Smart Aspects of Academic Life: Research and Education

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Abstract

This paper addresses the topic of how smart elements can drive two main areas in academic life: academic research and the teaching process. The objectives consist in using smart elements to benefit academic research and teaching our subjects to students. In the case of the author of this paper, who teaches English and French language seminars for engineers, a course in Culture and civilization and one in European Union Institutions, benefits of students using digital resources, visual materials and prompting interactivity are considered. Prior work in the domain of psychology of education using advantages related to visual learning which helps students assimilate the information easier will be considered. Students can find the digital environment familiar, and, according to environmental psychology, this can create a comfortable medium for efficient learning and interaction with colleagues and teachers. The approach used is that of participatory observation, based on the experience of the author of the paper in her work with students and in her work regarding research during the pandemic and post-pandemic era in the online medium. The results show that technology can make both research and teaching activity more interesting, motivating, and more productive. The implications of this study have to do with helping with ideas for better performance in both research and teaching activities the academics interested in using digital methods more. With respect to foreign languages and culture and civilization seminars, information that could be of interest to students may be suggested to be taken from the domain of smart cities, for activities such as reading comprehension and examples of technological advancements in history and their role in connecting through digital communication researchers from various cultures. The value of the paper consists in sharing the experience of the author as researcher and teacher, in the context of today's smart culture.

Keywords: smart cities, ESP, cultural awareness, digital natives, student needs.

1. Introduction

The concept of smart city does not have a definition everyone agrees with currently [1]. If a city is intelligent, it means that "when an intelligent system adapts itself to the users' needs" [1]. According to Harrison et al., a smart city means an "instrumented, interconnected and intelligent city." Albino et al [1] sum up these features proposed by Harrison et al as follows:

> "Instrumented" refers to the capability of capturing and integrating live real-world data through the use of sensors, meters, appliances, personal devices, and other similar sensors. "Interconnected" means the integration of these data into a computing platform that allows the communication of such information among the various city services. "Intelligent" refers to the inclusion of complex analytics, modelling, optimization, and visualization services to make better operational decisions.

A smart city, therefore relies on technology in order to improve the lives of its inhabitants. These improvements reach as far as the education system is concerned. Universities in a smart cities can be expected to have various benefits for their staff and for their students.

A smart city also includes access to electronic resources for education purposes. Therefore, teacher and students can benefit from research platforms and from educational resources

for holding their classes. Since the COVID-19 crisis, at the Technical University of Civil Engineering where the author of the paper teacher, the use of Microsoft Teams platform has been maintained, and now classes are taking place in both face-to-face and online format. This is because some buildings and classes on campus are being rehabilitated through existing projects. As for teachers at this university, they have free access to the enformation.ro platform for research, which offers them access to papers from valuable journals in various domains, including Humanities, the field of research of the author of the paper.

The present paper has as an objective to present the experience of the author as a teacher and researcher at the University of Civil Engineering Bucharest, within the Department of Foreign Languages and Communication. The author of the paper teaches this academic year seminars of English as a foreign language for engineering students, a seminar in French as foreign language, a seminar in Humanities (Culture and Civilization) for engineers, as well as a course in European Union Institutions for students of the specialization in Translation and Interpretation. The paper will address questions regarding the advantages of using Microsoft Teams groups for both staff and students. The opportunities that have been seen concern the efficient exchange of information and keeping up to date with the events going on within the university, as well as the ease of access to the courses and seminars materials.

Efficient communication within the campus regarding both administrative, teaching and scientific resources are part of the smart city system, since "A smart city is based on intelligent exchanges of information that flow between its many different subsystems." [2]. Information regarding class requirements was usually lost at some point during the classes held before the COVID-19 pandemic. The dissemination of the information was based on real-time, direct communication during class, in the very beginning, when not all the students were present. Later on, students could ask and the teacher could provide the information again. Still, the deficiencies in information passing on were clearly seen, as at any time before the end of the seminar or course there would be at least one student claiming he/ she did not know about how to get the final grade or when to show up for the final test. For teachers, workshop opportunities are presented in a specific Microsoft Teams group. Some workshops can still take place online, organized by the university staff. Other workshops and other administrative information regarding academic year structure, elections, procedures regarding classes, such as hybrid classes, or opportunities for teachers to issue a card that can help them access various facilities regarding travelling and visiting museums abroad (the ITIC card) are all present on the TUCEB teaching staff group. The students of TUCEB have their own such group, where they receive similar information regarding cards for students (ISIC), deadlines to bring some documents to the secretariat, to sign up for optional courses, to pay study fees, to pay student hostel fees, academic year structure, workshops, contests, fairs regarding possibilities to find jobs or trainings for various jobs in their domain, volunteering, and so on.

