Active Learning in Teaching Digital Tourism: Preliminary Results Through Online Travel Business Simulation

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***Abstract*—Today, education requires a constant search of methods and instruments that stimulate student engagement. Active learning methods ensure student activities through their creativeness and reactiveness during educational processes. Simulation techniques have been used as a crucial component of active teaching especially in the context of Business Informatics due to a close relationship between simulated business models and computer technologies and management skills. In this paper, we focus on online Travel Agency Business simulation and show how a real simulation performed through active methodology of web coding results in a complete set of learning outcomes in Digital Tourism and Management education.**

Keywords*— *Digital Tourism Courses, Active learning, Project-based Learning, OTA Business Simulation

I. INTRODUCTION

Over the last decades, simulation resources have been extensively integrated within teaching programs, especially in engineering. Initially, many strategies have relied on the use of software tools for simulating a wide field of engineering problems [3]. In the last years, a particular attention has been devoted to the programs of business and management engineering for which digital resources for computational problems and simulation have been analyzed also from a learning point of view as usefully employed in terms of active learning methodology [6] [7]. However, in these cases the use of a particular simulation tool is required to involve students in management tasks and strategy building. Often this solution is difficult to implement for students without some technical and digital basic skills. As a matter of fact, Digital Tourism is an example of a business area with the need to teach skills for Online Travel Agencies (OTA business simulation) and often with students with low-level profile of digital skills. Therefore, the main aim of this paper is to describe a simulation based activity to support a complete active learning framework for digital and management competencies for OTA management with a web coding based simulation approach that emulates a simulation scenario of travel business. This is strongly related to the field of Digital Tourism with emphasis on booking data and travel business planning.

In the next section, we describe course organization and the way how web simulation platform has been implemented. Then we analyze the Travel Business simulation process and discuss the advantages. A focus on web coding and its role in active learning strategy it will be discussed in section 4 before the Conclusions.

II. DIGITAL TOURISM COURSES

These specific courses are **Digital Tourism** and **Web Information systems for Smart Cities**. From a general point of view they are organized in agreement with Agile Learning paradigm by following a project based approach (see [5] and [8]). The Digital Tourism course covers, among others, such issues as Digital Tourism fundamentals and software architectures, entrepreneurship, planning of travel business, organizational structures, destination analysis, market research and branding, team building in the modern companies, risk analysis and information gathering.

The teaching methods used so far are: presentations, discussions, case studies, teaching and learning activities, team exercises and web-stories on social platforms.

During the course, students carry out a research project, whose topic is: "Project preparation – Digitalization of a Travel Italian Destination of small scale to be promoted ". The student's task is to develop a model. They should also find examples of interesting business solutions based on a literature review and their observations.

During the classes on the subject "Web Information systems for Smart Cities", students learn about the concept of "Smart City and Data analysis", including the distinguishing factors and consequences of the fourth industrial revolution. In addition, they learn in detail the concepts of the Dashboard and web app for Data analysis and visualization: conditions for the development of this type of web information system, the impact of ICT on the challenges posed by this type of analysis, and aspects related to the sharing of knowledge. The teaching methods used so far in the classes are seminar lectures and exercises: group work, presentations and discussion. Students of this course carry out a research project covering the following aspects:

- development (in a team) of a concept of a digital tourism data model with assumptions and justification/comments on the selection of individual elements of the model;
- preparation of a multimedia presentation on the developed concepts.

As remarked in [6], this activity can be made more attractive by considering business simulation as learning process. In this case this introduction has been obtained by considering Online Travel Agency Business implemented through a complete web platform composed by independent web travel agencies each related to a particular destination assigned to a group of students according to their preferred destination. This differs from [6], meaning that web coding replaces business simulation platform and allows a more complete learning process with respect to the acquisition of digital skills. For example, there is no need to run an external simulation tool to show the elements of business reality because in the case of simulation of online travel agencies , students are able to experiment with real data gathered from the internet the tourism services and corresponding data analysis functions thus emulating tour operators and destination managers behavior. In particular Figure 1 shows the organization of the two courses obtained by considering collaborative platforms for the agile learning process resulting in a set of learning outcomes that are viewed as components of two-levels web architectures BACK-END and FRONT-END used in the Online Travel Agency Simulation Web Platform. In the next section it will be described this type of

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business simulation solution in more detail and it will be discussed its advantages.

III. OTA Business Simulation Analysis

The Online Travel Agency (OTA) business simulation learning system is implemented through the use of a project based platform (Wordpress PM) syncronized with team collaboration system already used in the class (Microsoft Teams). To engage students in travel business as potential digital tour operator, the project based platform works as multi destination management platform hosting a set of Travel Agencies each assigned to a working group and defined by e-commerce Wordpress CMS with the following plugin extensions:

- BuddyPress plugin for community management [9]
- Project management plugin for the Tour and destination content [10]
- Booking plugin for e-commerce travel simulation [11]

As recognized by [4] and [6], competencies needed in Modern Digital Business society are strongly related to flexible adaptive skills typical of active learning and collaborative frameworks.

