Journal of Hospitality, Leisure, Sport & Tourism Education 26 (2020) 100238

Contents lists available at ScienceDirect

Journal of Hospitality, Leisure, Sport & Tourism Education

journal homepage: www.elsevier.com/locate/jhlste

Design thinking - A revolutionary new approach in tourism education?

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ARTICLE INFO

Keywords:
Design thinking
Tourism education
Tourism product development
Creative thinking
Teamwork
Problem-solving

ABSTRACT

Although design thinking as a teaching method has mainly been applied by architecture or economy-related study programmes, in the last decade less business-oriented courses have also discovered the potential of this creative, problem-solving approach. In 2018 Constantine the Philosopher University in Nitra, Slovakia, piloted design thinking on three courses in the Regional Tourism study programme to test whether it can foster creativity, teamwork and communication, as emphasised by many experts. The paper provides an insight into the lessons, as well as a summary of the participants' opinions, according to which students were far more active, cooperative and creative than using traditional teaching methods.

1. Introduction

According to the Strategic Framework for Education and Training 2020 (European Commission, 2009) one of the challenges that today's education has to address effectively in order to meet the needs of a 21st century society is "enhancing creativity and innovation, including entrepreneurship, at all levels of education and training" (Li et al., 2016; Liu et al., 2017). Based on numerous empirical findings (Henriksen et al., 2017; Retna, 2016), design thinking (DT) "is a great tool for teaching 21st century skills, as participants must solve problems by finding and sorting through information, collaborating with others, and iterating their solutions based on real world, authentic experience and feedback" (Ray, 2012, p. 1). Similarly, Luka (2014) highlights the practice-based and human-centred problem-solving feature of this approach, developed by a design consulting firm called IDEO that specialised in innovation and problem-solving in the USA at the end of 1990s. IDEO help entrepreneurs and companies to identify customers' needs in order to create such solutions, (i.e., services and products), that will likely be bought.

In education DT was firstly applied by the Stanford University d. school in California's Silicon Valley and the HPI D-School of the Hasso Plattner Institute of Design in Potsdam, Germany. In these schools students from different universities and disciplines are educated within interdisciplinary projects and work together within different areas, such as companies, non-profit organisations or the government (Wrigley & Straker, 2015). The D. School was launched in 2005 and since then it has been primarily used by business or design-related study programmes (Çeviker-Çinar et al., 2017). In the last decade the technique has been successfully launched in less profit-oriented areas of education, such as nursing (Beaird et al., 2018) or religious studies (Tan & et al., 2014). In the academic year 2017/2018 the Department of Tourism at Constantine the Philosopher University in Nitra, Slovakia, piloted DT on three of the courses offered for tourism undergraduates. In addition to the literature review, the methodology of the research is followed by the

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https://doi.org/10.1016/j.jhlste.2019.100238
Received 9 February 2019; Received in revised form 25 June 2019; Accepted 20 December 2019

teachers' and students' reflections on the given experience.

2. Literature review

Drawing on the Stanford model DT can be considered as a process consisting of five stages (see Fig. 1), as follows: Empathise, Define, Ideate, Prototype and Test (Hasso Plattner Institute of Design, 2018). *Empathising* teaches students to understand the real needs of the customer through interviewing or observing. The stage of *defining* helps to define the problem, in order to be able to come up with solutions and ideas in the next phase, i.e., the phase of *ideating*, which may include a variety of techniques, from brainstorming to mind-mapping and sketching. *Prototyping* as the next stage is about bringing the selected idea to life using different materials. The last phase, *testing*, focuses on getting feedback through observation or interviews (Henriksen et al., 2017).