Otherwise, before the pandemic, teaching staff received administrative information by means of collective emails, and students had their own whatsapp group. Some teachers

would create groups for communication regarding their course/ seminar using social media such as whatsapp and Facebook groups.

After the COVID-19 pandemic, the Microsoft platform is still usable, and students still receive their own institutional email addresses to access the platform for those courses and seminars that are still held online. This allows some teachers to choose to create a Microsoft Teams group where to add the students and to put in the files section all their teaching materials organized per courses and seminars. In this way, even if the respective seminar or course is still held usually face-to-face, it can benefit from having readily available materials in electronic format, instead of asking students to photocopy some pages, get them from a colleague, or take picture of them using their smartphones. It can often happen that not all the students manage to get the materials, or they may not know if they have them in order. Otherwise, they would be asked to go to the library to get the course support to photocopy and/ or the CD. This was valid before the pandemic before electronic resources platforms were supported by the university. Some courses/ seminars did not work based only on one single textbook, as teachers could collect materials from a variety of textbooks and adapt them according to the respective class' needs.

Communication between teachers and students was more efficient using electronic resources, since the Microsoft Teams platform allowed students to receive material to work on from the teacher, solve it and send it right away to the teacher to correct in cases where the student needed to work for a grade for an urgent make-up test.

Teachers could benefit generally from the online organization or hybrid organization of workshops and conferences, since they did not have to take the time and expenses to travel to on-site scientific events. In this way, they could present their research before physical classes at the university, and then return to their usual teaching staff activity. Otherwise, another teacher had to be asked to replace the teacher going away abroad or to another city to take part in a scientific event. One of the disadvantages could be that less travelling was done, yet, at the same time, right after COVID-19 various flights were postponed and travelling was taking place in more difficult conditions.

The present paper has as an objective to present the experience of the author of the paper as a teaching staff member and researcher regarding these two areas of activity in the Technical University of Civil Engineering Bucharest following the changes after COVID-19 pandemic brought to the high education system. The experience presents an application to the particular case of a university in Romania, and to the opportunities offtered by the Microsoft Teams platform as well as other platforms used in the field of Humanities, for both teaching and research activity. This paper can be relevant to other university teachers dealing with using electronic platforms after the COVID-19 pandemic for the benefits of the students and teachers, regarding course/ seminar materials and possibilities of communication regarding both the curricula, tasks and final tests.

2. Materials and Methods
The digitalization of education has been a frequently discussed topic in the literature [3], [4]. It is, after all, what the experience of the teaching staff at the Technical University of

Civil Engineering Bucharest is about. The online classes during the COVID-19 pandemic have created certain habits that are being maintained, including having the teaching staff and students group on Microsoft Teams that is still being used for information of the activities within the universities, as well as using Microsoft Teams groups for keeping in touch with the students of the taught subjects.

Starting with the 1960s, computers were used for classes in Europe [5]. This informatization process is nowadays continued by the digitalization process [6]. The digitalization process includes using "the virtual sphere, and expanding it with the possibilities of consolidating information and communication, mobile technologies and global information resources [6]" [3].

Teaching with technology has been encouraged, in particular for the domain of foreign languages. The fast pace of the inclusion and development of technology in the education process is what is new: "Integration of technology into teaching and learning is not new, but the rapid rate and pace of technological advancement is new, especially regarding new Internet, ICT and digital technologies." [7].

With the group on Microsoft Teams, everything is easier, since for listening activities all the teacher needs to upload is either an audio file or a link to a youtube video clip. The Department of Foreign Languages and Communication has kept in touch with technological devices to help students with foreign language resources since cassette players and recorders were frequently used. Among the teaching resources we can still find CDs, and DVDs used for video lessons. With the use of the Microsoft Teams platform, everything can be directly shared to students during class. Nowadays students have various gadgets, such as smartphones, tablets and laptops and they can use their own during class. The teacher no longer needs to look for the availability of desktop computers and laptops labs and to fit their availability with the schedule of the students' and teachers' other classes.

