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# French HUBBLE project experience on Ethics in Learning Analytics

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**Abstract.** This paper discusses a research effort on ethical aspects of the French HUBBLE project that brings together research teams from different areas, including Computer and Human Sciences. Nine cases that make use of e-learning traces are currently running in this project. Seven case studies' team completed a questionnaire focused on ethics perspectives. The answers of this questionnaire are being reviewed by the authors as the responsible persons in charge of the Ethics work package of the HUBBLE project. By placing a special focus on the process designed to handle ethical concerns, and tracking ethics errors in concrete case studies, this paper presents our attempt in making sure that ethics is being fairly treated by the researchers and by other partners of the project.

**Keywords:** Ethics, Learning Analytics, HUBBLE, tracking data, traces.

## 1 HUBBLE project

The HUBBLE project (HUMAN oBServatory Based on anaLysis of eLEarning traces) [1] proposes the creation of an observatory of e-learning traces analysis and sharing.

The observatory aims at giving the participants involved in the educational settings (e.g. teachers, researchers, designers, students, administrators and policy makers) the possibility to analyze and explain the teaching and learning phenomena occurring within e-learning environments. The analysis processes we build will therefore accompany the researchers in the decision-making, while also guiding them in the elaboration of analytical constructs, models and indicators.

The project brings together research teams from different areas, including Computer and Human Sciences, to co-design and implement a national observatory. Built upon existing platforms developed by the project partners such as UnderTrack [2], KTBS4LA [3], UTL [4], the observatory capitalizes the trace analysis processes and makes them available to the research community in Learning Analytics through xAPI or CSV as common formats.

The main goal of the HUBBLE project is to enable the construction, sharing and management of the analysis processes made on the traces being shared among the researchers of the project. In such a context, ethical concerns have to be taken into account in the design and in the usage of the observatory. The authors of this paper are in charge of a work package that covers the ethical aspects of the HUBBLE project.

The team is treating the ethical questions according to the organization of the whole project based on case studies and analysis scenarios.

- A *case study* is a specific learning situation, with teachers, learners, managers (administrative, political, educational, technical people) and also learning platforms (Moodle, FUN MOOC platform, etc.).
- The *analysis scenarios* describe the objectives of the analysis, the context of its use and results (indicators, models). They will be described starting from the case studies and are categorized in either researcher or decision maker scenarios.

Table 1 gives a summary of nine case studies being treated in the first project loop. It also gives a glimpse of a huge variety of traces by their nature and volume, which make the study of ethics of each case study even more challenging.

**Table 1.** List of the case studies in HUBBLE in the first project loop

| Case Study      | Purpose  | Nature of traces  | Volume in 2015                                       |
|-----------------|--|---|--|
| Classcraft      | Free online, educational role-playing game to play in the classroom and teach differently.     | Logs, custom google analytics, comments   | 75000 learners, 2000 teachers                        |
| LIF3            | Computer science classes for undergraduates in Lyon  | Exercises models, content & answers + diagnosis                                 | 100 students/  |
| Met-toi-à-table | Serious game in Lyon on Nutrition (biology), history and geography.                            | Activity traces, timestamp, resources   | 56 students age 14-15                                |
| MOOCAZ          | MOOC to learn how to make a MOOC (from A to Z).  | Form + Logs: Timestamp, ID for video, quiz, forum                               | 2500 learners. 5 weeks, 5 hours of video, + homework |
| Openclassrooms  | MOOCS on Web development: activities (alone or in groups): data Video, Text, Quiz              | Logs, exercises, forums, self-reported data                                     | 14000 learners (per month)                           |
| PACES           | Blended learning for first year of Health studies in Grenoble                                  | Questions asked by students, MCQ answers, Final results.                        | 1700 students, 20 teachers                           |
| Tactileo-map    | A geomedia serious game: (learners go in the field, with tablets)                              | timestamp, geo-localized actions and products                                   | 200 learners   |
| Tamagocours     | Serious game for learning about copyrights and teaching exceptions                             | chat (manually coded) + logs: timestamp, user id, group id, action id, resource | 200 learners   |
| TESTL1          | Tests in sciences and technologies to assess the level of student entering Grenoble University | Logs, answers   | 1000 students 10 teachers                            |

NB: the case studies presented here were used in the first loop of the Hubble project (in 2016). Some of them are running every year.

To ensure that the decision makers can reuse most of the analysis processes available in the HUBBLE observatory, an “editorial chain” will be suggested. Ethical concerns include privacy issues, but address broader issues regarding the design, the use of e-learning systems and the exploitation of the learning traces. These concerns are also very relevant to the learners, policy makers, tutors, teachers, etc. To address them, an ethics committee has been created within the HUBBLE project. The committee works closely with the representatives of each case study with an objective to ease their workflow and to accompany them when it comes to ethical questions.

The rest of the paper is organized as follows. The next section presents the work process in ethics work package. It focuses on how we treat ethical aspects in each case study through a submitted form. In section 3, we draw a conclusion with the assessment of Ethics for LA from the HUBBLE project standpoint.

## **2 The ethics treatment of each case in the Hubble project**

Nine case studies are considered inside the HUBBLE project (see Table 1). According to the process designed to address ethical issues, we asked the representatives of each case study to submit their questionnaire related to the ethical aspects of different analysis processes being worked on. Thus far, the ethic committee has received seven questionnaires. It is worth mentioning that the questionnaire is expressed in French; but an English version is now available online [5]. It covers specific questions, among which, the purpose and objectives of the research, the recruitment of participants, the protocol, the consent form, the benefits and risks, the treatments on data, the privacy and anonymization, the archive duration, the conditions of data storage and sharing.

Below is the summary of the most important aspects pointed out during the review of each submitted questionnaire:

- The description of the stored data is not sufficient to decide if privacy is preserved;
- The participants were not informed that their learning interactions had been monitored;
- The consent form was missing or was not available in all case studies;
- The data collection process on mobile devices (tablets in some case studies) might have kept track of private activities;

Considering that most of the researchers were informed of the ethical aspect of their research for the first time, it is not surprising for us to witness all the emerging anomalies. Nonetheless, the positive note of the whole process of making sure that ethics is being fairly treated by the research colleagues in the HUBBLE project is that they have been sincere with their answers and their declarations. While the outcome of our research effort is encouraging, we have to acknowledge that there are still some milestones before full compliance of our research methods and data treatments with French and European ethics laws or recommendation. Having said that, being fair and honest is the first step in making ethics relevant and highly considered in Learning Analytics.

Last but not least, the review of each case study will be discussed in the French Learning Analytics Ethics Committee (CELA), and the recommendations will be sent to the researchers.

### 3 Conclusion

As members of the Ethics work package, we have the feeling that the HUBBLE project opened a concrete and practical way for researchers to consider ethics more seriously. As a side effect for some HUBBLE participants, this ethics perspective lead to new research works centered on ethics questions [6]. These contributions and external ones [7]–[10] where particularly welcome where and when many data are collected, as it can be the case in some of the HUBBLE case studies. Our first attempt on the questionnaire, inspired by the existing ones, in the medicine fields in particular, is a good illustration of how ethics should be handled in practice. Though, the document alone is not self-sufficient. As a matter of fact, it is important to have someone, better informed from the Ethics work package, that can help the data owners (leaders or representatives of the case study) to build trust and to ensure that ethics is not neglected. A preliminary conclusion the team could draw from this experience is that ethics has to be considered as a chance for more successful research results and not as a set of constraints [11].

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