Strengthening Teacher Agency: Supporting the Orchestration of Ethical Dilemmas With EthicApp

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Abstract: Developing ethical reasoning as a competence is gaining relevance in higher education settings influenced by the current demands of society. One approach to achieve this competence is to propose realistic ethical dilemmas to the students. Nevertheless, educators need help in integrating ethics education effectively in higher education due to curricular constraints and a lack of supportive structures. EthicApp is a social platform that aims to support teachers in designing and enacting learning scenarios to foster ethical reasoning. However, the introduction of a new tool such as EthicApp may have undesired consequences for teachers' agency. The notion of teacher agency is complex and not sufficiently studied in Technology Enhanced Learning contexts. For this reason, we propose to study the implications of the use of EthicApp for teacher agency in the light of the metaphor of orchestration. The metaphor of orchestration in TEL offers a holistic approach to studying how teachers integrate technologies into their practice. This paper presents preliminary findings from a case study in which three higher education teachers orchestrated learning designs supported by EthicApp. Early findings indicate that, although managing the learning scenarios in real-time was perceived as demanding, EthicApp empowered the participant teachers to design innovative learning scenarios, raise awareness, and inform the adaptation of the learning scenarios.

Keywords: Ethics education, Orchestration, Teacher agency, Higher education, Case study

1. Motivation

Current societal demands are causing higher education institutions to reconsider how to integrate ethics education into their curricula to better prepare students for facing real-world dilemmas (Rodríguez-Galván et al. 2023). Apostolou et al. (2013) advocate for an across-the-curriculum approach that considers skills like ethical reasoning and decision-making, among others, as core elements of academic curricula. However, there are barriers to incorporating ethics such as the perception that the course content is not related to ethics or curricular constraints (Smith et al., 2023), as well as the lack of resources (e.g., research-based information and/or tools) to help teachers redefine their methods for implementing problem-solving activities (Choi and Lee, 2009). Computer-Supported Collaborative Learning platforms such as EthicApp, which implements a pedagogical model based on dilemmas to teach ethical reasoning, can help to address this challenge. EthicApp[1] enables students to analyse ethical cases and answer individually or as a group (which can be anonymous and formed based on heterogeneity criteria) allowing teachers to monitor in real time students' work (Álvarez et al., 2024). However, the introduction of new tools may pose challenges to the achievement of teacher agency in Technology Enhanced Learning (TEL) contexts. Teacher agency is achieved when educators strive to control the curriculum by leveraging their pedagogical stances, future goals, and current constraints and opportunities (Jenkins, 2020; Priestley et al., 2015). Approaching the study of technology integration in the classroom through the lens of teacher agency helps to understand teachers' positioning on innovations, while illuminating how technologies can enhance their educational practice (Albion and Tondeur, 2018; Ketelaar, 2013).

[1] https://www.ethicapp.info/

Despite existing research, teacher agency remains understudied in TEL contexts. There are challenges to study how teachers navigate through complex interactions among the tool and students at different levels. We propose to use the orchestration metaphor to characterize the implications of teacher agency in TEL settings. The orchestration metaphor offers a comprehensive approach to studying how teachers integrate technologies into pedagogical practices, including designing and managing multiple activities and social levels (Prieto et al., 2015). Studying how teachers orchestrate ethical dilemmas with EthicApp can provide valuable insights for strengthening teacher agency and supporting ethics education. Hence, this study aims to explore the following Research Question (RQ): *To what extent does EthicApp support teacher agency when orchestrating learning scenarios based on ethical dilemmas in higher education?*

2. Methods

To study the aforementioned RQ, we conducted a case study guided by the interpretive research paradigm, whose aim is to achieve a deep comprehension of concrete phenomena. To structure the inquiry, we deployed an anticipatory data condensation process (Miles et al., 2014) based on four orchestration activities within the revised orchestration framework proposed by Prieto et al. (2015): design, management, awareness, and adaptation.

This case study was conducted at the Universidad de Valladolid (Spain) and encompassed three learning scenarios (see Table 1). Three different teachers orchestrated each of the learning scenarios in which the participants were students from the Bachelor's degree in computer engineering (S1), the Master's Degree in Applied Research in Education (S2), and a training course on Ethics for doctoral students (S3). Two experts who designed the dilemma-based ethics teaching model that is implemented in EthicApp, participated in several meetings with the teachers to assist them in preparing the learning scenarios. Additionally, the experts provided support to the teacher in scenario S3. The underlying goal of the learning scenarios was to develop students' critical thinking and argumentation skills through collaborative knowledge construction. The learning scenarios included several phases in which students had to judge the dilemmas posed, first individually and then in pairs or small groups.

