The Student Journey Map (SJM): a scenario-based approach to professionalizing digital education

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Abstract—The Student Journey Map (SJM) places learners at the center of sharing knowledge, with the support of a teacher who assumes the role of coach in the acquisition and dissemination of know-how. The SJM is designed to be experimented with in combination with the educational scripting approach of the Customer Journey Map. In our qualitative study, we formulated several propositions, the primary one being that it is important to offer face-to-face social exchanges in student-based environments. The SJM helps to compensate for isolation by recreating a social link between students. The teacher begins by establishing the pedagogical scenario of the course with its objectives, the topics to be covered, and practical training sessions. Our experiments show that by using the SJM approach, students collaborate directly with each other, thereby allowing co-learning that does not occur in a merely transposed online teaching approach.

Keywords— Student Journey Map, online teaching, tacit knowledge, explicit knowledge, students' socialization, group skills acquisition

I. INTRODUCTION

Narrating a course by adding a voice-over and publishing it online is not enough to qualify as distance learning, especially if the purpose of course is to impart practical skills. If a distance learning course offers a certain freedom in the learning process, then the pedagogical material has to be adapted to accommodate the constraints of distance learning if the purpose is the development of tacit skills, which typically rely on a logic of exercises and training. With the integration of audiovisual means as pedagogical supports to facilitate comprehension, scripting has become an essential pedagogical approach in recent years, particularly in distance learning. Scripting allows students to project themselves mentally and practically into the realities that they will encounter, or have already encountered, in their daily professional activities.

A. Analogy to the Notion of Script in Cinema and Theater

In the fields of theater and cinema, scripting and directing a story consists above all in bringing the story to life. Dividing a story into units and suggesting their relationships to each other, whether they are scenes, acts, or sequences, allows for the expression of a multiplicity of perspectives drawn from different situations. In that dynamic, the aim of pedagogical scriptwriting is to divide the know-how to be acquired into units to be linked to one another for a progressive, masterful acquisition of knowledge that engender professional skills. However, the process not only involves scripting the content but also ensuring the learners' activity. Indeed, scripting not only allows learners to relate to the pedagogical content but also stimulates and organizes their activity in relation to content. By encouraging learners' personal involvement, scripts position learners as engaged actors in the process of learning professional skills. Scriptwriting thus primarily entails the work of content design, the organization of resources, the planning of activities and mediations to accompany learning, and projection into a given professional context. By extension, pedagogical scripting involves a delicate balancing act to avoid being too boring or distracting learners from the knowledge to be acquired.

B. Integrating the Customer Journey Map in the Teaching Process to Design the Student Journey Map

Scripting a professionalizing learning process requires the teacher to plan their course by detailing the content covered, the targeted learning outcomes, the teaching strategies, and the methods of evaluation used. Several studies that have examined teachers' designing of pedagogical scenarios have highlighted the importance of guiding teachers in the process of developing such scenarios. At the same time, XXX raises questions for learners, including about how they may interpret the scenario, about whether the organization and structure of the activities are effective, and about how learners experience learning in the system planned and staged by the teacher. Against that background, the Student Journey Map (SJM) aims to place learners at the center of the creation of knowledge and the sharing of know-how. The creation and exploitation of knowledge in education has to be effectively managed with the support of the teacher, who assumes the role of director and guide in the acquisition and dissemination of knowledge. The SJM is designed to be experimented with in combination with the pedagogical scripting approach of the Customer Journey Map (CJM), a primary tool of service design used to create and realize experiences for customers.

The aim of our research was thus to provide a framework to support teachers in adapting their teaching material, especially for distance learning, while integrating learners as co-actors in the sharing of knowledge and thus in the progressive acquisition of know-how.

C. From Explicit Knowledge to Tacit Knowledge through Internalization

This research is based on the observation that we are increasingly used to sharing and manipulating rich digital content, especially in the form of video. Clearly, those skills can be exploited in learning approaches in which each actor in the learning chain can create content that explains the important elements of their work and is aligned with the pedagogical objectives of the course identified by the teacher.

For the digital learning of business skills, a particular grammar for the transmission of know-how in an originally traditional mode based on a master–disciple relationship and therefore on socialization, that is from tacit to tacit knowledge, according to Nonaka's SECI (Socialization, Externalization, Combination, Internalization) model [1], has to undergo successive phases of externalization (i.e., tacit to explicit), combination (i.e., explicit to explicit), and especially internalization (i.e., explicit to tacit). It is during that last phase, which has heretofore been neglected, that the challenges of teaching practical know-how via digital means lie.

