand. The research objectives were as follows:

1. To provide a better understanding of the current situation and relevant applications for three main areas: 1) cultural tourism, 2) inclusive design and 3) digital storytelling (Chapter 2).
2. To create an initial inclusive digital storytelling for cultural tourism framework (Chapter 2).
3. To develop and detail an initial inclusive digital storytelling for cultural tourism framework from three empirical studies (Chapters 4,5,6).
4. To evaluate the usability and desirability of the inclusive digital storytelling for cultural tourism framework that embodies the findings from three empirical studies (Chapter 7).

Table 8.1 summaries the PhD research objectives and major findings in Chapter 2,4,5,6 and 7.

Table 8.1 Research objectives and key findings for this PhD research

1. To provide a better understanding of the current situation and relevant applications for three main areas: 1) cultural tourism, 2) inclusive design and 3) digital storytelling	Literature review and analysis	2	Review and analysis of the three factors to explain their relation to each other
2. To create an initial inclusive digital storytelling for cultural tourism framework	Literature review and analysis	2	An initial IDST for CT framework is created
3. To develop and detail an initial inclusive digital storytelling for cultural tourism framework from three empirical studies	Questionnaire, interviews and observations	4,5,6	- Barriers and drivers in cultural tourism - Digital storytelling guidelines for cultural tourism - Understanding diverse audiences whilst they engage with digital storytelling
4. To evaluate the usability and desirability of the inclusive digital storytelling for cultural tourism framework that embodies the findings from three empirical studies	Online questionnaire	7	Confirmation as useful and desirable to users

8.2.1 Research objective 1: To provide a better understanding of the current situation and relevant applications for three main areas: 1) cultural tourism, 2) inclusive design and 3) digital storytelling

The first objective was to provide a better understanding of the current situation and relevant applications of three main areas of this PhD research. This objective was achieved through literature review and analysis in Chapter 2.

- **Inclusive design and cultural tourism**

Cultural tourism is considered a niche market and suffers from a lack of diversity compared to mass tourism. Moreover, the tourism industry mostly pays attention to tourists who are already interested in and motivated for cultural tourism and ignores attracting new cultural tourists. Thus, there is an opportunity to increase the diversity of potential cultural tourists. Moreover, tourists have a wide diversity and therefore variety of drivers and barriers to engage in cultural tourism, including needs, difficulties, expectations and motivations. This PhD research applied the principle of inclusive design and aimed to identify new and diverse potential cultural tourists by exploring their drivers and barriers, in order for the drivers to be further supported, and barriers to be removed.

- **Digital storytelling and cultural tourism**

At cultural sites, visitors are not motivated to engage with the stories displayed behind the exhibitions and to visit to real places. These problems highlighted a good opportunity to further facilitate cultural tourism to increase visitors' motivation using digital storytelling. However, when creating of digital storytelling content, there were no guidelines focusing specifically on cultural tourism for potential visitors, especially those older adults and people with disabilities, who were not typical target groups. Therefore, the aim of this study was to create and propose a digital storytelling guideline to motivate five diverse groups of Thai people to engage in cultural tourism.

- **Digital storytelling and inclusive design**

One of the main aspects of digital storytelling is that most content is provided in digital format. This issue led to questions about whether people (especially older adults and people with disabilities) were unfamiliar with and unable to access this form of technology. Hence, there was an opportunity to apply inclusive design to digital storytelling to understand users' needs in order to inform the industry, designers, and researchers, and to help create a system that supported a diverse range of potential users. Thus, this PhD research presented an understanding of the behaviour of five diverse potential user groups, whilst engaging with digital storytelling through digital devices.

8.2.2 Research objective 2: To create an initial inclusive digital storytelling for cultural tourism framework

The second objective was to create an initial IDST for CT framework. This objective was achieved through literature review and analysis in Chapter 2, to identify relationships, gaps, problems, and opportunities between three main fields. The analysis was summarised below:

- **Lack of diversity (inclusive design and cultural tourism):** To broaden and increase the potential market, this PhD research drew upon inclusive design principles as 'understanding and designing for diversity' by researching barriers and drivers to engaging in cultural tourism among five different groups.

- **Lack of motivation (digital storytelling and cultural tourism):** To increase tourists' motivation, this PhD research adopted digital storytelling by creating and proposing the digital storytelling guidelines to motivate all five groups to engage in cultural tourism.
- **Lack of understanding of the user's behaviour whilst watching digital storytelling (inclusive design and digital storytelling):** This PhD research applied the principle of inclusive design to understand the behaviour of five diverse groups of Thai people to observe understanding of digital storytelling at various stages.

To resolve these three main problems, a framework for inclusive digital storytelling to increase diversity and motivation for cultural tourism in Thailand was created in Figure 8.1.

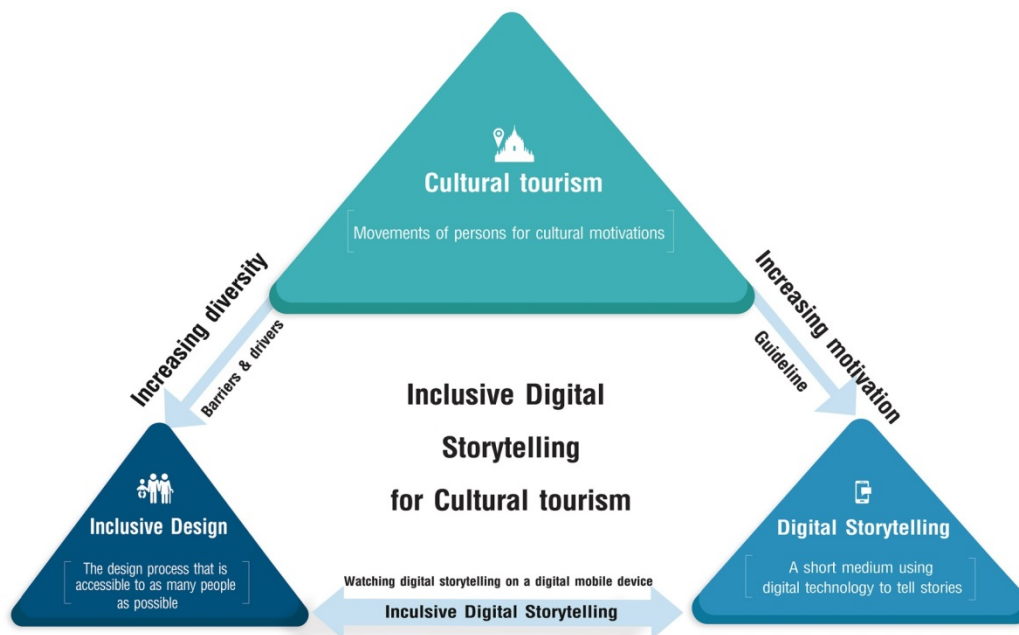


Figure 8.1 A framework for inclusive digital storytelling for cultural tourism (IDST for CT) in Thailand.

8.2.3 Research objective 3: To develop and detail an initial inclusive digital storytelling for cultural tourism framework from three empirical studies

The third objective was to develop and detail initial framework. This was achieved via three empirical studies in Chapters 4, 5 and 6. The framework was detailed based on the prescriptive stage from the DRM that aimed to develop the initial framework, by collecting empirical data and presenting the results of the relationship from three key fields. This stage (PS-1) set up three studies and reported them as follows:

Table 8.2 Three empirical studies in this PhD research

1.	Barriers and drivers in cultural tourism for five groups in Thailand	Inclusive design and cultural tourism (500 Questionnaires)	Results about barriers and drivers for five groups
2.	Constructing the digital storytelling: guideline to increase motivation in cultural tourism for five groups in Thailand	Digital storytelling and cultural tourism (17 expert interviews)	The digital storytelling guideline for five groups
3.	Inclusive digital storytelling to understand audiences' behaviour	Inclusive design and digital storytelling (50 observations)	Data for five groups in terms of reaching out and engaging with digital storytelling

Study 1: Barriers and drivers in cultural tourism for five groups in Thailand

This aim of this study was to identify barriers and drivers in cultural tourism for five groups of Thai people to answer the research question: What are the barriers and drivers in cultural tourism among five different groups? The results were presented in Table 4.9 in Chapter 4 in full detail. Figure 8.2 shows the key findings presented in the inclusive design and cultural tourism section of the framework.

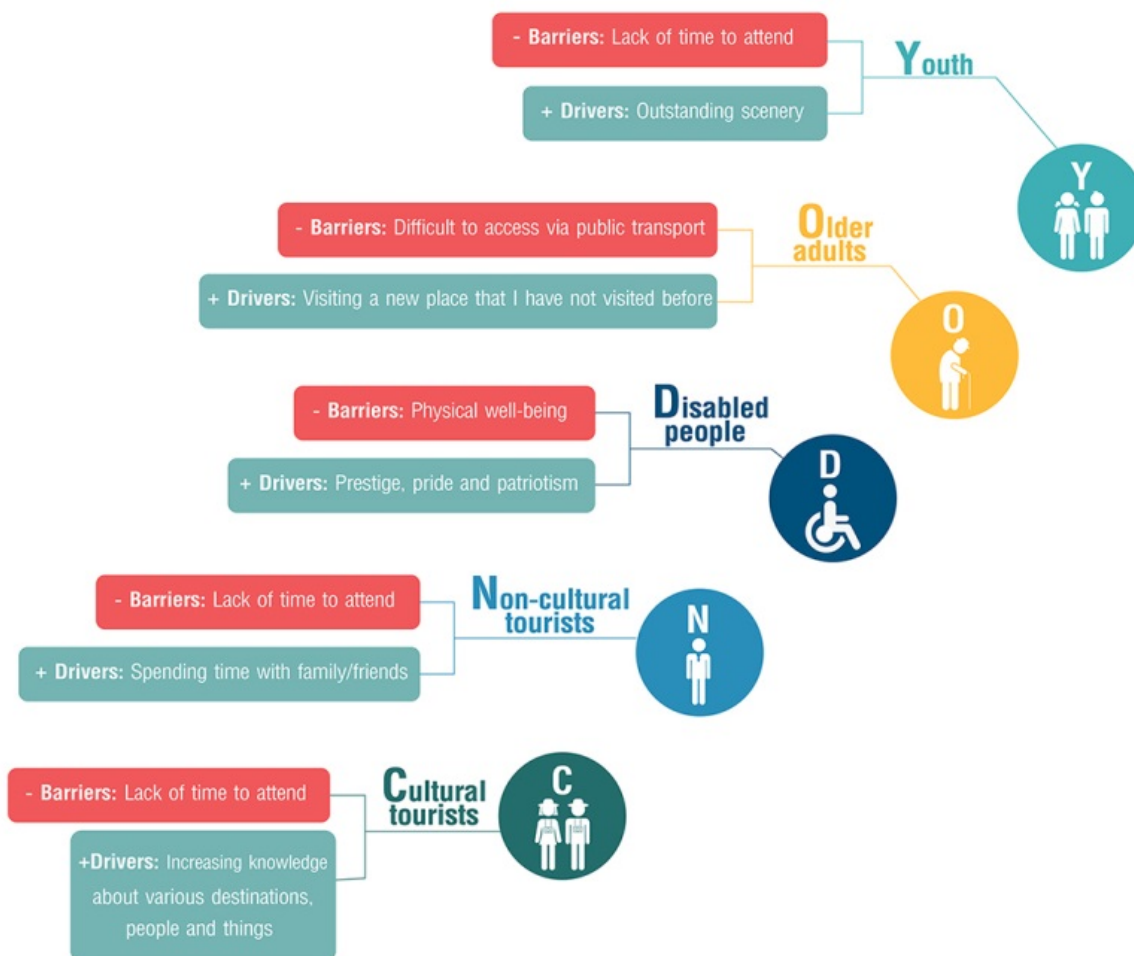


Figure 8.2 Barriers and drivers for five groups presented in Chapter 4

Key findings on barriers and drivers are also outlined below as follows.

Barriers

- 'Transportation' (e.g. difficult to access public transportation and physically difficult to get to) was common to all five groups of Thai people.
- 'Time' (e.g. a lack of time to attend and inconvenient opening hours) applied to four groups, except people with disabilities.
- 'Architectural barriers' was common to three groups (older adults, disabled people and non-cultural tourists), but did not apply to young people and

cultural tourists.

Drivers

- 'Visiting a place not visited before' applied to four groups, all except people with disabilities.
- 'Just relaxing' was common among four groups except cultural tourists.
- 'New experiences and different lifestyles' was applied to three groups except people with disabilities and cultural tourists.