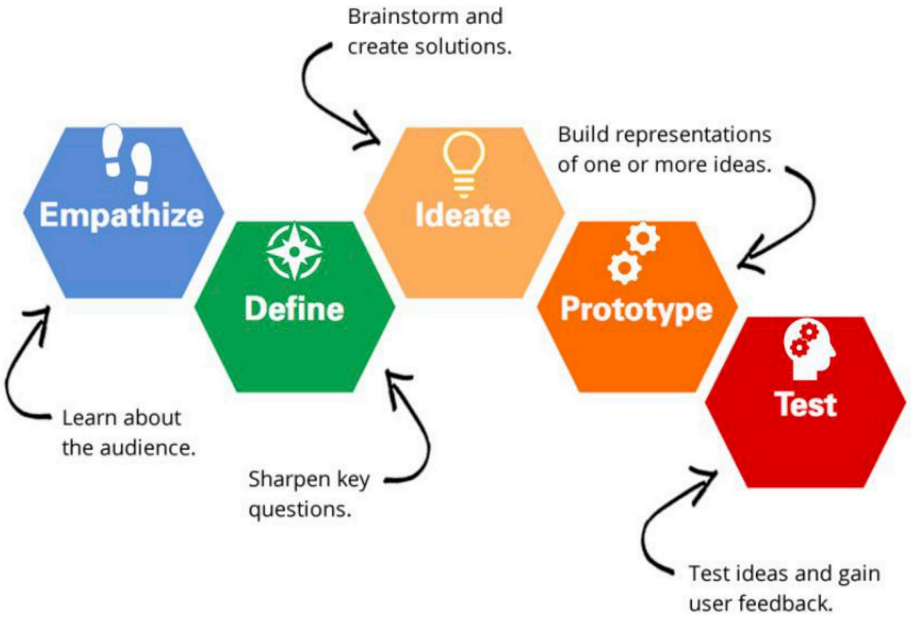

Fig. 1. Design thinking process (Hoover, 2018).

However, DT should not be understood only as a process, but rather as a "philosophy" (Çeviker-Çinar et al., 2017) or "mindset", which according to Baeck and Gremett (2012 in Luka, 2014, p. 66) could be characterized by nine attributes, as follows: Ambiguity, Collaboration, Constructiveness, Curiosity, Empathy, Holism, Iteration, Non-judgemental way, and Openness. Ambiguity in DT refers to the "state of being comfortable in unclear situations". Collaboration refers to the (interdisciplinary) teamwork of the participants and students during the whole process of DT. Constructive thinking can be associated with the problem-solving character of this approach. Curiosity and empathy refer to the focus on customers' needs. It can also be considered a holistic approach, since it tries to find a solution to the problem from a wider perspective. In addition, as the whole process has a cyclical rather than linear character, it can be regarded as iterative. Last but not least DT puts emphasis on unusual, innovative ideas which foster non-judgmental and open communication between team members.

Although DT was first applied in education in 2005, it does not only suit the demands of the twenty-first century (Scheer et al., 2012), since it shows similarity with the educational theory of John Dewey and Maria Montessori (Retna, 2016). Not surprisingly, the method is ranked among the teaching methods in numerous Montessori schools, such as in the Urban Montessori Charter School in Oakland, California (http://www.urbanmontessori.org/design_thinking). Both Montessori's learner-centred pedagogical approach and Dewey's theory of learning by doing corresponds with DT in terms of solving real-life problems through hands-on activities (Brown et al., 2018; Dewey, 1938; Williams, 2017). In addition, the experience-based method of DT may also be associated with Kolb's experimental learning theory (Kolb, 1984; Miettinen, 2000).

Proponents of DT as a contemporary pedagogical approach argue that it can be applied from kindergarten to higher education, since it helps to educate creative, innovative individuals (Scheer, Noweski, & Meinel, 2012). In addition, Beckman & Berry (2007, p. 47) claim that through DT the ideal learning cycle is ensured, for students go through "experiencing, reflecting, thinking and acting" during the particular phases of this method. Luka (2014:70) points out that the process of DT comprises both analytic and synthetic elements. She also adds that "DT skills can be developed in various activities at schools, especially in group work and projects, as one of the preconditions is team working and open communication".