D. Purpose of the Research and Organization of the Paper

First, we conducted a literature review and a qualitative field survey to generate propositions from our findings. Second, by using a new type of visualization tool—in our case, the SJM—we redesigned a pedagogical scenario of online teaching that promotes the learning of professional skills. Third, for staging and testing, we conducted an experiment based on pre-experimentation techniques on Microsoft TEAMS with two groups for comparison: one applying the classical teaching approach (i.e., linear), the other applying our SJM concept, followed by a focus group with all participants to draw conclusions for improvement.

In concrete terms, our research aimed to:

- Establish a map (i.e., the SJM) inspired by the CJM to accompany teachers in their scripting processes, one that needed to include the course requirements in terms of pedagogical objectives and integrate learners in the co-construction and sharing of knowledge; and

- Experiment with the SJM within the framework of a course to evaluate its relevance for both teachers and learners.

This paper is structured as follows. In Section II, we present a review of the literature that explains what is involved in the process of using online teaching to promote the acquisition of know-how (i.e., tacit knowledge). In Section III, we briefly present the primary findings of our qualitative investigation based on semistructured interviews, as well as a research proposition that we developed based on the synthesis of the fieldwork. In Section IV, we present the experiments that we conducted on Microsoft TEAMS and the primary inferences that we have drawn from the operationalization of our research proposal. Last, we articulate our conclusions and provide some directions for future research.

II. LITERATURE REVIEW

The COVID-19 pandemic has spawned unprecedented situations worldwide that have greatly affected people's lives. Despite lingering doubts about how and when the pandemic will end, the question that remains is whether life will ever return to its former state before the pandemic began [2]. According to the World Health Organization (WHO), although COVID-19 may haunt our daily lives for years to come, the world will return to normal only once a vaccine against the viral strain has been fully implemented around the world [3]. WHO scientists have also cautioned, however, that the pandemic will never be contained by vaccination campaigns and that the world needs to be prepared to live with COVID-19 indefinitely [4].

The pandemic and the lockdowns that it necessitated have affected nearly every sector of the global economy, and higher education is no exception [5]. In the context of the ongoing crisis, universities have scrambled to transfer courses to virtual classrooms and have rapidly introduced new forms of teaching and learning, in which the shift to online education is accompanied by new forms of assessment and innovative digital tools for communication [6]. As a result, school closures have ranked among the many non-pharmaceutical prevention strategies that have helped to reduce the number of cases and slow the spread of the disease [7].

A. Asynchronous versus Synchronous Online Teaching

Online training is a subset of *distance education*, described as learning via the Internet, intranet, and/or extranet [8]. The sophistication of e-learning varies widely; basic online programs provide text and graphics of course content, exercises, tasks, and online assessments, whereas more sophisticated e-learning programs include audio and video content, simulations, and live sessions with peer-to-peer and expert discussions [9]. The two ways of teaching students online—asynchronously and synchronously [10]—are offered by virtual learning platforms, usually facilitated by learning management systems (LMS) [11]. LMSs are software applications used to facilitate the online learning process. Moodle, one of the most popular LMSs, has various features that can support students' online activities, including the uploading and sharing of course materials, the uploading and review of student work, chats, discussion forums, surveys, and quizzes [12].

A synchronous learning environment is one in which the teacher and students meet online on a specific online platform to engage in and communicate about a lesson. The advantage of synchronous teaching is that students can access immediate feedback and participate in live interaction. However, such learning requires a real-time online presence and quality infrastructure [5] and, in turn, a fixed date and time to meet, which contradicts the promise of so-called "anytime, anywhere" learning that online courses have traditionally promoted [13].

Asynchronous learning, by contrast, does not require students to be present online in real time, because learning takes place according to their own schedules. The advantage of asynchronous learning is that students are in control of their own time of learning and the learning itself and can learn at their own pace. However, in asynchronous learning, students cannot receive immediate feedback from professors or interact directly with their classmates [5]. Nevertheless, according to [10], when such responses are delayed, students engage in

critical thinking to a greater degree, and the more that they think about the problem at hand, the more carefully they construct answers instead of issuing impromptu responses. That spatial distance reduces shyness, fear of the teacher, and pressure.

B. Recent Research on the Impact of Rapidly Switching Students to Online Education

Although online teaching is stigmatized as being of lower quality than face-to-face learning, research has shown that the opposite may be true. Even so, the abovementioned rapid transitions to online education by so many institutions may have entrenched the perception of online teaching as the weaker mode.