These most common barriers and drivers to cultural tourism were cited by almost all groups and were considered significant issues. This means that the Thai government, tourism organisations and tourism industry designers and researchers should consider these as specific barriers and drivers in the context of Thai cultural tourism.

Study 2: Constructing digital storytelling: guidelines to increase motivation in cultural tourism for five groups in Thailand

This study aimed to create guidelines to increase Thai visitors' motivation to engage in cultural tourism using digital storytelling. Furthermore, it focused on addressing the research questions: What are the digital storytelling guidelines that focus specifically on cultural tourism? and How can the guidelines be used to motivate cultural tourism in Thailand for five different groups of Thai people? Figure 8.3 shows the key findings presented in the digital storytelling and cultural tourism section of the framework.

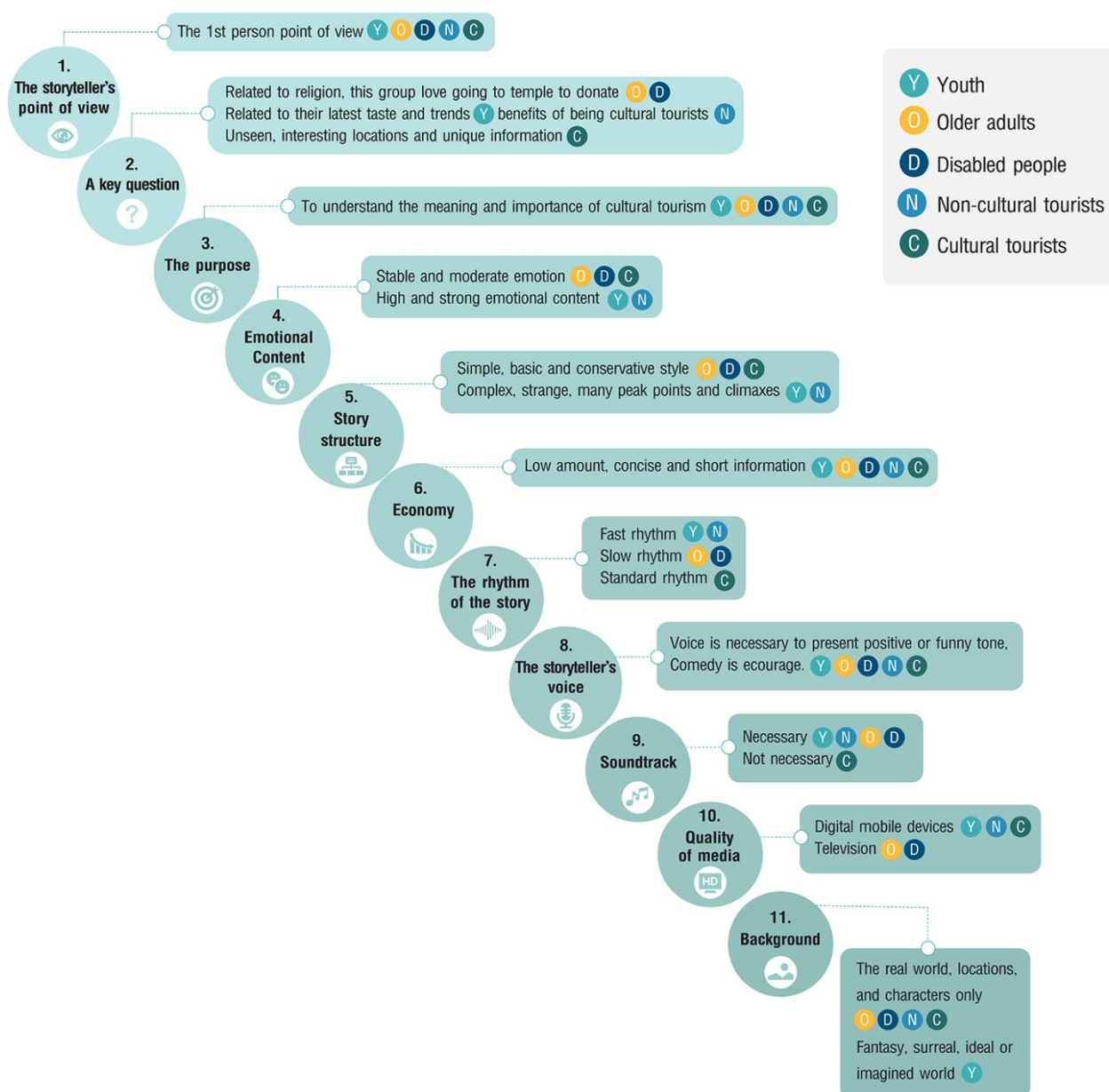


Figure 8.3 A set of guidelines to create digital storytelling for five groups presented in Chapter 5

This study converged various general digital storytelling guidelines into one single set of guidelines, which included 11 sections; 1). the storyteller's point of view; 2). a key question; 3). the core idea and purpose; 4). emotional content; 5). story structure; 6). economy; 7). the rhythm of the story; 8). the storyteller's voice; 9). soundtrack; 10). quality of media, and 11). background and characters. Consequently, 17 experts were interviewed on how to use the converged guideline

to motivate cultural tourism for five different groups in Thailand. The detailed results were presented in Table 5.6 in Chapter 5. Some key findings are outlined below. Results suggested these digital storytelling elements as significant and applicable to all five Thai groups:

- **The storyteller's point of view** – The first-person point of view
- **The core idea and purpose** – Showing the meaning and importance of cultural tourism.
- **Economy** – Simplicity and brevity.
- **The storyteller's voice** – Using the storyteller's voice to narrate.
- **Background and characters** – Presenting real locations, not fantasy.

Study 3: Inclusive digital storytelling to understand audiences' behaviour

The aim of this study was to understand diverse audiences in terms of reaching (accessibility and understanding) and engaging with (usefulness, usability, preferences) digital mobile devices. Furthermore, it focused on addressing these research questions: What are the diverse audiences' behaviour in terms of reaching and engaging with digital mobile devices? Figure 8.4 shows the key findings presented in the inclusive design and digital storytelling section of the framework. The key findings are also presented in Table 8.3.

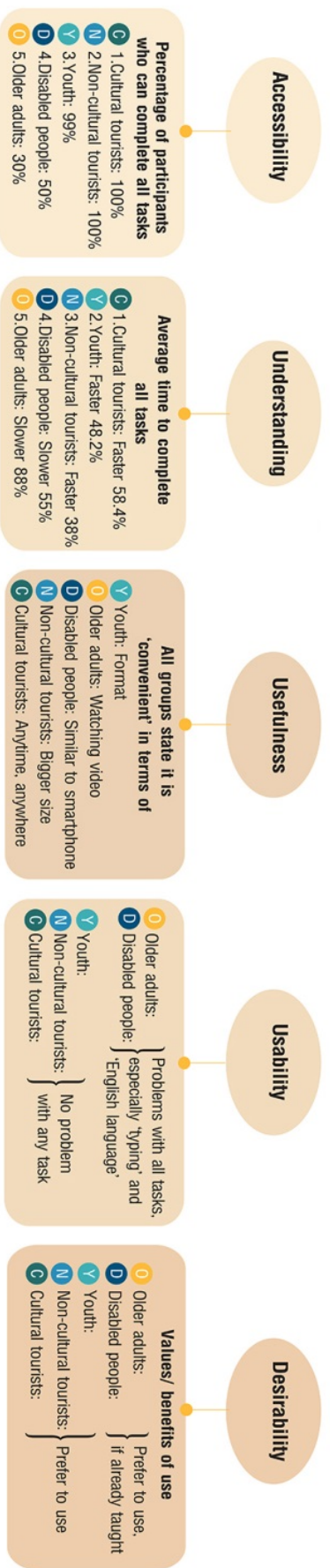


Figure 8.4 Key findings from diverse audiences in terms of reaching and engaging with digital mobile devices from Chapter 6

Table 8.3 Summary of reaching and engaging with digital storytelling from all five Thai groups

1.	Accessibility	99%	%30	%50	%100	%100
2.	Understanding	Faster than average 48.2%	Slower than average 55%	Slower than average 55%	Faster than average 38%	Faster than average 58.4%
3.	Usefulness (convenience in terms of...)	Format	Watching video	Similar to smartphone	Bigger size	Anytime, anywhere
4.	Usability	No problem with any task	Problems with all tasks, especially typing and English language barriers	Problems with all tasks, especially typing and English language barriers	No problem with any task	No problem with any task
5.	Desirability	Prefer to use	Prefer to use, if already taught	Prefer to use, if already taught	Prefer to use	Prefer to use

Some key findings in terms of accessibility, understanding and usability included: Youth, non-cultural tourists and cultural tourists had no major problems in almost all stages. However, older adults and disabled people faced various problems using digital mobile devices in terms of the accessibility, understanding and usability.

However, in terms of the desirability, all groups stated they preferred to watch digital storytelling through digital devices. Also, older adults and disabled people are willing to learn how to use digital devices, provided it is taught to them.

8.2.4 Research objective 4: To evaluate the usability and desirability of the inclusive digital storytelling for cultural tourism framework that embodies the findings from three empirical studies

The IDST for CT framework was evaluated in Chapter 7 using five factors, including reaction, learning, behaviour, results (Kirkpatrick, 1975) and desirability (McGinley, 2012). Overall, the framework was evaluated positively as presented in Table 8.4 below:

Table.8.4 Total mean from five factors for four groups

Rank	Groups	Mean	SD.
1.	Thai digital storytelling group	5.95 (agree)	0.84
2.	Thai inclusive design group	5.31	0.86
3.	International group	5.37	1.19
4.	Thai cultural tourism group	4.68 (somewhat agree)	0.98
	Total	5.33 (somewhat agree)	1.08
Rank	Groups	Mean	SD.
1.	Thai digital storytelling group	5.50 (agree)	1.31
2.	Thai inclusive design group	5.24	1.00
3.	International group	5.08	0.90
4.	Thai cultural tourism group	4.96 (somewhat agree)	0.85
	Total	5.20 (somewhat agree)	1.06
Rank	Groups	Mean	SD.
1.	Thai digital storytelling group	5.55 (agree)	1.08
2.	Thai inclusive design group	4.86	1.20
3.	International group	4.78	0.911
4.	Thai cultural tourism group	4.18 (neutral)	1.04
	Total	4.85 (somewhat agree)	1.17
Rank	Groups	Mean	SD.
1.	Thai digital storytelling group	6.19 (agree)	0.65
2.	Thai inclusive design group	5.39	1.04
3.	Thai cultural tourism group	5.61	0.89
4.	International group	5.25 (somewhat agree)	1.26
	Total	5.67 (agree)	1.01
	Total for all usability test	5.26 (somewhat agree)	1.08
Rank	Groups	Mean	SD.
1.	Thai digital storytelling group	6.00 (agree)	0.92
2.	Thai inclusive design group	4.86	1.39
3.	Thai cultural tourism group	4.72	1.40
4.	International group	4.59 (somewhat agree)	1.33
	Total for desirability test	5.11 (somewhat agree)	1.38

The IDST for CT framework was evaluated using five factors and received a total mean of 5.26 (somewhat agree) for usability and 5.11 (somewhat agree) for desirability. Furthermore, the mean in five stages for all groups were: 'reaction' at 5.33 (somewhat agree); 'learning' at 5.20 (somewhat agree); 'behaviour' at 4.85 (somewhat agree); 'results' at 5.67 (agree); and 'desirability' at 5.11 (somewhat agree).

The Thai digital storytelling group considered the framework most related to their works, understandable, and were likely to introduce and use this framework.

However, the Thai cultural tourism group considered the framework least related to their experience, and stated it could not increase their understanding and did not recommend this framework to others. Moreover, the international group was the group who agreed the least that this framework could increase diversity and motivation, and they had the least preference to use it.

The results indicated that the Thai digital storytelling expert group scored significantly higher than: 1.) the Thai cultural tourism expert group in 'reaction'; 2.) the Thai cultural tourism expert group and international group in 'behaviour'; 3.) the Thai inclusive design expert group and international expert group in 'results'; and 4.) for all expert groups in 'desirability'.

This could imply that in every evaluation stage, the Thai digital storytelling group considered this framework as important, interesting and understandable. Especially in desirability, there was a statistically significant difference from three expert groups. This means that the Thai digital storytelling group would prefer to use this framework.