According to Melles, Howard, and Thompson-Whiteside (2012, p. 162), four main types of courses on DT can be distinguished, as follows: "DT as course logic, e.g. Master's in design thinking; within a course as a discrete programme unit; as individual seminars or lectures; or a combination of any of the above as a general philosophy for schools". For example, at Rotman School of Management,

University of Toronto, Canada, DT "is the heart of business education, which is not only integrated as a course, but as an embracing philosophy" (Çeviker-Çinar et al., 2017, p. 982). DT as an elective subject has been introduced as part of the Design Management Minor for students from Industrial, Interior, Communication and Digital Media Design courses (Melles, Howard and Thompson-Whiteside, 2012, p. 164). The teaching input of the semester-long programme consisted of a 1-h lecture and a 2-h tutorial per week. The objective was to make students understand the key aspects of DT using relevant sources. The lectures focused on topics addressed in the reading materials and were complemented by multimedia presentations available on online video channels. In addition, the course also drew on the d. school *Bootcamp Manual* that, through a number of theoretical and practical examples, helped students to acquire the necessary knowledge of the Empathy-Define-Ideate-Prototype-Test procedure. Tasks included completing readings and reflecting on them through answering questions in their blogs, writing a 1500-word literature review on DT, as well as to work on a project in groups in order to find solutions to problems related to a service or system on the campus. The course ended with presentations on the problems and solutions. The difficulties challenged during the course included the lack of students' skills in terms of the critical reading and writing a literature review, thinking about problems and their possible solutions from a broader perspective, as well as in terms of any time limitations required to "fully develop and test" prototypes.

The stages of DT mentioned above represent a challenge for the students, thanks to which multiple learners' skills are efficiently developed. In particular, it can address perfectly two of the pitfalls of today's virtual and individualistic society: the reluctance to cooperate and to communicate. According to Rauth, Köppen, Jobst and Meinel, (2010, p. 2) "it enables students to work successfully in multi-disciplinary teams", thus it "helps the potential employees to become better team players" (Çeviker-Çinar et al., 2017, p. 979). In addition, the teams can only succeed if its members work together; hence team members have to express their opinion and discuss it, which, undoubtedly, improves their communication skills (Henriksen & et al, 2017; Retna, 2016). A further benefit of this innovation-centred approach is that it fosters students' creative thinking and problem-solving skills (Dolak et al., 2013; Luka, 2014). What is more, it also contributes to the development of "soft skills", such as empathy and interpersonal competence (Çeviker-Çinar et al., 2017), which should be developed in order to increase business graduate employability (Andrews & Higson, 2008). Last but not least, since innovation goes hand in hand with information and communication technologies, DT improves students' digital skills.

The aforementioned benefits of DT as a pedagogical approach have also been proved by numerous empirical findings. Retna (2016, p. 5) investigated teachers' perceptions and experiences during the implementation of DT in the teaching process. The qualitative case study research using a method of in-depth interviews and participant observations revealed that teachers considered the potential of DT mainly in terms of enhancing students' creativity and empathy, as well as in fostering their problem-solving and communication skills. However, the research also showed that teachers struggled with several challenges in terms of time management, appropriate resources, poor grades, as well as the difficulties of an unusual way of teaching and learning. Similarly, the study carried out by Henriksen et al. (Henriksen, Richardson and Mehta, 2017, p. 150) examined teacher trainees' experiences and perceptions of DT as a teaching method through a qualitative analysis of the teacher education course drawing on the Stanford design thinking model, as well as the discussions, projects and writings of course participants. The findings of the research showed that DT had the potential to enhance participants' creative approaches to the problems of educational practice. They also "found empathy to be a powerful new strategy for understanding students" and in the phase of ideating they "recognized the power of idea incubation" and of "brainstorming without boundaries". Prototyping gave them the "excitement of bringing ideas to life" and the experience of connecting thinking and doing.