Unlike educational experiences that are planned from the start and designed to be online, emergency distance learning involves a temporary shift in educational delivery to an alternative delivery due to critical circumstances [14]. In a recent study [15] addressing emergency distance education, students had access to blended learning approaches involving a mix of technological and conventional means of learning or using blended materials. Their experiences revealed that although they appreciated distance education, they also perceived it as a challenge.

University students are increasingly recognized as a vulnerable population that suffers from higher levels of anxiety, depression, substance abuse, and eating disorders than the general population. Therefore, when the nature of their educational experience changes dramatically, their mental health burden is liable to be amplified [16]. [6] have confirmed that the current dissolution of the physical and social environment of universities can significantly affect students by creating problems related to routine and self-discipline, mental and physical well-being, motivation to study, and feelings of isolation.

Those authors have also acknowledged that the COVID-19 pandemic and its effects on universities represent a crisis in which rather stable structures, including campuses with shared facilities and face-to-face communities and practices, have been temporarily dissolved and transformed into something less familiar on online platforms [6]. Although school leaders consider distance learning to be similar or worse than standard practice, they admit that the sudden shift to distance learning adversely impacts group work and practical work, as well as students' participation and engagement. In addition, long-term physical distance from their schools, their teachers, and, more severely, their peers can engender the emotional effects of detachment [17].

New evidence also suggests that students in virtual learning retain only a fraction of the material that they could have acquired through face-to-face instruction, meaning that many students may not learn fundamental concepts that prepare them for lifelong learning and work. Published in the journal *Rite of Passage* [18] has revealed that teachers also made themselves available beyond office and classroom hours to provide constant support to their students and help them to navigate unfamiliar technology from home. The study also revealed that home-schooled students, who tend to live in higher-income households, enjoy widespread access to technology and helpful resources such as tutors. By contrast, disadvantaged students, whose parents are more likely to be essential workers and thus absent for much of the school day, often cannot access such services.

Although the idea that leaving home to attend college was an essential rite of passage has been shaken due to the COVID-19 pandemic, academics should view the pandemic as an opportunity to change their teaching practice, to take advantage of the replacement of outdated practices, and to reframe what the student experience entails. [19].

III. FIELDWORK

To achieve the objectives of our research, we first conducted a qualitative survey following a semi-structured interview guide that we developed. The eight students whom we interviewed formed the sample of our target audience.

A. Interview Guide

The interview guide contained multiple primary, and follow-up prompts and/or questions:

1. Tell me about your last online course in chronological order. What did you like about the online course? What did you not like about the online course? If you could change three aspects of the online course, then what would you change?

2. Are there any subjects in your online courses that involve the learning of skills (e.g., skills acquisition)? How do you approach exercises, case studies, workshops, group work, etc. in your online courses? Of all of your distance teaching and learning experiences, tell me about one that has worked particularly well in terms of skills acquisition. What do you think would be the ideal way to acquire a skill through online learning?

3. How do you personally approach challenges with motivation in relation to online education? Do you think that interacting with a mentor (e.g., guide, teacher, expert, or tutor) would facilitate skills acquisition online? Do you think that the quality of learning is as good online as it is in person? In your opinion, what kind of feedback in terms of frequency, form, constraints, and learning follow-up would be necessary to complete a learning experience?

Following interviews, our synthesis and analysis of the data collected led to the formulation of research propositions, the primary one being that, in order to allow students to enter the professional world with confidence, it is important to offer face-to-face social exchanges in a student setting.

B. Discussion Related to the Main Research Proposition

The online learning context makes the experience anticipated by students less attractive due to forced social isolation. For students, the situation not only raises the prospect of experiencing online courses alone at home, for our interviews revealed that students experience less of a sense of belonging in the class. Certain transversal skills, including learning to make a presentation to a responsive audience, are also no longer accessible in that context. Key rituals are absent as well, particularly breaks during lessons that are considered to be a strong informal moment of sharing between students and teachers. Interviews captured how the decrease in social contact has greatly affected new generations of students, for our interviewees reported difficulties in making connections with others, working in groups, or even in disciplining themselves and taking responsibility for their learning. At the same time, the effects of lacking social contact are easily imagined among students, who tend to develop significantly as individuals during their university years. That period of their lives marks an important passage in which many of them relocate, gain independence, develop their personalities, and

improve their sociability. All of those aspects also help to prepare them for the professional world that awaits them.