8.2.5 What is known now that was not known prior to this PhD research?

Prior to this PhD research, no study has attempted to link the three areas of cultural tourism, inclusive design, and digital storytelling. Many studies that link inclusive design with tourism tend to focus on one group only (older adults or disabled individuals) in terms of accessible tourism, and do not focus on cultural tourism specifically. Moreover, research presenting digital storytelling guidelines mainly focuses on one specific group in typical areas such as education, interactive systems, or game design. Some studies have focused on digital storytelling and cultural tourism, but exclude certain groups, particularly older adults and disabled individuals. Furthermore, several research pieces have studied the behaviour of older adults using digital mobile devices, but also emphasise only one group, and do not focus on digital storytelling.

- **The relationships between the three areas**

This PhD research presents the relationships between three factors and presents the following: (1) barriers and drivers for five diverse groups of potential Thai cultural tourists in order to increase diversity; (2) a set of guidelines for digital storytelling in cultural tourism to motivate five groups; (3) an understanding of five diverse groups in terms of their reaching out to and engaging with digital mobile devices to help create a system that supports all

users, and that informs the industry, designers, and researchers accordingly. These data will be useful for solving two main problems in cultural tourism, i.e. a lack of diversity and motivation.

- **The newly created framework**

Prior to this PhD research, no specific framework has been designed that combines the above noted three areas, or that suggest how to solve the primary issues in cultural tourism. This research offers a theoretically and empirically informed structure (the framework) that is interdisciplinary (combining three distinct disciplines) and original. This is because the framework was constructed from three studies, adopting both qualitative and quantitative methods (500 questionnaires, 17 expert interviews, and 50 observations), with subsequent results being implemented into the final framework.

8.3 Contribution to knowledge

8.3.1 Suggesting and establishing links between digital storytelling, inclusive design and cultural tourism

This PhD research has identified, explored and further informed a triadic relationship between three distinctive disciplines i.e. cultural tourism, inclusive design and digital storytelling, through a theoretically and empirically informed approach.

Through linking the problems and opportunities in cultural tourism, inclusive design and digital storytelling, a link between these three areas was identified. This link was further explored and detailed between each of the two areas through separate studies. Consequently, the link between all three areas was established and further evaluated. The context for the identification, exploration and detailing of this triadic relationship, was cultural tourism for Thai people in Thailand.

The three links established, offer novel and original knowledge as follows:

- **Inclusive design and cultural tourism** – presents barriers and drivers for five diverse groups of potential cultural tourists.
- **Digital storytelling and cultural tourism** – illustrates a set of guidelines for digital storytelling in cultural tourism to motivate five diverse groups.

- **Digital storytelling and inclusive design** – provides understanding of five diverse groups in terms of their reaching for and engaging with digital mobile devices.

In terms of inclusive design and cultural tourism, there is a lack of diversity in cultural tourism. This problem can lead to several issues, such as a weaker economy in the local area, less social engagement of local people, and a reduction in financial support from the government. Thus, this PhD research applied inclusive design principles to identify a diverse range of potential tourists and explore their barriers and drivers to cultural tourism, in order to increase diversity.

Regarding digital storytelling and cultural tourism, there is a lack of motivation for tourists to engage with the stories related to cultural features. This could be due to lack of understanding, appreciation, entertainment or enjoyment of these stories. Therefore, this PhD research applied digital storytelling as a guideline to motivate five diverse groups of cultural tourists to better engage with cultural tourism.

In terms of digital storytelling and inclusive design, digital storytelling is available in digital formats only, which could pose a barrier for a diverse group of people for various reasons. Therefore, this PhD research investigated the concept of inclusive digital storytelling to understand users' needs in order to help create a system that supports all users, and to inform the industry, designers, and researchers accordingly.

8.3.2 Devising and detailing a framework for inclusive digital storytelling to facilitate cultural tourism

The main contribution of this PhD research, the inclusive digital storytelling (IDST) framework for cultural tourism (CT), is an original and interdisciplinary contribution to knowledge. The IDST framework, for the first time links and combines three distinctive and diverse disciplines and areas of research in an attempt to offer a theoretically and empirically informed structure (i.e. the framework) in order to facilitate a specific topic (i.e. cultural tourism), within a specific context i.e. for Thai people in Thailand.

The new IDST for CT framework resulting from this PhD research is interdisciplinary, since it connects and converges three distinct disciplines and areas of research in an attempt to address key issues in cultural tourism i.e. lack of diversity and motivation. This framework integrates theoretical knowledge from all three key fields and combines it with empirical knowledge from three studies using diverse methods (500 questionnaires, 17 expert interviews, and 50 observations), converged into one framework. The framework presents inclusive design to broaden the diversity of cultural tourists and digital storytelling to increase the motivation of cultural tourists. Moreover, it presents the issues between inclusive design and digital storytelling as lack of understanding of user' behaviour while engaging with digital storytelling.

The new IDST for CT framework resulting from this PhD research is original, since it for the first time, combines three fields i.e. cultural tourism, inclusive design and digital storytelling. The IDST framework investigates cultural tourism through inclusive design by identifying barriers and drivers of five diverse groups of potential cultural tourists. It also presents guidelines for digital storytelling, focusing mainly on cultural tourism for five diverse groups. Furthermore, it illustrates an understanding of five diverse groups of users when engaging with digital storytelling. No such studies or triadic framework existed prior to this PhD research.

8.3.3 Providing the tourism industry and researchers with an understanding of the trends of cultural tourism and preparing them to face new challenges by applying digital storytelling and inclusive design.

The literature review from Chapter 2 stated that most of the tourism industry seems to ignore disabled people and older adults and considers them as a general group (Shaw and Coles, 2004). However, in the future, the tourism industry will be saturated and in high competition. This means that the tourism industry should target new customers that have currently been overlooked.

Moreover, the average age of the world population is increasing, and is predicted to continue increasing, whilst people are also living longer and are becoming healthier and wealthier. In 2050, the number of ageing people will reach approximately 22 per cent of the world's population (Magnus, 2009). Regarding people with disabilities,

Ozturk, Yayli and Yesiltas (2008) suggest that this group is significant since they are very loyal customers and tend to come back to the places that are suitable for their accessibility. Consequently, opening up this tourism market can result in a higher income for the tourism industry (Arellano, 2003).

Therefore, this is the opportunity to apply inclusive design into the area of cultural tourism. This is because it aims to make products, services and environments accessible to the widest range of users possible, irrespective of impairment, age, or capability (British Standards Institute, 2005; Langdon, Persad and Clarkson, 2008). This study adopts the concept of inclusive design for cultural tourism to understand the barriers and drivers of all potential audiences of cultural tourism through research and to engage diverse and different groups in cultural tourism, which is presented in Chapter 4. Therefore, the industry may be better able to recognise the significance of neglected groups and increase accessibility and inclusivity for these potential customers.

In terms of digital storytelling in the future, the tourism industry, museums and cultural sites will tend to further develop technology to present the data more interactively and realistically to deliver a successful visitor experience (i.e. virtual museums, virtual presentations, applications, websites, games, interactive presentations, etc.). As a result, digital storytelling is imperative to attract both researchers and general tourists, using a range of presentation techniques (i.e. plots, characters, conflict, and soundtracks) that are not hard-sell advertising (Miller, 2012; Alcantud et al., 2014; Wexler et al., 2014).

Moreover, digital storytelling can present physically inaccessible places (i.e. those that are too expensive to visit, too inhospitable, too far away, too fragile, too dangerous, or no longer exist) and offer inclusive accessibility in multiple languages (Paquet and Viktor, 2005; Wither et al., 2010; Pujol et al., 2012; Keil et al., 2013; Floch and Jiang, 2015).

Therefore, digital storytelling in cultural tourism, through increasing motivation, seems to be the new trend in tourism. However, the key is how to apply and integrate the latest technologies effectively with good, simple content that can be reused on many platforms in the future. The guidelines to create digital storytelling

for cultural tourism presented in Chapter 5 are necessary for future trends in cultural tourism.

8.3.4 Academic contribution to knowledge

The academic data presented in this PhD research can serve as the groundwork for future studies on cultural tourism, inclusive design, and digital storytelling, as it presents a set of barriers and drivers for potential tourists, a set of guidelines for creating digital storytelling works, designed by experts, and a set of user requirements for watching digital storytelling, sourced from five groups of viewers. Hence, this research contributes to the academic body of knowledge and combines data collected from tourists, as well as from experts presenting different research methods (survey, interview, and observation). This PhD research produced a range of academic contributions to knowledge, including the following.

- 1). Presenting a set of barriers and drivers for cultural tourism in Thailand from five groups, which researchers can apply and adopt, and a process for categorising all potential cultural tourists. Prior to this study, a set of requirements (e.g., barriers, drivers, needs, suggestions) about cultural tourism in Thailand never exist, particularly for specific groups (i.e., older adults and individuals with disabilities). The majority of research in this area focuses on management and archeology in tourism. Moreover, this study adopted the concept of inclusive design to increase diversity, by categorising potential cultural tourists into five groups, the criteria of which other studies can apply in future research to identify tourism needs.
- 2). Creating digital storytelling guidelines to increase motivation in cultural tourism. Prior to this study, most research in this field have emphasised how to use digital storytelling in classrooms, or the use of interactive systems, entertainment, or game design. Some studies have focused on cultural tourism (e.g., online museums, applications), but have focused mainly on one group as representative of cultural tourists. The current study created a set of guidelines to create digital storytelling works for five groups. Hence, other studies can apply the data of the present research to create digital storytelling works that match user needs, particularly in the case of older adults and individuals with disabilities, for whom there is currently limited information available.
- 3). Presenting user behaviour, exhibited while watching digital storytelling. Prior to this study, most studies have focused on only one group (primarily older adults) when testing digital mobile devices. However, this study presents a set of user requirements from five groups of

potential cultural tourists. This was effected by creating 11 users' journey stages in a bid to observe user behaviour. Hence, other studies can adopt these user journey stages and the requirements of the five groups to their own studies. Importantly, the present study highlights the likes and dislikes of users in terms of watching digital storytelling. The tourism industry can apply the data in this area, as presented in the current research, to develop digital storytelling work that match user needs.

8.4 Implications and impacts of this thesis

8.4.1 How to use this PhD research to benefit Thailand

- **Digital inclusion in Thailand:**

For Thai older adults and those with disabilities, digital technology is a significant barrier. However, the finding of this PhD research (Chapter 6) suggests that Thai disadvantaged users (people with disabilities and older adults) are willing to learn and use such technology in their everyday lives as a way of maintaining digital inclusion. Findings from the study could help remove and reduce these digital barriers.

- **Insights into five key audiences of cultural tourism in Thailand**

These Thai five groups can be targeted more effectively if the Thai tourism industry can present and develop advertising campaigns that counter the different barriers and reflect the various drivers of each group.

- **Digital storytelling guideline for Thai cultural places**

In the future, the Thai tourism industry, museums and cultural sites will tend to develop more high technology interactions in order to present the data more realistically and attractively. This PhD research creates a new digital storytelling guideline (Chapter 5) for five Thai groups representing specifically the motivation for cultural tourism in Thailand.

- **Thai local public engagement**

This PhD research could support Thai local people in creating and sharing stories about their hometowns, lifestyle, social values and local identity. Hence, members of any Thai locality could be trained in workshops by adapting and adopting this

guideline to create simple digital stories from their personal ideas to attract visitors to cultural places and understand local lifestyles.

- **Training and familiarising Thai older adults and people with disabilities**

The total number of Thai older adults and disabled people who could complete the task of using iPad to watch digital storytelling movies increased double from round 1 to round 2 after they were taught. These groups are well capable of developing their digital skills – if well taught and induced.

8.4.2 Supporting the government, tourism industry, designers, and researchers on how to use the inclusive digital storytelling for cultural tourism framework

This PhD research can benefit both areas of research (CT, DST and ID researchers) and practice (the government, tourism industry, designers). The IDST for CT framework could be used by several groups as follows:

- **Researchers:** The triadic relationship of the three fields, and the theoretically and empirically informed results presented in the framework regarding barriers and drivers, guidelines to digital storytelling and users' behaviour regarding digital devices can benefit researchers and be inform new research.
- **Tourism industry:** The framework could be used to understand the potential for diversifying cultural tourists, especially including disabled people and older adults who are currently marginalised groups. Focusing on new groups of customers could lead to market differentiation by targeting new customers overlooked by their competitors. DST principles could help inform decision making and developments regarding digital marketing, advertisement and curation.
- **Thai government:** Transportation was identified as a common key barrier to all five potential visitor groups. Moreover, architectural barriers were identified as significant older adults, people with disabilities and non-cultural tourists). This will need infrastructure investment, planning and support for the government. Building on the insights form this PhD research, it is suggested that Thailand should establish a Thai Disability Act to provide and support

accessibility and inclusivity for people with disabilities and older adults.