Due to the aforementioned advantages, the DT method can be a great tool not only in the hands of managers or entrepreneurs, but also in the hands of teachers and educational institutions, making the teaching/learning process more meaningful and authentic, as well as motivating students towards active participation (Ray, 2012). According to Liu et al. (2017, p. 98) "tourism and hospitality educators must invest time, patience and resources in preparing the teaching intervention to establish a cooperative and competitive atmosphere" that fosters creative thinking and enhances students to exchange new ideas with others during the course. Hsu (2018) points out that today's students are different in terms of their behaviours and expectations, thriving more in stimulating environments that enable collaborative learning. This viewpoint is also supported by the findings of the research carried out by Zagonari (2009), according to which Chinese tourism and hospitality undergraduates prefer hands-on teaching approaches rather than theoretical and descriptive methods. The fact that "traditional classrooms are no longer effective for the new generations of students" should also be taken into consideration by universities offering tourism degrees. Radical changes and breakthroughs are necessary for the sustainability of tourism education, including innovative approaches that make it possible to try out ideas and construct prototypes, and facilitate practicing project management and research skills, as well as developing soft skills, such as decision-making, problem-solving, leadership and communication (Hsu, 2018, p. 3). Despite the fact that most of the basic principles of the human-centred, collaborative, experimental, learning-from-failures and holistic approach of DT correspond with the expectations described above, as well as with the nature of tourism services and tourism product development (Tschimmel, 2012), no evidence of applying DT has been found in the field of tourism or hospitality education so far. In order to fill this gap, in 2018 the Department of Tourism at Constantine the Philosopher University in Nitra, Slovakia, piloted DT within the *Regional Tourism* BA study programme. According to the description of the given study programme, graduates are expected to develop tourism products, control the commercial and operational processes in tourism businesses and communicate in at least one world language and in one Central-European language. Since the method of DT is an approach that can address all these expectations effectively, i.e. creating new ideas, leading processes and teams, and communicating with people, it was introduced onto three courses, as follows: *Tourism Products*, *Destination Tourism Product Development* and *English Language for Tourism 2*.

The next part of the paper provides the methodology including research objectives, research instrument and sample, as well as the procedure.

3. Introducing DT in the *Regional Tourism* study programme – the methodology

The main objectives of piloting DT as a teaching method, based on the above theoretical background, were:

1. To test whether DT can develop creative thinking and problem-solving skills in the context of tourism.
2. To test whether DT can make tourism undergraduates more cooperative and motivated.
3. To test whether DT can enhance communication in English (in the case of the course of *English Language for Tourism 2*).

3.1. Further research aims

1. To identify the most demanding stage of DT as a learning experience and teaching method.
2. To identify the advantages and disadvantages of DT as a learning experience and teaching method.
3. To learn about the necessary changes that would make DT as a teaching method more effective.

3.2. The method

In order to reach the aforementioned aims the following research methods were used:

1. Unstructured observations of the lessons carried out by the teachers of the lessons taking notes of any difficulties, problems, and questions that emerged.
2. Semi-structured interviews with the students and the teachers carried out immediately after the lessons using a pre-defined set of questions.

3.3. The research instrument

In terms of the interviews with the teachers, the research instrument consisted of the following pre-defined set of questions:

a) Which of the stages of DT do you consider the most demanding?
b) What are the advantages of the method in your opinion?
c) Can you mention any negatives?
d) What would you change in order to make this method more effective?

With regard to the opinions of the students, the interviews included the following questions:

a) Which of the stages do you consider the most demanding?
b) What are the advantages of the method in your opinion?
c) Can you mention any negatives?

3.4. The sampling strategy and the sample

In terms of the type of sampling strategy, purposive sampling was opted for. Concerning the interviews with the students the sample consisted of 33 first-year undergraduates of the *Regional Tourism* BA programme and 28 first-year students of the *Regional Tourism Management* MA study programme. The groups of mixed-gender and mixed-nationality (Slovakian, Serbian, Hungarian and Ukrainian) students were further divided into teams of four or five members. Prior to the workshop students were divided into groups according the results of Belbin's Team Roles test (Belbin Associates, 2018).

With regard to the interviews with the teachers, the sample consisted of three respondents who took part in a one-week course of DT in Italy and who work as Associate Professors at the Department of Tourism (Constantine the Philosopher University in Nitra, Slovakia).

As far as the sample of the observations is concerned, for the introduction of DT, three courses were selected, as follows: *Tourism Products*, *Destination Tourism Product Development* and *English Language for Tourism 2*. The aim of testing the method of DT within three different courses was not to contrast or compare the results, rather to see whether DT can work with different courses and topics, as well as to get feedback from a relatively large number of students. The courses of *Tourism Products* and *English Language for Tourism 2* are offered in the first year within the *Regional Tourism* BA programme and are provided as weekly 90-min courses during the summer semester. *Tourism Products* gives basic knowledge on the products of different types of tourism, such as cultural, health or rural tourism. The syllabus of *English Language for Tourism 2* is concerned with the relevant terminology and issues of the fields most related to tourism, such as gastronomy, hospitality, or various other types of tourism, for example cultural, health or creative tourism. *Destination Tourism Product Development*, provided within the *Regional Tourism Management* MA programme as a weekly 90-min course in the summer semester, focuses on the most characteristic types of tourism and the development of tourism products in the destinations.