IV. OPERATIONALIZATION VIA PRE-EXPERIMENTS ON MICROSOFT TEAMS AND THE ANALYSIS OF RESULTS

To operationalize our research proposal, we used a pre-experiment to compensate for the isolation of online education by recreating a social link between students. To that end, we imagined adding so-called "internalization bubbles" to the externalization structure of online teaching, as shown in Figure 1. Those terms, *internalization* and *externalization*, refer to Nonaka's SECI model [1] and respectively mean moving from explicit to tacit knowledge and from tacit to explicit knowledge. Accordingly, when teachers teach online, they no longer operate in a configuration of socialization with their students. On the contrary, they become a part of externalization, for by using an online mode, their own tacit knowledge becomes codified. Thus, the internalization bubbles that group students working together will allow them to internalize the knowledge provided by the teacher. In that process, the teacher's explicit knowledge will be transformed into tacit knowledge due to the socialization that occurs within the student group.
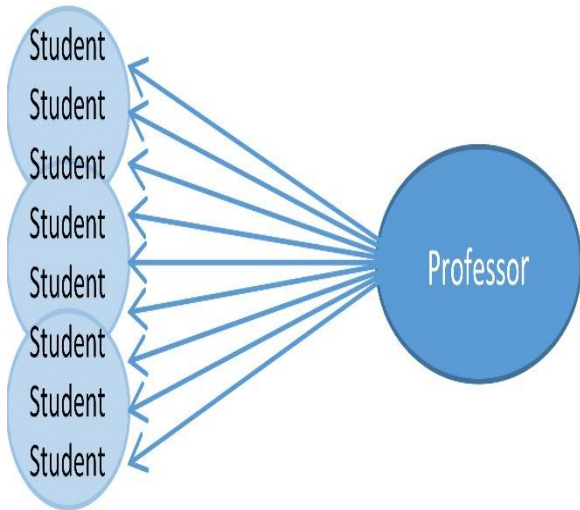

Fig. 1. From externalization to internalization through student bubbles in online teaching modes
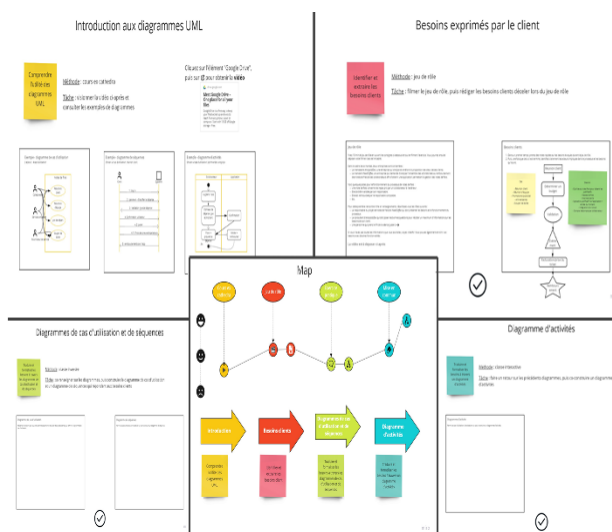

Fig. 2. Programming the Student Journey Map pre-experiment on Miro

To verify whether our *modus operandi* confirms our proposition, we adopted a comparative logic in which one group experiences completing an exercise in a collaborative way (i.e., with knowledge of the pedagogical scenario of the subject in question), whereas the members of the other group experience completing the exercise individually. We wanted to observe whether the quality of learning was better in one group than in another and whether the co-construction approach compensates for the isolation experienced by some students. We thus proceeded to conduct two experiments on Miro based on the pre-experimentation protocols (see Figure 2) with a sample of students:

- Moderator mode: Two groups have to complete a collaborative exercise, and in one of the two groups, a student is designated as moderator of the group.