From the point of view of students' needs, we could look a bit into their psychology, by starting from their interests. As a group, students are concerned with gadgets and technology, since at their age they have ease of using it. Besides, they are believed to belong to the generation of digital natives, a term that underlines "the significance and importance of new technologies within the lives of young people [8]" [9]. For any group of students, their preoccupations should always be taken into account by the teacher, even if it is just to briefly mention them here and there when addressing them. In this way, they can feel included in a group and feel that the teacher has shown concern for what they enjoy doing in their free time at least. From engineering students, any teacher would expect them to be interested in the latest technological developments, due to the inclusion of various technologies in their main field of activity. Therefore, the platform with its online teaching resources is a welcome addition to the foreign languages classroom, since the seminars are promising to become more and more attractive. From the observations of the author of the present paper, students were more interested in handing in their tasks, in the exercises themselves, and in being active when they were allowed to use their phones, tablets and

even laptops in class to solve them. They also continued to enjoy participating in group or pair activities with other colleagues to solve some of the exercises together.

Since students nowadays are digital natives, their reactions to the use of Microsoft Teams platform can be explainable, since they find this environment familiar. Environmental psychology has focused on the benefits on the learning experience when a pleasant environment was available. In the past, the field trip was considered beneficial, especially due to the setting [10]. Social climate [11], [12], [13] as well as school design [14], [15] have shown how an environment that students enjoy or find familiar helps stimulate them to have good learning results.

The students in Translation and Interpretation need to be skillful with translation and interpretation software, since these can help them work fast. Various CAT (computer assisted technology) tools can be used for them to instruct a software programme with various terms from domains such as engineering, medicine, politics, and others so that the translations become more and more accurate. For EU institutions work, translators are expected to work with technology and correct the automated translations. Therefore, their needs are also related to the use of technology just as engineering students'. The European Union site offers all information about careers, citizens' rights, policies, etc., and students should know where various pieces of information they need are located. Therefore, the platform was useful since the teacher could share the screen and show them directly on the site where to look for. The links were also provided on the general chat of the teams group. At the same time, the files section includes graphics suggesting how the European Union institutions work together and how the EU is governed, as well as various research papers about EU institutions and about the EU itself, as a supranational entity. The course on EU Institutions was decided to be held exclusively online by the university, at least for the academic year 2022-2023.

What is immediately noticeable is the interest of the students to attend the online course and seminars. The attendance is large, and students are also willing to do the tasks they are assigned. For the students in the Humanities seminar, the teacher has noticed how they have been paying attention to the suggestion to use the culture identity manifestation grid of analysis when they choose to present a culture, which includes symbols, values, traditions, rituals and practices, as well as heroes (universal examples of outstanding behaviour) or personalities (restricted to a domain of activity, such as science, innovation, sports). The teacher has written on the general chat of the team this grid of analysis for the students to see, imitating the use of the blackboard. However, unlike the blackboard, the general chat offers a lasting preserving of information and availability even after the class is over for further consultation. This grid offers students a means of sensitivizing them to cultural awareness, and to understanding the specific features of each culture. They can understand that cultures can be different by comparing these elements of culture identity manifestations. The students appreciated the possibilities offered by exploring different culture or by presenting their own culture if they were foreign students and also the possibilities offered by sharing a PowerPoint presentation on the platform for their colleagues and for the teacher to check. This seminar is held exclusively in online format for the current academic year, which makes it easier to use these resources. Knowing how

to use a Powerpoint presentation efficiently is one of the skills that are appreciated for company presentations and academic events, so it is a good opportunity to practice this skill.

Besides audio and audiovisual material, as well as electronic resources which can be taken and used right away, other advantages may include the exercise with using technology to one's advantage, such as practicing PowerPoint presentations, which can be used for any occasion, both face-to-face and for online events. At the same time, in the online environment there can be more opportunities for visual learning. Not all lecture halls at the university are equipped with overhead projectors and screens, and not all students have a laptop or can group themselves around one during face-to-face classes if a computer lab is not available. After the class, especially if it is a foreign language class, students may not have the time to access additional visual material sent to them by email, whatsapp or in a Facebook group. Their time is limited for extra resources, especially if they are engineering students. Their curricula is quite charged regarding their main domain subjects.

Visual learning is prompted by the use of the digital environment. It is significant for engineering students according to the White Paper, and due to the following reasons, as the methods of visual learning can:
   • "open up new ways of problem solving,
   • provide new ways to think about science and engineering, and
   • enhance the education and practice of science and engineering." [16].