- **Designers, directors and screenwriters:** Designers, especially user experience (UX) designers can apply this framework to create both non-interactive and interactive applications or websites. The results from all three key areas could be used to understand user barriers and drivers and user behaviour in digital storytelling. Moreover, the framework could be used as a design process guideline to support communications between designers, marketers and clients. Directors and screenwriters can similarly use the results to understand barriers and drivers to target groups and digital storytelling guidelines to create stories that match with audiences' capabilities and expectations, especially people with disabilities and older adults, who most directors state they had no previous experience of working with.

8.4.3 Impacts of this framework on international tourists

This framework was originally designed to attract Thai tourists only, using data distributed to Thai respondents in three studies. However, this framework can be applied to attract international tourists as well, particularly youth, older adults, and people with disabilities, by understanding barriers and drivers, guidelines for creating digital storytelling, and understanding user behaviour while they are engaged in watching digital storytelling. In terms of older adults and people with disabilities, the user requirements of Thai and international groups are not entirely different; they share some aspects and requirements, e.g., ramps, an accessible environment, experience using digital devices, and trends and styles when watching movies and listening to music. Moreover, in the case of youth, currently, trends change globally and rapidly due to the presence of the Internet and social media. This means that youth throughout the world tend to share the same interests as a result of watching the latest Hollywood films, or because they are exposed to new trends on social media (e.g., YouTube, Facebook, and Instagram). However, cultural tourists have specific requirements and trends individually. Additionally, cultural differences and interests also exist. Non-cultural tourists comprise the largest group with different interests, and these can be extremely broad. It can be difficult to identify what they require within an international scope. Hence, this framework can be applied to attract

some groups of international tourists (youth, older adults, and disabled individuals), but will not be as useful in the context of cultural and non-cultural tourists.

8.5 Limitations

This PhD research aimed to create, develop and evaluate a framework for inclusive digital storytelling to increase diversity and motivation for cultural tourism in Thailand. For this aim, four empirical studies were set up. Each of the empirical studies had limitations and this was discussed in previous chapters. However, this section presents a summary to understand the overall and specific limitations and suggestions for this PhD research.

8.5.1 General limitations

- **A gender imbalance**

This PhD research did not control the participant gender ratio due to volunteer-based recruitment throughout all studies. As a result, there was an issue regarding gender imbalance in two studies. For example, in Chapter 4, there was a gender imbalance in four groups: young people (male: 37 and female: 63), older adults (male: 36 and female 64), people with disabilities (male: 66 and female: 34), non-cultural tourists (male: 34 and female: 59). Moreover, in Chapter 7 – evaluation stage, there was a gender imbalance in two groups: the Thai inclusive design experts and students (male: 5 and female: 17) and the Thai cultural tourism experts and students (male: 6 and female: 31). This could generally imply that more Thai women tended to agree to participate in the studies than men. Thus, further studies should consider controlling the gender ratio to balance the rate of participant gender.

- **Access**

Two studies (Chapters 4 and 6) were set up in official government locations. The processes (i.e. sending the questionnaire to be approved, research plans and official letters) took around two months. Especially in the case of one specific Disabled Foundation, the proposal and questionnaires had to be further approved by a psychologist and a government representative. During the survey (Chapter 4) and

observations (Chapter 6), psychologists were also accompanying the researchers and staff to observe. Thus, for a researcher to set up a study in an official place in Thailand, they must expect and be prepared for a rather long preparation and approval process.

- **Misunderstanding and lack of familiarity with technical terms**

There were some technical terms in the three empirical studies that participants could not understand. This sometimes led to refusal to participate. In specific, Chapter 4 presented ‘inclusive design’ and ‘cultural tourism’; Chapter 5 presented ‘digital storytelling’ and ‘cultural tourism’; and Chapter 7 proposed all three technical terms. Therefore, the researcher had to clearly explain the terms and provide useful and relevant examples. Hence, to increase the rate of acceptance, the researcher should provide very clear definitions of technical terms and examples in emails and on the questionnaire.

8.5.2 Specific limitations

Limitations specific to each study conducted in this PhD research, are presented in Table 8.5 below.

Table 8.5 Limitations in the four empirical studies

1.	Likert scaling questionnaire Many of the disabled people and older adults said they were not familiar with the scaling answer.	The researcher recommends avoiding complicated ways of answering for older adults and disabled people.
	Access The survey was set up in several official government locations, which were approved in two months.	The researcher recommends sending an official cover letter and questionnaire early.
	Limited use in Thailand The study was taken from the city of Bangkok in Thailand. Thus, the research was limited to one urban area within the country.	Further research should be conducted in other rural and urban areas in Thailand.
	A gender imbalance Due to a volunteer-based survey, there was a gender imbalance in four groups: young people (male: 37 and female: 63), older adults (male: 36 and female 64), people with disabilities (male: 66 and female: 34), non-cultural tourists (male: 34 and female: 59)	Further research should consider gender and control it to balance both genders.

2.	<p>Misunderstanding in digital storytelling Many interviewees refused to join the study, stating that they did not know the term 'digital storytelling'.</p>	The researcher recommends providing the definitions for any technical terms in the email sent to interviewees.
	<p>Interviewees – a lack of experience with some groups Sometimes experts refused to give suggestions for the groups they had never worked with (i.e. older adults and disabled people).</p>	The researcher recommends the provision of details, data and/or results for interviewees, especially when it comes to certain specific information.
	<p>Limited use with Thai users This guideline was originally created to target Thai audiences. Moreover, out of the 17 experts interviewed, 13 were Thai and 4 were international.</p>	The researcher recommends other studies to create their own guidelines for the specific topics they wish to use.
3.	<p>Internet connection Older adults and disabled people participants lived in the suburbs of Bangkok; an area with an unstable internet connection. Consequently, the iPad screen was generally choppy and occasionally froze for a while when the participants were watching the video.</p>	The researcher recommends that all participants be observed in controlled areas that have Wi-Fi.
	<p>Low educational levels for some groups The demographic profiles reveal that five of the disabled people and one of the older adults had received no education. This factor may lower the overall observation scores for these two groups.</p>	The researcher recommends contacting schools or part-time courses for disabled people and older adults rather than the government foundation.
	<p>The length of video and animation was too long This study used a video that was 5.21 minutes in length and an animation that lasted 3.51 minutes. However, some participants, especially older adults and disabled people, suggested that the videos were too long and boring. Moreover, some participants (cultural tourists, the youth, non-cultural tourists) refused to join due to its length.</p>	The researcher recommends choosing videos and/or animations that are as short as possible when observing older adults and disabled groups.
	<p>Low acceptance rate for the observation When participants knew that the whole process would take around 30 to 60 minutes, and that they would be recorded by two video cameras, the majority refused.</p>	The researchers should set up the whole process so that it takes as little time as possible. Another option is to increase the number of vouchers offered.
4.	<p>A gender imbalance Online questionnaires were sent to all participants. As a result, there was a gender imbalance in two groups as: Thai inclusive design experts and students (male: 5 and female: 17) and Thai cultural tourism experts and students (male: 6 and female: 31).</p>	Further research should consider controlling the gender ratio, especially in online surveys.
	<p>Low rate of response One of the main problems in this study was low rate of responses in every group, especially Thai cultural tourism group.</p>	Researchers should increase the period to collect online data and increase the number of participants who it will be sent to.
	<p>Type of career imbalance There was imbalance in the type of career in every group: Thai cultural tourism group (experts: 24 and students: 13), Thai inclusive design group (experts: 19 and students: 3), Thai digital storytelling group (experts: 29 and students: 9) and International group (experts: 18 and students: 9). Although, the online survey was sent to both experts and</p>	Researchers should collect data from online surveys using only one target group at a time. Thus, the researcher can monitor the number of participants that match the expected rate or not.

students at the same rate, the ratio was too different.

Mobile phone format preference

So many participants stated that they prefer to watch the framework and fill out the online survey on a mobile phone.

Further research should consider designing a mobile phone format as most people prefer to use a mobile phone to do everything. This could increase the rate of response online.

8.6 Further work

1. Comparative studies in other regions in Thailand

Due to limited samples set up in the capital city, Bangkok, the results of this framework are of limited use to other countries. Moreover, the results are not representative of all Thai people. Especially, in the case of Thailand, the country is composed of five parts (north, north-east, centre, east and south). It is difficult to apply the findings on barriers, drivers and behaviours whilst watching digital storytelling to other areas that may have different cultural, socio-demographic or economic contexts. Comparative studies should also be set up in the remaining four areas of Thailand, to compare these results with other areas. This would help assess universal validity and practicality of the results of this framework in other contexts.

2. Comparative studies between Thai cultural tourists and international tourists in Thailand

The framework was intentionally created to attract Thai tourists to visit cultural places in Thailand only. Thus, further work should include new groups, especially international tourists in Thailand to extend the use of this framework to international visitors.

3. Including more target groups

In the evaluation stage, most participants stated that the positive aspect of this framework is the 'understanding diversity', which received the highest mention [n=41]. This is the strong point that classifies the target group of cultural tourists into five groups, especially data about disabled people and older adults. However, they commented that this framework should 'include more target groups' [n=12] (i.e. children, family or international tourists, etc.).

4. Detailing more results of the framework

In the evaluation, most participants recommended that the framework should be improved by 'presenting more details' [n=20] and 'improving graphics and style' [n=13]. They needed details of each study for every group (i.e. all barriers and drivers for all groups and full guidelines for the five groups) and needed a stylish layout and interactive graphic design. While the focus of this PhD research has been on devising the 'content' of the framework. Further studies could focus on devising the 'presentation' of the framework and its content and apply this concept to design a way to properly present the full range of formal information using an interactive system.

5. Setting up workshops with users to test this framework

From Chapter 7, the evaluation, participants recommended that the framework 'needs testing and improvement' [n=22]. They stated that the framework is rather theoretical and not specifically practical. More support was needed to know how to apply this framework in practice. Therefore, further studies should be conducted; setting up workshops with real target users (digital storytelling, inclusive design and cultural tourism experts), and adopting this framework in real-world scenarios and evaluate the findings.

6. Setting up workshops for local Thai people

One advantage of digital storytelling is the ability to create non-professional work with low-budget equipment. Thus, everyone can create their own stories using this framework. Further studies should set up workshops to train local people how to create and share their stories of their local area using this framework. Consequently, the research should identify areas and aspects to develop the framework to work in accordance with non-professional users' needs.

8.7 Summary

This PhD research focused on two main problems of cultural tourism: lack of diversity and lack of motivation. To address these issues, cultural tourism for Thai people in Thailand was chosen as the context and the following research question

was proposed: How could inclusive design and digital storytelling principles be applied to facilitate cultural tourism in Thailand? Four empirical studies were carried out in order to address the four objectives below:

1: To provide a better understanding of the current situation and relevant applications for three main areas: 1) cultural tourism, 2) inclusive design and 3) digital storytelling.

- **Inclusive design and cultural tourism:** this PhD research adopted the principle of inclusive design as ‘understanding and designing for diversity’ by identifying new potential cultural tourists and exploring their drivers and barriers.
- **Digital storytelling and cultural tourism:** there are no guidelines for digital storytelling focusing on cultural tourism. Therefore, the aim of this study was to create and propose a digital storytelling guideline to motivate five diverse groups to engage in cultural tourism.
- **Digital storytelling and inclusive design:** there is an opportunity to apply inclusive design to digital storytelling to create a system that supports and engages diverse groups of users. Thus, this study aimed to understand the behaviours of five diverse groups of users whilst engaging with digital storytelling on digital devices.

2: To create an initial inclusive digital storytelling for cultural tourism framework

This objective was achieved through literature review and analysis in Chapter 2 to identify relationships, gaps, problems, and opportunities between three main fields: 1.) lack of diversity (inclusive design and cultural tourism); 2.) lack of motivation (digital storytelling and cultural tourism); and 3.) lack of understanding of user behaviour whilst engaging with digital storytelling (inclusive design and digital storytelling). To address these, an initial IDST for CT framework was created and presented in Figure 8.1.