The lessons for all the three courses contained the same modules with the same duration that were developed on the Stanford Model (Hasso Plattner Institute of Design, 2018). However, certain modifications were made in order to make the tasks less

demanding with respect to the special conditions of the university environment. This refers mainly to the fact that at the time of piloting DT as a teaching method, Constantine the Philosopher University did not have the necessary infrastructure to test the tourism product prototypes created by the students among the tourists of Nitra. Hence, the last phase, i.e. testing, which is normally realized before product launch, was omitted. Thus, the whole procedure comprised only four stages (excluding *Icebreaking* at the beginning and *Presenting prototypes* at the end of the lessons), namely *Empathising*, *Defining*, *Ideating* and *Prototyping*. However, it is noteworthy to mention that since this pilot testing, a cooperation has been established with the local destination management organisation which will help to get feedback from the tourists of Nitra on the tourism products created in the process of DT by the students of the university.

The problem, or the goal, for each lesson was different. The task for the *Tourism Product* course was to come up with ideas on how to improve sport possibilities in Nitra (being the European City of Sport in 2018) for physically challenged tourists. Students of the *English Language for Tourism 2* course had to offer products of creative tourism in Nitra and its surroundings for non-Slovak tourists. Creative tourism is a relatively new field of tourism becoming more and more popular in recent times which "offers visitors the opportunity to develop their creative potential through active participation in courses and learning experiences, which are characteristic of the holiday destination where they are taken" (Richards & Raymond, 2000, p. 19). It may include a myriad of activities, from painting or cooking classes to performing a concert (Creative Tourism Network, 2018). Despite its growing popularity abroad, the possibilities of taking part in creative activities for tourists in Slovakia are still rather unsatisfactory (Hrubalová et al., 2017, pp. 205–212), even though the potential of Slovakia for developing this type of tourism is extremely high, due to its rich cultural heritage, history and spectacular natural conditions. The goal of the *Tourism Destination Product Development* course, whose training scheme is discussed in detail in Appendix No. 1, had to make the information about the cultural heritage of the city of Nitra easily accessible and interesting in a modern way for young, foreign cultural tourists.

3.5. The researchers and the procedure

As far as the observers are concerned, they played the role of "observers as participants", since they took part in the lessons as tutors and students were aware of their presence in the classroom (Cohen et al., 2007; Gavora, 2010). Similarly, the interviews with the students were carried out by the mentors of the courses.

The data were processed, with regard to the small sample and the character of the respondents' answers, mainly through applying the method of qualitative content analysis. However, in the case of the first question, the arithmetic mean was also applied. The findings, based on the observations and the participants' opinions, are described in the next part of the study.

4. Results

The findings of the observations and interviews can be evaluated from two points of view, i.e. those of the teachers' and the students'. Since the aim of testing the method of DT within three different courses was not to contrast or compare the results, the findings, i.e. the opinions of all the participants will be summarised together.

4.1. Evaluating the method of DT from the teachers' point of view

With regard to the level of difficulty of the particular stages of DT, the teachers were asked to evaluate each of them on a scale from 1 (the least demanding) to 5 (the most demanding). As is shown in Table 1, the mentors identified the phase of *Ideating* as the most demanding and the phase of *Icebreaking* as the least challenging one.

As summarised in Table 2, as far as the benefits of the method are concerned, one of the teachers mentioned "its applicability into different fields and organisations, from business and technology to services and education". That is why DT can be considered not only as an appropriate and modern way of educating future tourism destination managers, but also a method that students can use in their future jobs. Another positive opinion was that "students were forced to work in groups, share and discuss tasks through communicating face-to-face, what is becoming less frequent amongst the members of the Y and Z generation". Similarly, the teacher who piloted DT within the course of *English Language for Tourism 2* expressed that the real-life problem-solving approach of the task motivated the students to use English without making them aware of the fact that they were actually completing a communicative task. In addition, in order to reach the goal and to be successful as a team, they were far more cooperative and active than in the case of classic role-plays or discussions. In addition, another benefit was the fact that "they had to come up with creative solutions,

Table 1
The level of difficulty of DT stages from the teachers' point of view.
Source: Own elaboration, 2018.