- Student Journey Map mode: Two groups engage in a 45-min course: one using a map built to allow interactivity and use different teaching methods, the other approaching the course in the traditional way.
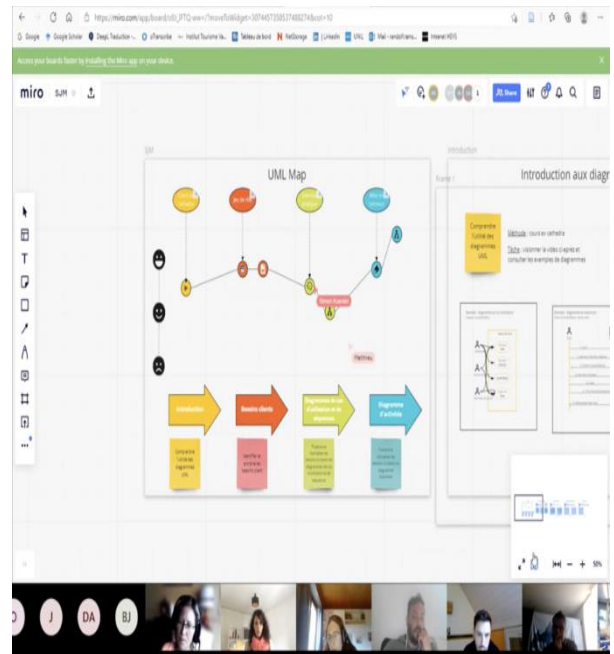

Fig. 3. Course conducted with Microsoft Teams and Miro in which students follow the teaching scenario provided by the Student Journey Map

A. Focus Group Following the Experiments on Teams

Overall, participants found the SJM to be useful to follow due to its clarity, simplicity, and color coding. On the one hand, the limited time allowed for rapid, relevant critical thinking in the group exercise. The examples of diagrams previously integrated facilitated the practice of implementation. On the other, the same limitations of time may were viewed as too restrictive for participants not familiar with the tools and content of the course. Therefore, an introduction to the content to better contextualize the problems addressed in the course could facilitate the learning process. In either case, participants expressed a certain need to continue to take notes with paper and pen to help them to understand the material more effectively.

Depending on the complexity of the problem to be addressed, the presence of a coach is desirable in order to

better guide the participants and clarify situations as necessary. At the same time, feedback from the teacher at the end of the exercise to correct and fix mistakes is another possibility, as learners out of their comfort zone were able to be autonomous; they learned faster and engaged in more in-depth discussions. In e-learning, feedback allows participants to assess their progress and identify areas in which they can improve. Feedback promotes self-reflection, increases knowledge retention, and encourages constructive discussions with faculty and/or other team members. Thus, whereas some of the beneficial characteristics of face-to-face group work transferred easily to the online classroom, others seemed to have been lost.

Regardless, the group collaboration phase in using the SJM gets underway immediately. Those co-production phases are beneficial for students because they teach them collaborative skills and afford a way to foster knowledge sharing. Even so, it remains necessary to define strategies to structure interactions and establish conventions that allow effective learning, including specific roles assigned to each member of the group.

B. Lessons Learned and Follow-Up Steps

The chosen *modus operandi* for online teaching in our research was based on the notion of the SJM following the principle of the CJM. The teacher begins by establishing the pedagogical scenario of the course and its objectives, the topics to be covered, and the possible exercises and/or quizzes to be completed by students. The content is subsequently co-constructed by the teacher and the students, the pedagogical vision shared, and interaction fostered.

Because we followed a learning logic involving applied training, we concentrated our sample on tertiary-level and continuing education students in schools of management and conducted our interviews and experiments with such individuals. Ultimately, however, the target audience of our project is clearly university professors. Our project considered the COVID-19 pandemic to be a turning point in online education. Whereas most studies during the pandemic have focused on using technology in teaching, we wanted to contextualize the SJM as much as possible and provide a pedagogical scenario to better engage students in the acquisition of tacit knowledge and thus professional skills. However, our field study revealed that, in the online mode, social interaction between students seems to be necessary to avoid isolation but also decreased productivity in group work. Our experiments also revealed that by using the SJM as a pedagogical scenario, developed based on our qualitative fieldwork, students collaborated directly with each other, thereby allowing for co-learning that does not occur in a traditional teaching approach simply transposed to the online mode.

V. CONCLUSION

In our research, we first conducted a qualitative survey to understand the feelings of students who had to switch to online learning overnight. Our hypothesis was that such improvised distance learning may facilitate the acquisition of know-how (i.e., tacit knowledge). By applying the notion of the SJM, we sought to ensure that a learning path was taken online that involved exchanges with groups of students and feedback provided by the teacher along the way. We proceeded to conduct two pre-experiments on Microsoft TEAMS—one with a classical pedagogical scenario of a course addressing UML programming and a pedagogical scenario following the SJM—in order to verify the feasibility of our concept and to identify preliminary trends (i.e., in the focus group). The results are encouraging, and we intend to repeat the experiments on a larger scale in the form of quasi-experiments to draw statistical conclusions.

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