3: To develop and detail an initial inclusive digital storytelling for cultural tourism framework from three empirical studies

This objective was achieved in Chapters 4, 5 and 6. Three empirical studies were planned and conducted, summarised in Table 8.6.

Table 8.6 Three empirical studies in this thesis

1.	Barriers and drivers in cultural tourism for five groups in Thailand	Inclusive design and cultural tourism (500 Questionnaires)	Results on barriers and drivers for five groups
2.	Constructing the digital storytelling: guideline to increase motivation in cultural tourism for five groups in Thailand	Digital storytelling and cultural tourism (17 expert interviews)	The digital storytelling guidelines for five groups
3.	Inclusive digital storytelling to understand audiences' behaviour	Inclusive design and digital storytelling (50 observations)	Data for five groups in terms of reaching out and engaging with digital storytelling

4: To evaluate the usability and desirability of the inclusive digital storytelling for cultural tourism framework that embodies the findings from three empirical studies

The IDST for CT framework was evaluated in Chapter 7 using five factors including reaction, learning, behaviour, results (Kirkpatrick, 1975) and desirability (McGinley, 2012).

- Total mean for 'usability' was 5.26 out of 7 (somewhat agree) and 5.11 out of 7 (somewhat agree) for 'desirability'.
- Thai digital storytelling expert group received the highest mean in every factor, especially in 'results' and 'desirability'.
- Thai cultural tourism expert group received the lowest mean in 'reaction', 'learning' and 'behaviour'.
- International expert group received the lowest mean in 'results' and 'desirability'.

In conclusion, this PhD research has made three contributions to knowledge, outlined below:

1. Suggesting and establishing links between digital storytelling, inclusive design and cultural tourism.
2. Devising and detailing a framework for inclusive digital storytelling to facilitate cultural tourism

3 Providing the tourism industry and researchers with an understanding of the trends of cultural tourism and preparing them to face new challenges by applying digital storytelling and inclusive design

Further work will focus on comparative studies in other regions in Thailand, including International tourists, including more target groups, further detailing the results of the framework, designing the 'presentation' of the framework, setting up workshops with target users to evaluate the framework in real-world contexts and applications, and setting up workshops for local Thai people.

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Appendix A1: Research ethics

Barriers and Drivers in Cultural Tourism for Five Groups in Thailand – mentioned in Chapter 4



College of Engineering, Design and Physical Sciences Research Ethics Committee
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 UB8 3PH
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 www.brunel.ac.uk

9 November 2015

LETTER OF APPROVAL

Applicant: Mr. Kittichai Kasemsarn
 Project Title: Study 1 Barriers and Drivers
 Reference: 0918-LR-Nov/2015-351

Dear Mr. Kittichai Kasemsarn

The Research Ethics Committee has considered the above application recently submitted by you.

The Chair, acting under delegated authority, is satisfied that the amendments accord with the decision of the Committee and has agreed that there is no objection on ethical grounds to the proposed study. Approval is given on the understanding that the conditions of approval set out below are followed:

- The agreed protocol must be followed. Any changes to the protocol will require prior approval from the Committee.
- The Research Ethics Committee highly recommends that you complete the Ethics Training via Blackboard Learn prior to commencing your research project.

Please note that:

- Research Participant Information Sheets and (where relevant) flyers, posters, and consent forms should include a clear statement that research ethics approval has been obtained from the relevant Research Ethics Committee.
- The Research Participant Information Sheets should include a clear statement that queries should be directed, in the first instance, to the Supervisor (where relevant), or the researcher. Complaints, on the other hand, should be directed, in the first instance, to the Chair of the relevant Research Ethics Committee
- Approval to proceed with the study is granted subject to receipt by the Committee of satisfactory responses to any conditions that may appear above, in addition to any subsequent changes to the protocol.
- The Research Ethics Committee reserves the right to sample and review documentation, including raw data, relevant to the study.
- You may not undertake any research activity if you are not a registered student of Brunel University or if you cease to become registered, including abeyance or temporary withdrawal. As a deregistered student you would not be insured to undertake research activity. Research activity includes the recruitment of participants, undertaking consent procedures and collection of data. Breach of this requirement constitutes research misconduct and is a disciplinary offence.

Professor Hua Zhao

Chair

College of Engineering, Design and Physical Sciences Research Ethics Committee
 Brunel University London

Appendix A2: Research ethics

Constructing the Digital Storytelling: Guideline to Increase Motivation in Cultural Tourism for Five Groups in Thailand – mentioned in Chapter 5



College of Engineering, Design and Physical Sciences Research Ethics Committee
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27 July 2016

LETTER OF APPROVAL

Applicant: Mr. Kittichai Kasemsarn

Project Title: Guidelines of Digital Storytelling

Reference: 3448-LR-Jul/2016- 3558-1

Dear Mr. Kittichai Kasemsarn

The Research Ethics Committee has considered the above application recently submitted by you.

The Chair, acting under delegated authority has agreed that there is no objection on ethical grounds to the proposed study. Approval is given on the understanding that the conditions of approval set out below are followed:

- The agreed protocol must be followed. Any changes to the protocol will require prior approval from the Committee by way of an application for an amendment.
- No research data collected prior to this ethical approval should be included in your research.

Please note that:

- Research Participant Information Sheets and (where relevant) flyers, posters, and consent forms should include a clear statement that research ethics approval has been obtained from the relevant Research Ethics Committee.
- The Research Participant Information Sheets should include a clear statement that queries should be directed, in the first instance, to the Supervisor (where relevant), or the researcher. Complaints, on the other hand, should be directed, in the first instance, to the Chair of the relevant Research Ethics Committee.
- Approval to proceed with the study is granted subject to receipt by the Committee of satisfactory responses to any conditions that may appear above, in addition to any subsequent changes to the protocol.
- The Research Ethics Committee reserves the right to sample and review documentation, including raw data, relevant to the study.
- You may not undertake any research activity if you are not a registered student of Brunel University or if you cease to become registered, including abeyance or temporary withdrawal. As a deregistered student you would not be insured to undertake research activity. Research activity includes the recruitment of participants, undertaking consent procedures and collection of data. Breach of this requirement constitutes research misconduct and is a disciplinary offence.

Professor Hua Zhao
 Chair
 College of Engineering, Design and Physical Sciences Research Ethics Committee
 Brunel University London

Appendix A3: Research ethics

Inclusive digital storytelling to understand audiences' behaviour – mentioned in Chapter 6



College of Engineering, Design and Physical Sciences Research Ethics Committee
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27 July 2016

LETTER OF APPROVAL

Applicant: Mr. Kittichai Kasemsarn
 Project Title: Inclusive Digital Storytelling to Increase Audiences' Motivations
 Reference: 3451-LR-Jul/2016- 3559-1

Dear Mr. Kittichai Kasemsarn

The Research Ethics Committee has considered the above application recently submitted by you.

The Chair, acting under delegated authority has agreed that there is no objection on ethical grounds to the proposed study. Approval is given on the understanding that the conditions of approval set out below are followed:

- The agreed protocol must be followed. Any changes to the protocol will require prior approval from the Committee by way of an application for an amendment.
- No research data collected prior to this ethical approval should be included in your research.

Please note that:

- Research Participant Information Sheets and (where relevant) flyers, posters, and consent forms should include a clear statement that research ethics approval has been obtained from the relevant Research Ethics Committee.
- The Research Participant Information Sheets should include a clear statement that queries should be directed, in the first instance, to the Supervisor (where relevant), or the researcher. Complaints, on the other hand, should be directed, in the first instance, to the Chair of the relevant Research Ethics Committee.
- Approval to proceed with the study is granted subject to receipt by the Committee of satisfactory responses to any conditions that may appear above, in addition to any subsequent changes to the protocol.
- The Research Ethics Committee reserves the right to sample and review documentation, including raw data, relevant to the study.
- You may not undertake any research activity if you are not a registered student of Brunel University or if you cease to become registered, including abeyance or temporary withdrawal. As a deregistered student you would not be insured to undertake research activity. Research activity includes the recruitment of participants, undertaking consent procedures and collection of data. Breach of this requirement constitutes research misconduct and is a disciplinary offence.

Professor Hua Zhao
 Chair
 College of Engineering, Design and Physical Sciences Research Ethics Committee
 Brunel University London

Appendix A4: Research ethics

Evaluation of an Inclusive Digital Storytelling for Cultural Tourism (IDST for CT) Framework – mentioned in Chapter 7



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29 March 2017

LETTER OF CONDITIONAL APPROVAL

Applicant: Mr. Kitichai Kasemsarn

Project Title: Evaluation of the usability of the new conceptual framework for inclusive digital storytelling

Reference: 6374-LR-Mar/2017- 6955-2

Dear Mr. Kitichai Kasemsarn

The Research Ethics Committee has considered the above application recently submitted by you.

The Chair, acting under delegated authority has agreed that there is no objection on ethical grounds to the proposed study. Approval is given on the understanding that the conditions of approval set out below are followed:

- The agreed protocol must be followed. Any changes to the protocol will require prior approval from the Committee by way of an application for an amendment.
- Please confirm with your supervisor that your research is purely an online survey/questionnaire as approval is only given for this type of research following the information you have provided.

Please note that:

- Research Participant Information Sheets and (where relevant) flyers, posters, and consent forms should include a clear statement that research ethics approval has been obtained from the relevant Research Ethics Committee.
- The Research Participant Information Sheets should include a clear statement that queries should be directed, in the first instance, to the Supervisor (where relevant), or the researcher. Complaints, on the other hand, should be directed, in the first instance, to the Chair of the relevant Research Ethics Committee.
- Approval to proceed with the study is granted subject to receipt by the Committee of satisfactory responses to any conditions that may appear above, in addition to any subsequent changes to the protocol.
- The Research Ethics Committee reserves the right to sample and review documentation, including raw data, relevant to the study.
- You may not undertake any research activity if you are not a registered student of Brunel University or if you cease to become registered, including abeyance or temporary withdrawal. As a deregistered student you would not be insured to undertake research activity. Research activity includes the recruitment of participants, undertaking consent procedures and collection of data. Breach of this requirement constitutes research misconduct and is a disciplinary offence.

Professor Hua Zhao

Chair

College of Engineering, Design and Physical Sciences Research Ethics Committee
 Brunel University London

Appendix B1: Questionnaire – mentioned in Chapter 4

PARTICIPANT INFORMATION SHEET



Barriers and Drivers in Cultural Tourism for Five Groups in Thailand

You are being invited to take part in a research event. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of this project?

The aim of this questionnaire is to investigate what are their barriers and drivers in cultural tourism for five different groups in Thailand.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep. If you decide to take part you are still free to withdraw at any time without giving a reason.

What will happen to me if I take part?

You will be invited to complete a questionnaire. We will ask questions about your why you travel and do not travel in cultural tourism in Thailand.

What are the possible benefits of taking part?

The results of this study will be used as a part of my PhD research to create an inclusive digital storytelling framework to increase motivation and diversity in cultural tourism, and help future studies in the area of digital storytelling, inclusive design and cultural tourism.

Will my taking part in this project be kept confidential?

All information that is collected from you during this research will be kept strictly confidential.

What will happen to the results of the research project?

The research findings will be communicated to designers and researchers wanting to gain insights into engaging the public with Inclusive Design and issues related to that.

Event researcher:

Kittichai Kasemsarn

If you have any queries about this research please contact –

Kittichai Kasemsarn

Inclusive Design Research Group, Human Centred Design Institute

Brunel University, Uxbridge, UB8 3PH; Tel: 074 72657643; E-mail kittichai.kasemsarn@brunel.ac.uk



Research Participation and Image Consent Form

Barriers and Drivers in Cultural Tourism for

Five Groups in Thailand

Ihave read the information on the research project which is to be conducted by Mr. Kittichai Kasemsarn and all queries have been answered to my satisfaction.

I agree to participate voluntarily in this event and give my consent freely. I understand that the event will be conducted in accordance with the *Information Sheet*, a copy of which I have retained.

I understand that I can withdraw from the project at any time, without penalty, and do not have to give a reason for withdrawing.

I consent to:

- Participate in a recorded research event
- I understand that all information gathered will be stored securely and my opinions will be accurately transcribed.

Print name.....

Signature.....