Design Thinking stages	Average evaluated number
Icebreaking	2.00
Empathy	2.66
Defining	3.33
Ideating	4.66
Prototyping	2.66

Table 2
Advantages and disadvantages of DT from the teachers' point of view.
Source: Own elaboration, 2018.

Advantages	Disadvantages
Applicability into different fields and organisations	Time pressure and time limits of the particular stages
Enhancing teamwork and cooperation	The phases of prototyping and testing were limited due to the conditions of the university
Enhancing face-to-face communication	Unsuitable with less skilled students or with A1, A2 or even B1 level of English
Fostering creativity	Only works well with selected topics
Enhancing students' activity	

especially in the stages of ideating and prototyping".

On the other hand, teachers rank among the drawbacks of this method "time pressure and the time limits for the phases". Another pitfall of DT, expressed by a respondent, was the "final phase of DT, i.e., testing in the academic environment, since universities often lack the necessary equipment and resources to bring the prototypes to life and make them suitable for testing. For this reason, she added, it would be necessary to cooperate with the business sphere". Another mentor expressed that "the method works well with open-minded and creative students, as well as in the case of the *English Language for Tourism 2* course with learners with upper-intermediate or advanced levels of English proficiency; however, it might be very demanding and time-consuming in the case of A1, A2 or even B1 level of English according to the Common European Framework of Reference for Language Learning, Teaching, Assessment (Council of Europe, 2001) or with less skilled and unmotivated participants. Similarly, it might turn out very well as a teaching method in the case of selected courses and issues, but might not work so well with others".

Finally, corresponding with the above opinions, all three teacher-observers agreed that if they would change anything, it was "the time limit for the particular phases, which should be considered and planned thoroughly according to the character of the participants and the topic/course".

4.2. Evaluating the method of DT from the students' point of view

In terms of the level of difficulty of the particular stages, the students identified the phase of *Icebreaking* as the most demanding and the phases of *Empathising* and *Ideating* as the least challenging ones (see Table 3).

Amongst the biggest positives of DT (see Table 4) the students rank mostly the following aspects: self-realization, teamwork and cooperation, creating new ideas and things, finding solutions to problems, communication and spontaneity. What is more, at the end of the lessons some of the students expressed that they enjoyed the lesson and that they would welcome more lessons with similar tasks and approaches.

The only disadvantage of the method according to the students was the lack of time for almost all the stages, especially for the phases of *Icebreaking*, *Empathising*, *Ideating* and *Prototyping*.

5. Discussion

In order to draw conclusions, firstly, the findings of the investigation will be summarised alongside the research objectives.

5.1. Research objective No. 1: To test whether DT can develop creative thinking and problem-solving skills in the context of tourism

Firstly, it can be assumed that this approach may foster creative thinking in the context of tourism, since students managed to develop new, creative solutions to the problems defined in the field of tourism. For example, within the *Tourism Products* course they came up with the idea of renovating the existing swimming pool in Nitra in order to make it more accessible for wheelchair users. Students of the *English Language for Tourism 2* course "established" a creative centre in Nitra that would organize creative activities of different kinds for the tourists visiting Nitra. Concerning the lessons of the *Destination Tourism Product Development* course, a mobile application was designed, called "Cultural Heritage of Nitra – Cyril and Methodius" and providing a complete tourist information service linked to the heritage of Cyril and Methodius in a playful form, including all historical and archaeological sites (see Appendix No. 1).

Table 3
The level of difficulty of DT stages from the students' point of view.
Source: Own elaboration, 2018.

Design Thinking stages	Average evaluated number
Icebreaking	2.70
Empathy	2.15
Defining	2.30
Ideating	2.15
Prototyping	2.38

Table 4
Advantages of DT from the students' point of view.
Source: Own elaboration, 2018.