These features and requirements should be, thus, kept in mind, as part of teaching foreign languages for specific purposes (ESP, when it comes to the English language). The seminar for French as a foreign language is not so much tailored according to specific purposes since engineering students are mostly beginners. However, the platform allows for sending links to news sites for those more advanced students, and the teacher has proposed for them a news article that is also read in native accent about the profession of engineers and the need for engineers in France. At the same time, most materials for beginners are also visual, and include youtube available videos showing interaction in simple dialogues.

Some students, according to psychological learning theories, prefer to learn visually, using "graphs, diagrams, pictures", while others prefer to learn using "words, by reading or listening" [17]. Therefore, visual learning may be beneficial up to a point, and for certain students, regardless of the environment. At the same time, it depends on how it is used and to what extent, since "The visual environment is extremely rich and complex, producing information overload for the visual system." [18].

One of the advantages of using visual learning for online classes and not only could be due to the fact that the digital environment is often visual. This can be seen in the case of students used to gaming, or with using games to learn a foreign language. The internet also provides opportunities for rich use of media that includes visual and audiovisual files. Social media is also predominantly visual, therefore we could assume the visual aspect is often present in the lives of present-day students.

3. Results

The need for using technology and technological skills should be kept in mind as part of the needs of contemporary students, regarding any subject that is being taught. The visual materials could be seen as having more impact on these students since they are used to the images shared on social media. Nowadays, we can take with our smartphones pictures of anything around us. Therefore, it could be assumed that today's students should feel that the teachers are adapting their taught subjects to contemporary day reality and take into account their need for the visual aspect. To the author of the paper, the Microsoft Teams platform reminded of social media, especially Facebook and Facebook groups, since it allows for files storage and real time communication both publicly for the members of the group and for private messages. It also allows for likes. This is what makes, in the opinion of the author of the present paper, a familiar environment for students and teachers used with social media activity.

What is more, certain profession, such as that of engineer, can require scientific training and use of spatial geometry and skills, which inevitably lead to them needing visual skills. Therefore, visual learning could be regarded as being adapted to their needs and to their psychology as future engineers. They may also find it easier to learn visually, since if they have spatial skills that are more developed, which make them suitable for their future profession, then this could be considered their general learning style. This could differentiate them, therefore, from the students in Translation and Interpretation, whom could be expected to have a more linguistic learning style, finding it easier to memorize by hearing spoken lectures, for example. At the same time, it depends on the materials used, and on the topic discussed. Sometimes, graphs and charts could help anyone, regardless of main learning style, to visualize information. Tables can sum up many pages of lectures, which can save time for any student, regardless of formation, skills and future domain of activity.

Extracurricular activities are also considered an important part of motivating students to learn more and to develop their skills. Such activities are easier in the online environment, and students at the Technical University of Civil Engineering Bucharest have taken part in various workshops regarding the way research should be done properly, in conferences based on the engineering domain, or in conferences and trainings organized by the European Union in the field of translation and interpretation.

For research, it is already a known fact that it is done easier and faster, finding out the main research already carried out in the domain of a paper we wish to write, by just a few clicks. Access provided to scientific literature by the university has helped teachers to develop in their field of research but also to help provide students with necessary material for the seminars and courses taught to them.

4. Discussion and Conclusion

Teaching and learning should lead to help learners adapt to their contemporary world, as far as their skills and future domain of activity are concerned. Since technology is such a big part of our lives, regardless of our domain of activity, education should consider helping students adapt to their times, but at the same time, it should also keep up with the reality

we are all living nowadays. For instance, nowadays we can do many activities ourselves and no longer have to go to a desk to pay our conference fees, taxes requires by the state or by our mobile phone company. Even when we go shopping we can use electronic devices and we can even not go shopping at all physically. Instead, we can use an application and order what we want to buy.

Nowadays, if students want to learn a foreign language, they can use smartphone applications. Therefore, the role of the teacher is to offer them more. They can also download any textbook or dictionary from the internet, by paying for the ebook version. Therefore, if a teacher only uploads the resources for them it may not be enough. The teacher should guide the students through the available resources, make recommendations, allow them to use existing material for solving their tasks, and to help them interact among themselves. Skills such as online presentations and use of online resources are part of smart education. At the same time, the role of the teacher in their learning remains the same as in the past, as well as the role of the environment. Human relationships never change, and so will establishing rapport, or a beneficial teacher-student relationship never change, in spite of the advancement of technology, skills requires, resources available and available digital environment for teaching and learning activities.

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