Date

This project will be conducted in compliance with the Research Ethics Code of Brunel University



“Barriers and Drivers in Cultural Tourism for Five Groups in Thailand”

Kittichai Kasemsarn; PhD student, Brunel University, London

- The target audiences of this survey are: 1.) Youth; 2.) Non cultural tourist; 3.) Older adult and 4.) People with disabilities and 5.) Cultural tourists.
- The aim of this questionnaire is to investigate what are their barriers and drivers in cultural tourism.
- This survey should only take 5-10 minutes. All answers are confidential and complete anonymity is assured. Please check or mark the appropriate box for each question or write an answer in blanks provided.

Cultural tourism means

“Travelling with cultural motivations or purposes (e.g. museums, heritage places, monuments, temples, cultural events, festivals)”.



Mass tourism means

“The destinations with a massive of tourists on holiday (e.g. sunbathing, visiting a theme park, hiking, beach)”.





Part 1: Demographic profile

1.	Gender	<input type="checkbox"/> Male	<input type="checkbox"/> Female
2.	Age	<input type="checkbox"/> 15-17	<input type="checkbox"/> 18-22
		<input type="checkbox"/> 23-25	<input type="checkbox"/> 26-34
		<input type="checkbox"/> 35-45	<input type="checkbox"/> 46-59
		<input type="checkbox"/> 60-65	<input type="checkbox"/> 66-75
		<input type="checkbox"/> 76-85	<input type="checkbox"/> 85+
3.	Education	<input type="checkbox"/> Primary/ Secondary	<input type="checkbox"/> High school
		<input type="checkbox"/> Diploma/ Certificate	<input type="checkbox"/> Undergraduate
		<input type="checkbox"/> Post-graduate or above	<input type="checkbox"/> Others
4.	Marital status	<input type="checkbox"/> Single	<input type="checkbox"/> Married
		<input type="checkbox"/> Others (please specify).....	
5.	Type of Disability* (only for people with disabilities)	<input type="checkbox"/> Locomotion	<input type="checkbox"/> Reaching and stretching
		<input type="checkbox"/> Dexterity	<input type="checkbox"/> Seeing
		<input type="checkbox"/> Communication	<input type="checkbox"/> Hearing
		<input type="checkbox"/> Intellectual functioning	
6.	Monthly income (Thai bath)	<input type="checkbox"/> Below 5,000 bath	<input type="checkbox"/> 5,000 – 10,000 bath
		<input type="checkbox"/> 10,001 – 20,000 bath	<input type="checkbox"/> 20,001 – 30,000 bath
		<input type="checkbox"/> 30,001 – 50,000 bath	<input type="checkbox"/> Above 50,000 bath
7.	How many days did you spend for 'cultural tourism' (e.g. museums, heritage places, temples, cultural events, festivals) in Thailand in the last year?	<input type="checkbox"/> Never	<input type="checkbox"/> 1-3 days/ year
		<input type="checkbox"/> 4-6 days/ year	<input type="checkbox"/> 7-9 days/ year
		<input type="checkbox"/> Above 9 days/ year	
8.	How many days did you spend for 'mass tourism' (e.g. sunbathing, visiting a theme park, hiking, travelling to other cities) in Thailand in the last year?	<input type="checkbox"/> Below 5days/ years	<input type="checkbox"/> 5-9 days/ year
		<input type="checkbox"/> 10-14 days/ year	<input type="checkbox"/> 15-20 days/ year
		<input type="checkbox"/> Above 20 days/ year	



Part 2 Barriers in cultural tourism

Cultural tourism means “movements of persons for cultural motivations such as study tours, performing arts and cultural tours, travel to festivals and other cultural events, visits to sites and monuments”

What do you dislike about cultural tourism?						
What stops you from doing cultural tourism related activity?						
Please tell us up to three reasons why you may ‘NOT’ do cultural tourism in Thailand? (e.g. historical places, museums, temples, etc.)	1.....						
	2.....						
	3.....						
Please read each of the statement below and select on the scale provided.							
Please tell us why you may ‘NOT’ do cultural tourism in Thailand? (e.g. historical places, museums, temples, etc.)	Strongly Disagree 1 	2	3	4	5	6	Strongly agree 7 
Uncomfortable experience, not entertaining							
Not relevant or of interest; have different interests							
Old and unfashionable							
No time to attend							
Inconvenience of opening times and activity schedules							
No past engagement							
Poor past experience							
No information where to go							
Physical well-being							
Medical problems							
No concession pricing							
Overall costs and supplementary costs							
Fear to travel alone							
Fear of hassles							
Embarrassing aspects of visible disabilities							
Interactions of individuals and social environments							

No self-confidence							
Poor quality offerings							
Only for education and information							
Security concerns							
Physically difficult to get to							
Difficult public transport to access							
Architectural barriers (e.g. cramped seating areas and unwieldy doors at hotels)							
Accessible accommodation on airplanes, at hotels and at restaurants							
Service of staff							

Part 3 Drivers in cultural tourism

What do you like about cultural tourism?						
What encourages you from doing cultural tourism related activity?						
Please tell us up to three reasons why you may 'DO' cultural tourism in Thailand? (e.g. historical places, museums, temples, etc.)	1..... 2..... 3.....						
Please read each of the statement below and select on the scale provided							
Please tell us why you may 'Do' cultural tourism in Thailand? (e.g. historical places, museums, temples, etc.)	Strongly Disagree 1 	2	3	4	5	6	Strongly agree 7 
New experience and different lifestyle							
Meeting new and different people							
Personal reward							
Visiting a place that I have not visited before							
Getting away from home or mundane environment							
Seeking adventure							
Increasing knowledge about foreign destination, people and things							
Education/ learning							
Just relaxing							
Spending time with family/ friends							
Visiting historical/cultural sites							

Interesting/ unique culture or environment							
Prestige, pride and patriotism							
Nostalgia							
Recommendation from friends/acquaintances							
Pre-trip information							
Attractive and contemporary presentation							
Advertising from media							
Engaging online communities							
Location/accessibility/distance or nearness							
Convenience of transportation							
Low cost/expenses (cheap food/accommodation/other facilities)							
Outstanding scenery							
Online museums, applications or websites							
Animation, VDO presentation, short movie							
Video game about cultural stories							

Appendix B2: Interview questions – mentioned in Chapter 5

PARTICIPANT INFORMATION SHEET



“Guidelines of digital storytelling to increase motivation in cultural tourism for five groups in Thailand”

You are being invited to take part in a research event. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of this project?

The aim of this questionnaire is to propose a digital storytelling guideline to motivate five groups for cultural tourism.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form indicating your willingness to be involved. If you decide to take part you are still free to withdraw at any time without giving a reason.

What will happen to me if I take part?

You will be invited to share your experiences and comments. In section A, we will interview about how to use each digital storytelling element to motivate five different groups to be interested in cultural tourism. In section B, we will ask you to evaluate how important of each digital storytelling element in a questionnaire.

What are the possible benefits of taking part?

The results of this study will be used as a part of my PhD research to create an inclusive digital storytelling framework to increase motivation and diversity in cultural tourism, and help future studies in the area of digital storytelling, inclusive design and cultural tourism.

Will my taking part in this project be kept confidential?

All information that is collected from you during this research will be kept strictly confidential.

What will happen to the results of the research project?

The research findings will be communicated to designers and researchers wanting to gain insights into engaging the public with Inclusive Design and issues related to that.

Event researcher: Kittichai Kasemsarn. **If you have any queries about this research please contact** – Kittichai Kasemsarn: Inclusive Design Research Group, Human Centred Design Institute, Brunel University, Uxbridge, UB8 3PH; Tel: 074 72657643; E-mail kittichai.kasemsarn@brunel.ac.uk



Research Participation and Image Consent Form

“Guidelines of digital storytelling to increase motivation in cultural tourism for five groups in Thailand”

Ihave read the information on the research project which is to be conducted by Mr. Kittichai Kasemsarn and all queries have been answered to my satisfaction.

I agree to participate voluntarily in this event and give my consent freely. I understand that the event will be conducted in accordance with the *Information Sheet*, a copy of which I have retained.

I understand that I can withdraw from the project at any time, without penalty, and do not have to give a reason for withdrawing.

I consent to:

- Participate in a recorded research event
- The audio or photographing of my contribution to the research
- The use of this audio and any still images in which I can clearly be identified by the Inclusive Design Research Group at Brunel University for purposes of research and publication and the sharing of this interview.

I understand that all information gathered will be stored securely and my opinions will be accurately transcribed.

Print name.....

Signature.....

Date

This project will be conducted in compliance with the Research Ethics Code of Brunel University



Guidelines of digital storytelling to increase motivation in cultural tourism for five groups in Thailand

Kittichai Kasemsarn; PhD student, Brunel University, London

Section A: Demographic profile

Section B: Interview

The aim of this section is to illustrate how to use digital storytelling elements to increase motivation in cultural tourism for five different groups. This section should take approximately 45 minutes, and will focus on suggesting each core element of digital storytelling to motivate cultural tourism for five groups.

Throughout this interview, please remember that you can choose to withdraw from this study at any time without having to give any reason.

Digital storytelling	A short medium which uses personal digital technology to combine a number of media into a coherent narrative (Ohler, 2013)
Cultural tourism	“Movements of persons for essentially cultural motivations such as study tours, performing arts and cultural tours, travel to festivals and other cultural events, visits to sites and monuments” (The World Tourism Organization - UNWTO, 2008).

Demographic profile

1.	Name	
2.	Gender	
3.	Age	
4.	Highest Education and where	
5.	Occupation	
6.	Academic position (for a lecturer)	
7.	How long have you work in the area of digital storytelling (years)	

Section B: Interviews

The aim of this section is to illustrate how to use digital storytelling elements to increase motivation in cultural tourism for five different groups.

Q1	<i>What 'The storyteller's point of view' (the 1st or 3rd point of view) will you use in digital storytelling to increase motivation in cultural tourism for five different groups and why?</i>
Q2	<i>What style of 'A key question' (The main concept or a question that will be answered by the end. For example, what is the origin of Thai people?) will you use in digital storytelling to increase motivation in cultural tourism for five different groups and why?</i>
Q3	<i>What 'purposes' (such as to initially understand the meaning of cultural tourism, to be impressed or to lead them going out...) will you set up in digital storytelling to increase motivation in cultural tourism for five different groups?</i>
Q4	<i>What style of 'Emotional Content' (high-low, stable-swing emotions or mood -tone feelings) will you use in digital storytelling to increase motivation in cultural tourism for five different groups?</i>
Q5	<i>What style of 'Story structure' (basic – one or no climax or many climaxes) will you use in digital storytelling to increase motivation in cultural tourism for five different groups?</i>
Q6	<i>What 'Economy' (the level of amount of information – high, moderate, low) will you use in digital storytelling to increase motivation in cultural tourism for five different groups and why?</i>
Q7	<i>What style of 'The rhythm of the story' (slow, moderate or fast rhythm) will you use in digital storytelling to increase motivation in cultural tourism for five different groups and why?</i>
Q8	<i>Is it necessary to use 'The storyteller's voice' and what style of voice will you use in digital storytelling to increase motivation in cultural tourism for five different groups?</i>
Q9	<i>What style of 'Soundtrack' will you use in digital storytelling to increase motivation in cultural tourism for five different groups?</i>
Q10	<i>What 'Media' will you use in digital storytelling to increase motivation in cultural tourism for five different groups and why?</i>
Q11	<i>What 'Background' (The real, surreal, fantasy world or locations) will you set up in digital storytelling to increase motivation in cultural tourism for five different groups and why?</i>
Q12	<i>Is there anything else you want to tell me about or comments you want to make?</i>
Q13	<i>Is there anything you wish I would have asked you or spoken about that didn't come up during this interview?</i>

Appendix B3: Observation Schedule – mentioned in Chapter 6

PARTICIPANT INFORMATION SHEET



“Inclusive digital storytelling to understand audiences’ behaviour”

You are being invited to take part in a research event. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of this project?

The aim of this observation is to understand diverse audiences in terms of reaching (accessibility and understanding) and engaging with (usefulness, usability, desire) digital storytelling on digital mobile devices.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form indicating your willingness to be involved. If you decide to take part you are still free to withdraw at any time without giving a reason.

What will happen to me if I take part?

You will be invited to share your experiences and comments about; **1.)** reaching (accessibility and understanding) – **how you** use mobile devices to access DST and barriers and drivers in each stage; **2.)** engaging (usefulness, usability, desire) - **how you** understand, prefer and are motivated from DST

What are the possible benefits of taking part?

The results of this study will be used as a part of my PhD research to create an inclusive digital storytelling framework to increase motivation and diversity in cultural tourism, and help future studies in the area of digital storytelling, inclusive design and cultural tourism.