"Self-realization"	"We created perfect ideas just playing"
"Working in team[s]"	"Working in groups and cooperation"
"Designing new ideas, finding new solution[s], communication"	" [The] [p]ossibility to cooperate, finding solutions to a problem"
"It was something new. We could develop our creative thinking (what is usually really rare at the lessons)"	"I liked that we put all the ideas on the Prioritization grid, it was well-arranged"
"I realized that I am good at doing spontaneous things. Therefore, I feel happy"	"It was good, we could cooperate in groups and connect our ideas"

5.2. Research objective No. 2: To test whether DT can make tourism undergraduates more cooperative and motivated

Based on both the observations as well as the students' and teachers' feedback it may be assumed that the biggest positive of the DT teaching method was that it forced the participants to work together, and to share and discuss opinions through communicating face-to-face. In addition, as it was verbalised by all three mentors, students were far more active and enthusiastic than in the case of other lessons where traditional teaching methods were used.

5.3. Research objective No. 3: To test whether it can enhance communication in English (in the case of the course of English Language for Tourism 2)

As far as the course of *English Language for Tourism 2* is concerned, it might be assumed that the real-life problem-solving approach of the task motivated the students to use English without making them aware of the fact that they were actually completing a communicative task. In addition, in order to reach the goal and to be successful as a team, they were far more cooperative and active than in the case of classic role-plays or discussions (Sándorová, 2018).

5.4. Further research objective No. 1: To identify the most demanding stage of DT as a learning experience and teaching method

With regard to the controversy between the students' and teachers' answers in terms of the difficulty of the particular stages, it can be explained by the fact that the teachers focused on the completion of the tasks within the given time limit and did not notice the struggle of the members to work as a team. The reason that lies behind the students' perception of icebreaking as the most demanding phase might be the fact that the majority of university courses are not based upon cooperation amongst students and therefore they needed some time to start to work as a team. On the other hand, based on discussions with the mentors, they perceived the stage of ideating as the most challenging one, since they had to make a huge effort to make the students be able to group their ideas using the "Prioritization grid" and to make decisions about which idea to implement.

5.5. Further research objective No. 2: To identify the advantages and disadvantages of DT as a learning experience and teaching method

In correspondence with the scholarly viewpoints and empirical results highlighted in the literature review of this study (Rauth, Köppen, Jobst and Meinel, 2010, pp. 1–8; Çeviker-Çinar et al., 2017; Henriksen & et al, 2017; Retna, 2016; Dolak et al., 2013; Luka, 2014), the following aspects were ranked among the biggest advantages of DT by both the students and the teachers: fostering creative thinking, problem-solving skills, cooperation, communicative skills, as well as enhancing motivation, activity and enthusiasm.

On the other hand, the most negative thing about DT according to both the teachers and the students was the time pressure. In addition, drawing on the teachers' views, the method worked well with open-minded, creative and in the case of foreign language courses, with students of upper-intermediate or advanced levels of language proficiency; however, it might be very demanding and time-consuming with less skilled students or participants with a tendency of high uncertainty avoidance. Similarly, as explained above, it might turn out very well as a teaching method in the case of selected practice-oriented courses and issues, mainly those focused on marketing (especially the phase of product development) and management. However, it might not work so well with rather theory-centred courses or topics.

5.6. Further research objective No. 3: To learn about the necessary changes that would make DT as a teaching method more effective

In order to address the difficulties of the stages, thorough preparation and planning is recommended so that the teachers work as facilitators rather than instructors and be able to intervene in the case of any problems. First of all, it is advisable that teachers consider the time limits of the particular stages. Secondly, it is also recommended to consider the appropriateness of the problem/topic prior to applying the method. Furthermore, as recommended by one of the teachers, in order to test the prototypes created by the students, cooperation with the business sphere is inevitable. Fortunately, in the last few months a cooperation with the Nitra Tourist Board and the local DMO has been signed; hence, from the next academic year, it will be possible to get feedback from tourists using the products developed by the students.