Table 1: Synthesis of the three learning scenarios

Learning scenario code	Educational level	Number of participant students	Delivery mode	Temporalization
S1	Undergraduate	70	Onsite	1 session. 2 dilemmas. 2 hours overall
S2	Master	14	Onsite	1 session. 2 dilemmas. 2 hours overall
S3	Doctoral	20	Online	2 different sessions. 1 dilemma per session. 40 minutes per dilemma.

Data collection techniques for this paper involved observations and document analysis. The first author of this paper observed the design meetings that the teachers shared with the EthicApp experts to craft the learning scenarios ([DO] - design observation) and the enactment of each learning scenario ([EO] - enactment observations). Document analysis included the learning design template ([LD] - learning designs) as well as notes and reflections that teachers wrote or communicated orally pre- and post-enactment ([NR] - notes and reflections).

3. Results

This section reports the preliminary findings regarding the orchestration of the learning scenarios, organized according to the four activities of the orchestration framework presented by Prieto et al. (2015). The data source of each evidence is indicated in brackets, as presented in the method section.

Design: The study revealed that the three involved teachers could design [LD] and implement [EO] learning scenarios in which students were asked to exercise their critical thinking, argumentation, and peer-debate skills [LD]. EthicApp was used across different educational levels and contexts, with the key distinction being its use in onsite versus online settings. This shows how the tool enables teachers to carry out onsite and online learning scenarios. The support provided by the two experts helped the teachers to refine their learning scenarios in several iterations [DO]. This support was perceived as beneficial for reinforcing the pedagogical value of the learning situations as the S2 teacher declared: "*In these previous sessions, I had the opportunity to share, in 3 iterations, my design ideas with the experts. These sessions helped me get feedback on whether the*

dilemmas were relevant and fit well with what could be done with the tool. It has also helped me to identify better how the questions need to be formulated to add some tension to turn the case into a dilemma. Ultimately, these iterations have helped me improve and refine the designs thanks to their recommendations" [NR]. While teachers perceived the co-design meetings with experts as beneficial, a more pragmatic approach could have helped reduce the co-design phase's duration. These meetings were crucial for teachers as they were novice regarding this tool. Nonetheless, in future iterations, they may view them as less relevant since they will be familiar with the system. Being less dependent on the expert's help would make the educators more autonomous in the design process [NR, DO].

Management: The enactment of the different learning situations was perceived as demanding by the teachers due to the cognitive load required. While the teachers had prepared a script (based on a template defined ad-hoc for EthicApp) outling all the phases and details of the activities to be presented to the students, the instantiation had to be done manually by entering the data into the system in real-time[2]. For example, this task entailed copy-pasting information from the script and setting range options for closed-ended questions (see the teacher interface in Figure 1). Performing this task in real-time was perceived as stressful as noted by the S2 teacher: "*I felt that I was getting confused about what to do when editing the design. This loss of concentration or nervousness at times, because I did not want the students to waste time waiting between phases, made me make several mistakes in the session when instantiating the design*"[NR]. This circumstance limited the teachers' time to reflection or engaging with students at a deeper level (e.g., making sense of students' responses). In the S3, the teacher received support from the experts for assisting students with different casuistries through the chat of video conferencing. This assistance diminished his orchestration load, allowing him to focus on performing concrete actions with EthicApp or reflecting on the learning process as the evidence shows: "*As I had [the support] of the expert who was explaining other things at the same time, I did not have the same cognitive load of giving instructions, solving problems and at the same time looking at what is going on, which is one of the problems of orchestration*" [NR].