Will my taking part in this project be kept confidential?

All information that is collected from you during this research will be kept strictly confidential.

What will happen to the results of the research project?

The research findings will be communicated to designers and researchers wanting to gain insights into engaging the public with Inclusive Design and issues related to that.

Event researcher: Kittichai Kasemsarn. **If you have any queries about this research please contact** –Kittichai Kasemsarn: Inclusive Design Research Group, Human Centred Design Institute , Brunel University, Uxbridge, UB8 3PH; Tel: 074 72657643; E-mail kittichai.kasemsarn@brunel.ac.uk



Research Participation and Image Consent Form

Inclusive digital storytelling to understand audiences' behaviour

Ihave read the information on the research project which is to be conducted by Mr. Kittichai Kasemsarn and all queries have been answered to my satisfaction.

I agree to participate voluntarily in this event and give my consent freely. I understand that the event will be conducted in accordance with the *Information Sheet*, a copy of which I have retained.

I understand that I can withdraw from the project at any time, without penalty, and do not have to give a reason for withdrawing.

I consent to:

- Participate in a recorded research event
- The audio/video taping or photographing of my contribution to the research
- The use of this footage and any still images in which I can clearly be identified by the Inclusive Design Research Group at Brunel University for purposes of research and publication and the sharing of this footage.

I understand that all information gathered will be stored securely and my opinions will be accurately transcribed.

Print name.....

Signature.....

Date

This project will be conducted in compliance with the Research Ethics Code of Brunel University

Observation Schedule: Inclusive digital storytelling to understand audiences' behaviour

Part 1: Demographic profile

Name	
Gender	
Age	
Education	
Monthly income	
Type of disability	
How many days did you spend for 'cultural tourism' last year	
How many days did you spend for 'mass tourism' last year	

Part 2: Observation

Observation Schedule				
1.	Unlocking a mobile device	<ul style="list-style-type: none"> - Give an iPad mini 1 to the participants - Ask them to unlock the screen to access the home page 	Accessibility	
			Understanding	
			Usefulness	
			Usability	
			Desirability	
2.	Opening the 'YouTube' application	<ul style="list-style-type: none"> - Ask the users to find the Youtube icon on the first page of iPad - Click the icon to open the Youtube application 	Accessibility	
			Understanding	
			Usefulness	
			Usability	
			Desirability	
3.	Accessing the 'Search' icon	<ul style="list-style-type: none"> - Ask them to find the 'Search' icon to search for videos on Youtube - Click the 'Search' icon to open the search panel 	Accessibility	
			Understanding	
			Usefulness	
			Usability	
			Desirability	
4.	Typing the	- Ask them to type	Accessibility	

	movie title	the movie tile 'I hate Thailand' on the search panel	Understanding	
			Usefulness	
			Usability	
			Desirability	
5.	Clicking on the 'Play' icon and watching the movie	- Ask them to click on the 'Play' icon and watch the video - Ask them to comment on every issue when watching (understand or not; like or dislike, etc.)	Accessibility	
			Understanding	
			Usefulness	
			Usability	
			Desirability	
6.	Closing the movie window	- Ask them to find the 'Close' icon - Click the 'Close' icon to turn off the video window	Accessibility	
			Understanding	
			Usefulness	
			Usability	
			Desirability	
7.	Accessing the 'Search' icon	- Ask them to find the 'Search' icon in Youtube again (round 2) - Click the 'Search' icon to open the search panel	Accessibility	
			Understanding	
			Usefulness	
			Usability	
			Desirability	
8.	Typing the animation title	- Ask them to type the animation tile 'Jinx Jenkins, Lucky Lou' on the search panel	Accessibility	
			Understanding	
			Usefulness	
			Usability	
			Desirability	
9.	Clicking on the 'Play' icon and watching the animation	- Ask them to click on the 'Play' icon and watch the animation - Ask them to comment on every issue when watching (understand or not; like or dislike, etc.)	Accessibility	
			Understanding	
			Usefulness	
			Usability	
			Desirability	
10.	Closing the animation window	- Ask them to find the 'Close' icon - Click the 'Close' icon to turn off the	Accessibility	
			Understanding	
			Usefulness	
			Usability	
			Desirability	

		video window		
11.	Closing the application	- Ask them to find the 'Close' icon	Accessibility	
			Understanding	
		- Click the 'Close' icon to turn off the Youtube application	Usefulness	
			Usability	
			Desirability	

13 .This framework can help increase diversity and motivation in Cultural Tourism

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

14. I would like to use this framework to increase diversity and motivation for Cultural Tourism

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

15. What changes or improvements would you suggest in order to make this framework more useful?

Long answer text

...

16. What pieces of knowledge or factors would you suggest to be included in this framework to increase diversity and motivation to Cultural Tourism?

Long answer text

17. Please mention top three things you dislike in this

Long answer text

18. Please mention top three things you like in this

Long answer text

2: Background

Description (optional)



Gende

- Male
- Female

...

Ag

- 18-22
- 23-25
- 26-34
- 35-45
- 46-59
- 60-65
- 66-75

Education

- Primary/ Secondary
- High school
- Diploma/ Certificate
- Undergraduate
- Post-graduate
- PhD degree

Marital status

- Single
- Married
- Others

⋮

Type of career

Multiple choice

- Inclusive Design, Digital Storytelling or Cultural Tourism expe ×
- Inclusive Design, Digital Storytelling or Cultural Tourism stud ×
- Add option or [ADD "OTHER"](#)

How long have you worked in the area of Inclusive Design, Digital Storytelling or Cultural Tourism?

- 1-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- Above 20 years

Monthly income

- Below 500 USD/ a month
- 500-1150 USD/ a month
- 1151 – 3000 USD/ a month
- 3001-5000 USD/ a month
- 5001 -10000 USD/ a month
- Above 10000 USD/ a month

...

...

What is the country you currently live in?* (this may not be your home country. For example, if you are Chinese working in the UK. Please choose

- Thailand
- UK
- European countries
- USA
- Asian countries
- Others

Thank you for accepting to participate in this

Description (optional)



Appendix C1: Applications of cultural tourism – mentioned in Chapter 2

- **Urbanisation:** The population of cities (megapolises), currently at more than 10 million people, is estimated to increase to approximately 30 million (United Nations, 2005). Therefore, managing large cities will be a problem in the future. As a result, travellers will tend to favour holidaying away from crowds, and to travel globally. Moreover, congestion in both industrialised and developing countries will lead to a tendency to escape and/or to indulge in tourism (UNWTO, 2002).

- **Changing social structures:** Changing social structures will increase because of generation Y, the largest and most diverse demographic (Gerkovich, 2005). Moreover, the concept of the family holiday will remain, but there will be growth in tourism for retired persons and for single people.

- **Health:** In the future, people will become increasingly concerned about their health and well-being. Moreover, greater value will be given to de-stressing and self-medicating (Pollock and Williams, 2000). Therefore, this trend will give rise to a demand for a combination of health and travel. In addition, developed countries will experience a blurring of working life and retirement (Cetron, 2001).

- **Changing work patterns:** People now tend to work flexibly, and will not sacrifice their personal life for their careers. Significantly, the distinction between work and leisure may blur. In summary, changing work patterns will lead to more flexibility of travel plans (Gerkovich, 2005).

- **Gender:** Society tends to be more feminised, since the traditional inequality between men and women has become less pronounced. Hence, women will have increasing influence on all types of decisions (Iida, 2005).

In summary, the future trends of cultural tourism are linked to many areas, including innovation and technology, and economic, political, environmental, demographic, and social aspects. However, this study focuses on the innovation, technology, and demographic aspects only.

Appendix C2: Applications of inclusive design in economy, industry and media – mentioned in Chapter 2

1. Business

Clarkson et al. (2003) state that inclusive design is accepted as a positive issue of business strategy and design practice in the United Kingdom. For example, British Telecommunications (BT) has made a strong commitment to inclusive design and commissioned the Design Toolkit, a web-based tool for designers to create better products with user satisfaction and commercial success. However, the business case for inclusive design raises the problem that it is targeted at a minority group, because it serves only older and disabled people. Clarkson and Coleman (2013) recommend that we could integrate some temporary effects such as injury and pregnancy to strengthen business opportunities. As a result, focusing on this market through the inclusive design of mainstream products and services could lead to brand and market advantage. In addition, inclusive design could be used as innovation for accessibility and usability. Consequently, it could drive companies to develop interfaces, accessible ICT, and people-friendly environment products and services. Inclusive design products, services, and environments can benefit all groups of people and increase business for companies (Clarkson and Coleman, 2013).

2. Economics

Clarkson and Coleman (2013) state that the economic case for inclusive design can be presented based on two main factors. Firstly, the Potential Support Ratio (PSR), the number of people aged 15 to 64 who could support one person over 65, has been declining rapidly, especially in the developed world, because care costs as a proportion of GDP have been escalating. Secondly, inclusive design in the workplace can offer the possibility for older adults and people with disabilities to continue working in gainful employment and extend independent living. This can then lower care costs and help to stimulate the economy.

Krauss (2011) notes that Germany is facing an increasingly ageing and simultaneously declining population. In fact, the proportion of those aged over 60 was only 5% in 1900, but today this number has risen to 25% and will reach approximately 40% by 2050. Hence, because of the increasing proportion of older

adults in industrial societies, Krauss (2011) recommends that knowing the needs of older consumers is becoming more important.

Frye (2013) also supports that a strong economic case can support inclusive design; for example, the demographic trends are one of the compelling factors. In the countries of the European Union, expenditure on older adults was around 23.1% of GDP in 2007 and importantly is expected to continue to rise. Moreover, the strong relationship between age and disability is a key factor, as approximately two thirds of disabled people are over retirement age. Therefore, solutions that reach everyone's needs, based on inclusive design, will provide the most cost-effective solution to the above issues.

3. Social impact

Frye (2013) outlines several social problems related to inclusive design, including evidence of decline for those older adults who cannot go out alone even within their own neighbourhood. The reduction in the quality of care, such as medical attention, and the reduction in nutrition, such as fewer food choices, are also reported. Another increasingly significant factor is loneliness, due to rapidly changing social patterns. Many older adults are now living alone; for example, in the UK, this includes more than 3.7 million people aged over 65. Clarkson and Coleman (2013) also present strong social cases for inclusive design: (1) the desirability of social cohesion and inclusivity, and (2) the accessibility of public buildings, spaces, and services that can support social inclusion.

Clarkson et al. (2003) discuss the fact that there are governments trying to establish universal design as an important component of the overall planning of the design process. This concept is reflected in the work of the Norwegian government beginning in 1997 (Bringa, 2001) who aimed to create a strategy supporting accessibility as a component of planning for all levels. The state of Queensland in north eastern Australia also has an integrated model of housing development and promotes the concept of sustainability. In addition, it has presented 'the triple bottom-line concept' of sustainability, composed of environmental, social, and economic sustainability. In the United Kingdom, universal design processes were initiated by the government-supported Commission for Architecture and the Built Environment (CABE) in 1999. Clarkson et al. (2003) explain that CABE is the government adviser

for improving the quality of people's lives through design in areas such as architecture, urban design, and public space.

Additionally, studies and tests, such as those carried out by the London-based Research Institute for Consumer Affairs, reveal that products that are researched and developed with the needs of older adults in mind actually have cross-generational appeal. This is because the designs are more user-friendly, and as a result, they can be appreciated by all target groups. However, older adult products should not look as if they have been produced for 'old people', as this can diminish their appeal (Meyer-Hentschel and Meyer-Hentschel, 2004).

4. Politics

Nowadays, politicians understand and recognise the concepts of inclusive design, universal design, and design for all as worthy of promotion (Krauss, 2011). Moreover, they generally support the increase in the social participation of older adults and people with disabilities. Significantly, companies that consistently adapt these concepts to develop their products and services could have competitive advantages.

Krauss (2011) states that several politicians such as the German Federal Minister of Family Affairs, Senior Citizens, Women, and Youth, and the German Federal Minister of Economics and Technology, recognise design concepts such as inclusive design as being important. Significantly, they encourage the advancement of these design concepts through long-term promotional measures. For example, the Federal Ministry of Family Affairs, Senior Citizens, Women, and Youth and the Federal Ministry of Economics and Technology jointly launched "Age: An Economic Factor" (*Wirtschaftsfaktor Alter*) in 2008. This project tried to increase older adults' quality of life, strengthen economic growth, and create jobs.