In addition, two of the most significant American human development organizations (namely the 21st Century Skills Partnership and the National Council for Social Studies), based on the research and analysis conducted, have introduced a map of social competencies for the challenges of the 21st century. This map contains a catalogue of social skills deemed necessary for full functioning in 21st-century societies. It covers the following areas of competences, i.e.:

- Knowledge and Organizational Competencies,
  - creativity and innovation,
  - critical thinking and problem solving,
  - communication,
  - cooperation within a community group.
- Character Quality
  - efficient use of information and communication technology tools,
  - flexibility and adaptability (the ability to adapt to changing conditions),
  - productivity,
  - leadership skills and responsibility.

The use of this Business Simulation solution in teaching helps each student to develop several competencies relating to a more insightful understanding of reality, its rational transformation, and stimulation of her/his creative activity. In particular, for Travel Business simulation carried out through web platforms, we can summarize the competencies derived from Agile learning activities and learning outcomes in Table I.

With this business simulation strategy, students develop creativity, innovation, and decision-making skills, which are desirable for future roles as needed by new profiles of SMARTOUR OPERATORS emerging in Digital Tourism society.

However, the most innovative contribution of the two courses introduced is that the simulation is obtained through the use of web coding platforms to implement the travel business simulation. In the next section we describe how such OTA Business simulation has been carried out through a specific set of activities.

IV. The impact of Web Coding

It is interesting to remark the impact of web coding on OTA business simulation to improve learning activity level. Coding laboratories are a very recent learning activity model used in high intensive digital skill course to enhance the competencies on software platforms (cloud, networking, security, algorithms and artificial intelligence). In this case, we apply the same coding approach but shifted at level of WEB-coding laboratory in which the use of web platform is motivated by the fact that in the context of travel business e-commerce they could sufficient to simulate all required digital services (tour data map definitions, scheduling and booking services, etc.) introduced in our courses. This has the potential to extend the capacity skill set towards the education of future digital managers with the inclusion of students incoming also from other different education profiles oriented for example to cultural knowledge.

A. Agile learning and Web coding for Digital Tourism

When applied to OTA Business Simulation, web coding has the potential to reach a deeper level of learning activities.

This will obtained by considering that:

- there is no predefined timeline sequence of web coding task to be followed by each student and each group is free to propose an autonomous task definition except the constraint defined by the general travel agency template definition.
- travel simulation and destination definition can be autonomously refined thanks to the online procedures synchronised following agile scrum methodology.
- web output sharing is very natural in the context of Online Travel e-commerce platforms leading to shared data map and services (e.g. booking). A student simulating tour operator on the assigned destination can participate as client visitor for another destination leading to be more productive for future work.
- cross-disciplinary activities are facilitated due to the fact that different digital skilled profiles can benefit from autonomous group coding activity.

B. Real Business Gaming issues

In the last session held in spring 2022 at our University of Rome, it has been experimented a real activity in the context of digital Tourism Course composed by an outdoor Smartourism Hackathon. This extra activity has been organized with the collaboration of a real Tour Operator Organization (Tevere Park) with the contribution of students participating in a smartourism gaming learning activity inside a green touristic park located out of Rome and reachable by train. Such gaming learning activity has been performed by exploring real river trekking tours through bike and canoe trips and the associated activities with the assistance of external guides (see Figure 2). The gaming output has been put in the form of web stories including travel data analysis with suggestions and annotations autonomously discussed. In this way, we have confirmed that web coding for Tourism is a framework to enhance digital and business skills in a real world of working activities.

Among the the resulting benefits we remark the following ones:

- Refinement of starting paths is achieved on the field by autonomous interaction between groups and park assistants thanks to a game approach like Hackathon.
- The use of web stories has been made possible in mobile computing mode using socialmedia story editing functions in real time (see Figure 3 in which are listed the web stories collected by students who participated in the game).
- Compared to learning processes conducted only in the classroom or online, team work on the field and spontaneous game processes in the park during the realization of the guided tours, have produced a better level of awareness and self-esteem in students also facilitating teamwork.