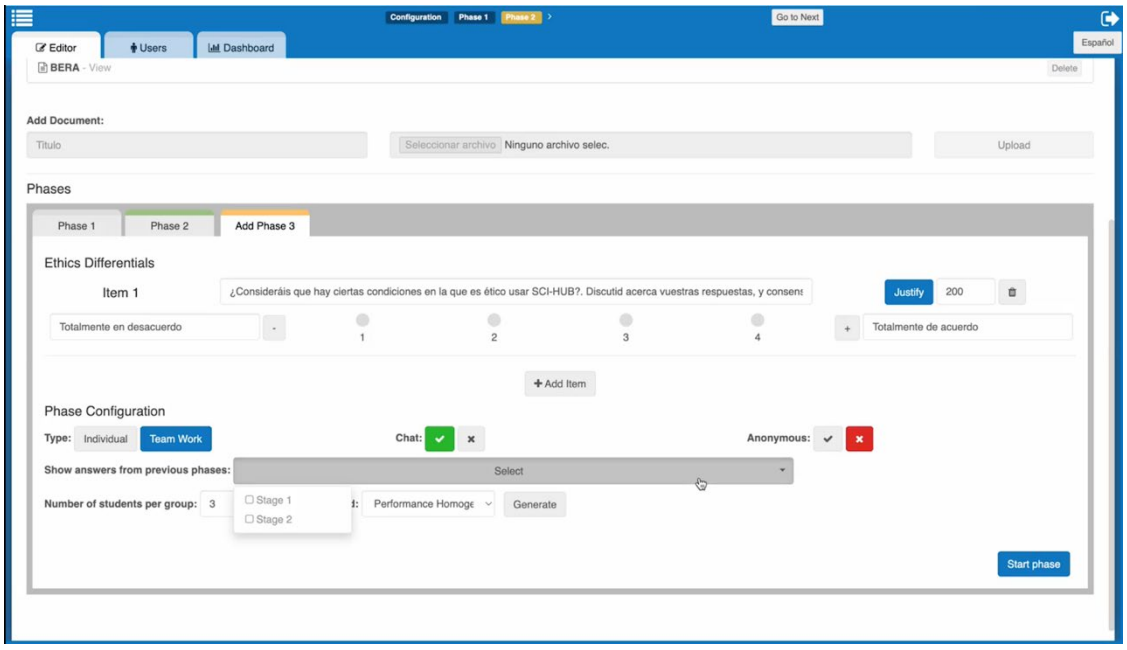

Figure. 1: Screenshot of the teacher interface of EthicApp. It shows the editor tab when the teacher was configuring phase 3 of the learning design of the master education learning scenario

Awareness: The teacher dashboard integrated in EthicApp allowed teachers to monitor students' progress (e.g., whether they have already submitted their answers) and to review their arguments in real time [EO]. This feature assisted teachers in real-time management (e.g., informing when students were ready to move to the next phase) and to adapt their commands (e.g., asking students to reformulate their answers if these were too vague or they were not progressing in the expected direction).

[2]This video provides a general demonstration of how a teacher configures the phases of a learning scenario.

Adaptation: The data that teachers could interpret in real-time allowed them to envision how the whole class debriefing could be. In the S1, the teacher used some of the student's arguments that she checked in the dashboard [EO] "*After a check of the dashboard, the teacher uses - without explicitly telling the students that this is one of her answers - a response to illustrate [for the whole class] a poorly constructed argument*" [EO]. While in S3, the teacher took notes of some of the students' answers to enrich the debriefing of the second session [EO].

4. Conclusions, Limitations and Future Work

This work-in-progress paper reports preliminary findings of a case study in which three teachers integrated EthicApp in their courses. EthicApp's functioning required teachers to generate well-structured instructional designs to foster students' critical thinking through multilayered ethical dilemmas. The collaboration with the experts who proposed the dilemma-based ethics teaching model implemented in EthicApp helped teachers to maximize the pedagogical value, leaning towards agency achievement (Priestley et al., 2015). As a result of real-time support, teachers could also adapt their guidance during the learning scenarios, which can already be interpreted as a manifestation of their agency (Bandura, 2018). This alignment between the learning design purposes and the tool's support enhanced the teachers' ability to orchestrate ethical dilemmas effectively with EthicApp, fostering their agentic orientation in course redesign.

This paper, which reports preliminary findings, has several limitations. Data analysis is still ongoing, and complementary data sources (such as in-depth evaluation interviews and follow-up inquiries) should be also considered for triangulation. The findings are specific to the context studied, reflecting the uniqueness of the realities observed. Future work aims at providing a detailed understanding of how teacher agency manifests through orchestration activities when teachers design and implement learning scenarios supported by EthicApp.

Acknowledgements

This research has been partially funded by the Spanish State Research Agency (MICIU/AEI/1013039/501100011033) together with the European Regional Development Fund, under projects grants PID2020-112584RB-C32 and PID2023-146692OB-C32. The research has also been partially funded by PID 129 "Desarrollo del razonamiento ético en disciplinas relacionadas con la investigación y la informática con metodologías activas apoyadas por la plataforma EthicApp" funded by the Vicerrectorado de Innovación Docente y Transformación Digital of the Universidad de Valladolid. Víctor Alonso-Prieto has received funding from the call for UVa 2021 pre-doctoral contracts, cofinanced by Banco Santander.

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