As Federal Minister Ursula von der Leyen stated, "if we promote products and services today, which people of all ages use and like, Germany with its rapidly ageing society has the great opportunity of setting standards and becoming a world market leader for generation-friendly products, before foreign competitors fill these gaps in the marketplace" (Krauss, 2011).

Frye (2013) states that the political issue is the strongest factor in the argument for inclusive design. This also relates to the urbanisation of the world's population as a significant key driver. Since 2008, around half of the world's population has been living in urban areas, and that number continues to grow. Moreover, there is pressure to create 'liveable' cities that allow older adults to stay in their own homes. Frye (2013) explains that there is a related link between the 'sustainability' or green issue and the idea of universal design, as cities continue to become more densely populated.

5. Education

The report of the President's Commission on Excellence in Special Education (U.S. Department of Education, 2002) states that teachers and parents should work together to provide successful teaching for students with additional needs, proposing "that all measures used to assess accountability and educational progress be developed according to principles of universal design" (U.S. Department of Education, 2002, p. 27). Parents also support universal design as "an increasingly popular approach" for all students (Casper, 2003).

Tauke (2010) also discusses a course named "Beth Tauke's award-winning Diversity and Design course" at the University at Buffalo. This course has taught more than 200 students each semester since 2002, and introduced them to eight issues of diversity: ethnicity, race, class, gender, age, physical ability/disability, mental ability/disability, and religion. It also provides several classes of design such as product, media, architectural, and urban design. The course "focuses on the relationship of design to the changing nature of . . . society" (Tauke, 2010).

In relation to written resources, Frank Bowe's (1999) book *Universal Design in Education: Teaching Non-traditional Students* is the first textbook on the principles of universal design in studying. Prior to this, David Rose set up the Centre for Applied Special Technology (CAST) in 1984 to develop and apply technologies for disabled students to access a print-based curriculum. The textbook *Universal Design for Learning (UDL)* is a further resource that includes guidelines for UDL in three main parts: representation, expression, and engagement. In addition, *Universal Design for Instruction (UDI)* focuses on college instruction for diverse learners to incorporate inclusive strategies in their teaching (McGuire and Scott, 2006).

Appendix C3: Trends in digital storytelling for cultural tourism – mentioned in Chapter 2

Trends in digital storytelling for cultural tourism

❖ From 2000 to 2010

1. Creating visitor experience

The Sarajevo Under Siege project can recreate via virtual experience the experience of Sarajevo under siege in 1992–1996 and tell the story using digital storytelling. Hence, online users can learn about and experience life in Sarajevo during that time. It presents the creativity and tenacity of Sarajevo's citizens, who could survive and defend their city in terrible conditions, such as lack of water, food, electricity and heating, under a constant threat of danger (Rizvic et al., 2012). According to the book 'The Museum in Transition', museums should transform 'on view' exhibitions into 'visitor's experience' (Hilde, 2000). This idea relates to the Eternal Egypt project. Tolva and Martin (2004) also state that the goal of museums must develop from 'assembling collectibles' to fostering visitor experience. For this reason, the Eternal Egypt project adopts digital storytelling, in order to link visitor experiences and formal information together (Tolva and Martin, 2004). Tolva and Martin (2004) state that virtual experiences of cultural heritage also benefit from a storytelling approach as they can be well presented by advanced technologies such as 3D animation, graphics, movies and high-resolution images.

2. 3D technology

One powerful benefit of online museums is the ability to link virtual 3D objects, stories and information and make the collection searchable. In the future, there might be new technology that allows users to search for the relevant information from audio, text, pictures and 3D images (Jones, 2002). Hence, this is a new challenge for online museums. In the Virtual Museum of Iraq, the use of storytelling with technology, such as three-dimensional presentations, undoubtedly increases users interest more than a simple image does (Cultraro et al., 2009). This is because exhibitions that can be explored interactively are more striking than one-way communication (Cultraro et al., 2009).

The virtual Smithsonian tour is a good example of the potential for presenting a wide

collection of materials to people that may never have the chance to visit the actual museums (Jones, 2002). It is also a good example of the use of graphic motifs, such as maps, direction signs and control panels that place the visitor within a context during their information navigation. Using state-of-the art technology with storytelling, especially on three-dimensional images, can lead online users to have a new museum experience (Jones, 2002).

3. Accessibility

The gas chambers of Auschwitz (Kaelber, 2007) are hard to reach and physically inaccessible. Virtual Auschwitz tours using digital storytelling offer this solution to create the dark tourism experience. By using multimedia and storytelling, online tourists can experience environments such as the detention camp, killing fields, death rows and gas chambers (Kaelber, 2007). This suggests that digital storytelling can enhance a story, present information and create mood and tone behind physically inaccessible places.

In terms of universal communication, Tolva and Martin (2004) write that one of the primary goals of the Eternal Egypt project is to provide worldwide access to Egypt's cultural heritage. There are five languages offered – English, Italian, Spain, French, and Arabic. This can be presented as a good example of using digital storytelling as a universal form of communication.

However, many studies have considered the question, raised by the emergence of the online museum, “if visitors can access our digital collections using the Internet, will they still come to the museum in person?” (Marty, 2007, p. 339). In theory, Marty (2007) suggests that the virtual or online museum should encourage potential museum visitors to visit the real place, not just plan to do so. Kravchyna and Hastings (2002) insist that 57 per cent of online users visit museum websites both before and after visiting the real places. Additionally, 70 per cent of visitors search for online information before physically going to museums, and 57 per cent of them state that information on a website can increase motivation to visit in person (Thomas and Carey, 2005). Moreover, a number of studies support the view that online museums can increase museum attendance. Online users confirm that the primary reason for visiting museum websites is to acquire information about the

actual museum prior to visiting it (Goldman and Schaller 2004; Chadwick and Boverie, 1999).

4. Less is more information

From the Eternal Egypt project, Tolva and Martin (2004) suggest that an overload of information and data in online museums can affect a visitor's subjective experience. The main challenge is how to simplify complex cultural exhibitions so that they are not only engaging but also understandable for a variety of online visitors. In the Virtual Museum of Iraq, the most difficult process for the online museum is the method of simplifying its contents (Cultraro et al., 2009). In digital storytelling, the 'less is more' approach is recommended; but the information presented should not be too superficial. However, offering too much information can make it feel redundant to visitors, potentially making them bored. Digital storytelling techniques can solve this issue by creating shorter and more entertaining content that can speak to a large variety of diverse of online users.

5. High-speed bandwidth Internet requirements

Jones (2002) points out that many of the latest web-enhanced presentations are geared toward users and institutions that can access newer and higher bandwidth internet connections. Jones (2002) also suggests that the virtual Smithsonian tour is a good example of this issue, as it requires at high-speed connections to support virtual three-dimensional presentations. As such, a majority of citizens in the United States, particularly users in isolated rural areas, have problems accessing it. However, as networking technology improves, this problem will affect fewer users.

This issue affects the Eternal Egypt project also. Because of the rich multimedia and multilingual features of the project, such as zoomable images, up-to-date CCTV and animations, the application requires an up-to-date web browser and two web browser plug-ins, Macromedia Flash Player and Quicktime, to be installed. Hence, not everyone can access the presentations, and it takes a lot of time to update a browser and install plug-ins in order to meet the minimum browser requirements.

❖ From 2010 to 2016

1. User experience (UX)

Many current applications apply user experience (UX) to design, evaluate and develop projects (Wither et al., 2010; Pujol et al., 2012; Floch and Jiang, 2015). For example, in case of CHESS, the project starts by studying the user's profile, demographics, interests, cognitive or conceptual change, perception of value and inspiration. Finally, it creates a specific user model that links between social media and augmented reality (AR). Pujol et al. (2012) also recommend that the UX process should be tested with real users in real locations with real experiences.

However, Law et al. (2009) suggest that user experience is very subjective and dynamic over time. There are a number of factors, such as users, trends, society, period of time and countries. This means there is no specific formula or guideline for all digital storytelling applications. UX designers should be aware of this issue and test their works personally.

2. Personalisation and sharing on social media

Previous interactive storytelling in museums tried to focus on the content on a device as one content for all users. Nowadays, most cultural heritage museums adopt personalisation methods. This allows users to give feedback, rate or answer questions about their interests, and they will then be presented with specific information matching their interests. The aim of the personalisation is to provide a smooth experience for each user visiting the museum (Pujol et al., 2012).

For instance, the CHESS project tries to enhance museum visiting in two ways. Firstly, it focuses on the personalisation of visitors' information. Secondly, it presents users with an experience of discovery and wonder. CHESS also emphasises an experience-oriented and user-centred approach focusing on the user's needs. In addition, Show Taiwan also creates user-created contents to tell stories and share ideas and knowledge between teachers and students. This study concludes that this process can lead users to explore cultural stories in much greater depth (Chen, Kao and Kuo, 2014).

Floch and Jiang (2015), in the Stedr project, support users' different interests and there are many stories and much information online. Most users would like to obtain, search, filter and personalise the information easily. So, in order to personalise the application, it is very important to consider their demographic information, needs and history.

Moreover, social media is very important; users would like to share the information or experience with online friends. Moreover, they often wish to follow what interests them. This is the benefit of sharing on social media (Floch and Jiang, 2015). Therefore, current cultural media try to support users to customise, personalise and share their interests on social media rather than just presenting one type of information for all visitors.

3. Mobile device technology

Nowadays, the technology in a mobile device's sensor has greatly developed. Sensors can provide information such as a compass, the direction of movement of a device and its GPS location. This technology has been adapted into cultural applications (Christodoulakis, 2014). For example, we can use a map or a diagram presenting the surrounding locations and identify the social context (who is near you) to increase a good experience in cultural tourism (Christodoulakis et al., 2013; Christodoulakis, 2014). All these applications presented previously – CHESS, Stedr, Show Taiwan, The Westwood Experience – also adopt the technology in a mobile device's sensor to locate users and show maps.

Moreover, beyond 3D technology, 4D visualisation has been presented to integrate a time factor into the visualisation. For instance, many heritage sites have been destroyed for hundreds of years, but using 4D can enable users to see the real building in the real location again to provide a better understanding of cultural heritage (Tarantilis et al., 2011). The Westwood Experience is a good example of this. It uses mixed reality (MR) to link the past and the current location. The story is presented by the mayor of Westwood taking a tour of Westwood in 1949 (Wither et al., 2010).

Very high technology in mobile devices can combine traditional media and real location in a way that was previously impossible. For example, augmented reality (AR) can present stories at the real sites through the camera and screen of a mobile device. Moreover, mixed reality effects combining video, audio and images in the real places can virtually present stories of a historical or fictional world linked between the application and the real world. These technologies can enhance storytelling at the real cultural locations by bridging the gap between past and present worlds in a more interesting way than traditional media (Wither et al., 2010).

Chen, Kao and Kuo (2014) agree that Show Taiwan adapts this technology to enhance the location-based guide process by mixing multimedia triggered by users' movement in the real locations. In addition, The Westwood Experience applies mixed reality; CHESS and Stedr adopt augmented reality to tell a linear story in the real location-based experience (Wither et al., 2010; Pujol et al., 2012; Floch and Jiang, 2015)

However, some studies recommend that AR or any technology that needs presenting on a mobile screen is only suitable for short descriptions, not for longer stories. Moreover, AR needs users to be at the real time location and will not work before or after the visit (Keil et al., 2013; Floch and Jiang, 2015). This could lead to limitations in the use of this technology due to limited time and space issues. In fact, users should be able to access the website or application when and where they like (Floch and Jiang, 2015).

4. Keep it simple

In the past, just a simple picture with narrative voices or texts or audio with sounds could be considered to be a form of digital storytelling (Sarvas and Frohlich, 2011). However, current technology, especially on mobile devices, such as advanced and complicated method mixing froms, audio, text, video and interactive have changed more rapidly than content or stories (Floch and Jiang, 2015). Therefore, some projects only emphasise the latest technology. In addition, the cost of interactive technology is very expensive. It is better to focus on creating good stories and content that can be reused on many technology platforms. So focusing on users' needs and the process of creating contents are very significant to develop guidelines for creating good content and stories (Floch and Jiang, 2015).

Recommendations from many studies also support telling a very simple story at the cultural sites rather than focusing on complicated and hi-tech methods (i.e. games, events or puzzle hunts). Users only need a simple, easy to understand, uncomplicated story structure (Wither et al., 2010; Pujol et al., 2012; Floch and Jiang, 2015).