6. Conclusion

First of all, it should be mentioned that the conclusions are only preliminary as they are based on pilot testing, the limitations of which can be described in terms of the small research sample both with regard to the number of the lessons as well as the respondents. However, due to the aforementioned future cooperation with tourism organisations, it could serve as a basis for further research in order to make a more substantial contribution and be able to draw stronger conclusions. Nevertheless it can still be assumed that although a few difficulties emerged during the piloting of DT, they can be addressed and eliminated effectively, as recommended above. Hence, it might be concluded that DT can be regarded not only as an efficient and creative problem-solving approach in tourism product development, but it also has the potential as a revolutionary and fascinating real-life teaching method, since it can enliven the lesson and enhance creative thinking, teamwork and communication.

Acknowledgement

The authors wish to give thanks for the financial support provided by the Education, Audiovisual and Culture Executive Agency (EACEA), within the Erasmus+ KA2 project, titled: *DigiThink: Design thinking for digital innovation,* ID: 2016-1-BG01-KA203-023719.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jhlste.2019.100238.

Appendix. Applying DT as a teaching method within the course of *Tourism Destination Product Development* – The framework of the lesson

Stage 1: Empathising (20 min)

One student played the role of a young cultural tourist, Magdalena, a French woman (aged 20–30), looking for the story of Saint Cyril and Methodius (the most important historical personalities connected with early history of the Nitra region) and open archaeological sites in Nitra, linked with these missionaries.

Students started this step with getting insight into the needs of the young woman. They asked Magdalena questions about her travel experiences, about her needs and problems she met during her travel and stay in Nitra. Then they put their findings on a "W4 Board".

Stage 2: Defining (10 min)

Based on the collected information of the previous stage, the students defined the basic problem by answering the questions on the "W4 Board". (A "W4 Board" is a square, further divided into four smaller squares in which the answers to the question words *Who? What? Why?* and *Where?* can be filled in. This board helps the students to better understand and to identify who has a problem, what problem he/she is facing, why this problem occurred and why it is important to be solved, and where it takes place.)

Their findings were, as follows:

Who? E.g. A 22-year-old French woman who speaks English but does not speak Slovak.

What? E.g. She wants to know more about the history of Nitra and the story of Saint Cyril and Methodius.

Why? E.g. Because she is interested in history and culture.

Where? E.g. She looked for information about Nitra on the internet, on web pages such as Tripadvisor; however, she found only a negligible amount of information on the history of Nitra and the story of Saint Cyril and Methodius.

Stage 3: Ideating (15 min)

1st Step: Brainstorming

The members of each team brainstormed on potential solutions to the problem identified previously. Each student wrote four ideas on a sheet of paper that, afterwards, was rotated among the members of the group, so that everybody could add his/her solutions to his/her colleagues' ideas.

2nd Step: Prioritising

Students discussed and put their ideas on the "Prioritization grid", which had two axes: 1. Importance for the user, i.e. the tourist (from low to high) and 2. Feasibility for the team, i.e. the workers of the destination management organisation (from difficult to easy). The upper right hand quadrant of the grid is called the "No Brainers" sector. The central right area is dedicated to "Utilities" (e.g. websites in English with the possibility of virtual sightseeing in Nitra) and the central top area is called the "Big Bets". The rest of the board is called "Unwise". If the idea is important for the stakeholders in the destination, but not for the tourists, it is considered as an idea of low importance. "No Brainers" (e.g. posters on buses and trains) are tempting and easy-to-reach solutions; however, it means that it might also be chosen by the competitors. "Big Bets" (e.g. a "story-telling" mobile application containing information about the cultural heritage of Nitra and the story of Cyril and Methodius) have a low level of feasibility, but they are of high importance reflecting significant investment and profitability. However, it is important to make them more feasible.

3rd Step: Deciding on the idea to implement

The teams had to decide on the idea they were going to implement. For instance, one of the groups selected the mobile application as the "biggest bet" and developed a prototype of it in next 20 min. The application provided a complete information service in a playful form about all of the historical and archaeological sites linked to the ancient history of Nitra and to the story of Saint Cyril and Methodius.

Stage 4: Prototyping (20 min)

The groups created a prototype of the idea selected during the process of prioritization using their imagination and various materials, such as plasticine, Lego, drinking straws, etc.

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