V. Conclusions

Digital Tourism competencies are strongly related to the acquisition of experience. Thus, one of the most important elements of education is learning through experience. Business computer simulation currently seems to be the best solution that allows management and digital education in a joint framework but the use of a particular business simulation tool must be replaced with a more user friendly and practical tool due to the increasing number of different sources of touristic data and processes. Therefore, it is important to indicate

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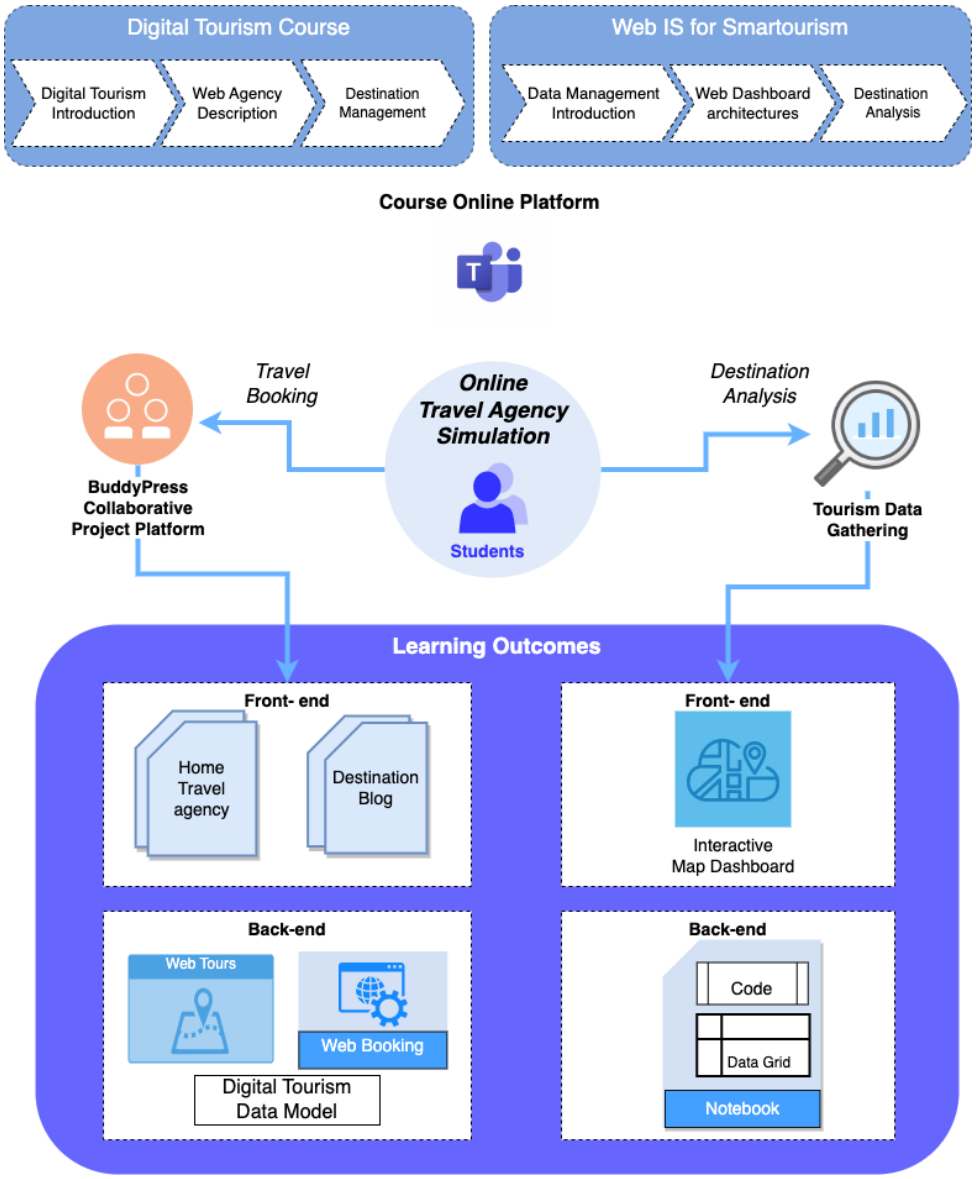

Fig. 1. Agile Learning Organization for the Course **Web for Tourism**

TABLE I
LEARNING OUTCOMES FOR SMARTOURIM COURSE

Cognitive Competencies	Tour and destination discovery web, map and multimedia design Planning and Risk analysis	Digital Competencies Analytical skills
	searching for attractions creativity in content creation innovation in new smartourism experience definition	Creativity
Action oriented Competencies	self management of travel business process time management and task planning	indipendence self learning Flexibility
Social Competencies	Tour integration and comparison Social networking diffusion	Communication and Collaboration Team Working

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Fig. 2. Smartourism Hackathon Organization

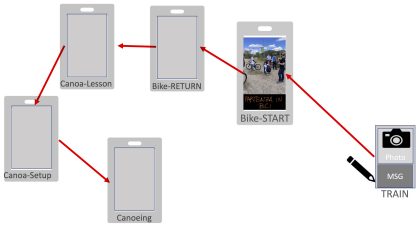

Fig. 3. web stories and student's perceptron

the need to develop students' professional and social competences with the use of a higher level type of business computer simulation strongly related to real cases. In this work we have explored the issues related to a first attempt to learn by means of web coding used in a set of project based courses for smartourism development. A complete organization of the learning web platform with a discussion of the resulting benefits has been given together a first analysis in terms of novel approaches arising from this type of web based simulation leading to the implementation of new game learning particularly suited for OTA business learning.

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