Vision and policy for learning analytics at Utrecht University

Introduction

Utrecht University aims to provide high quality education for its students, for which learning analytics can be a tool. Students leave behind digital traces of their study careers and behavior, such as obtained grades, handed in assignments, and activity in the digital course environment. Collecting and analyzing those digital traces and the insights derived from them are known as *learning analytics* (LA). LA has become an essential tool in shaping and improving the quality of education.

This document is a summary of the vision of Utrecht University concerning the purposes for which LA may be implemented, and the ethical and legal frameworks that we adhere to for LA. For a more detailed version, see the original, more elaborate document.

1. Definition and scope of learning analytics

LA is defined as the "the measurement, collection, analysis, and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs."[1] In other words, LA is a process in which data is analyzed and the results are fed back into the educational system, with the aim to improve the quality of education. LA is a circular process that consists of several steps, see figure 1**.**

The LA cycle starts with **students** taking part in learning activities at Utrecht University. These students **generate different types of data** (the digital traces) that can be collected. This data is processed and analyzed to get more **insight into the learning process**. The last step is to **initiate an intervention** aimed to improve education, after which the LA cycle can start again (to evaluate the effect of the intervention e.g.).
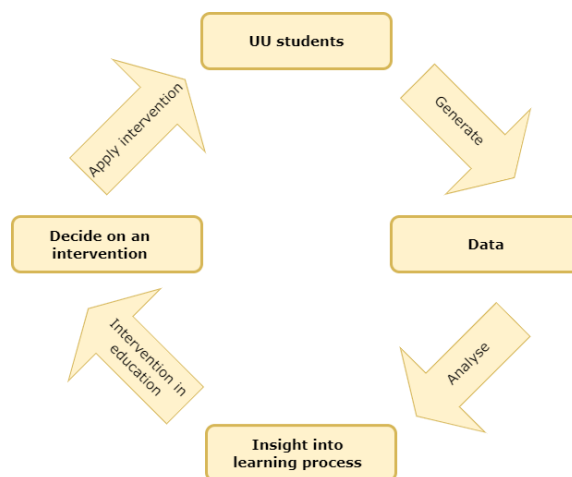
Figure 1. The LA cycle, adapted from Chow (2012).

2. Goals for learning analytics at Utrecht University

In the process of LA, different types of data may be collected for different kinds of analyses, and for different purposes. At Utrecht University, the overall vision is that LA is used in the primary learning process, with the aim to improve the quality of education. That vision is divided into four broad areas

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[1] https://www.surf.nl/whitepaper-hoe-data-de-kwaliteit-van-het-hoger-onderwijs-kunnen-verbeteren

for which Utrecht University deems it acceptable to use LA (see Figure 2). All LA project proposals should fall within the scope of these areas.
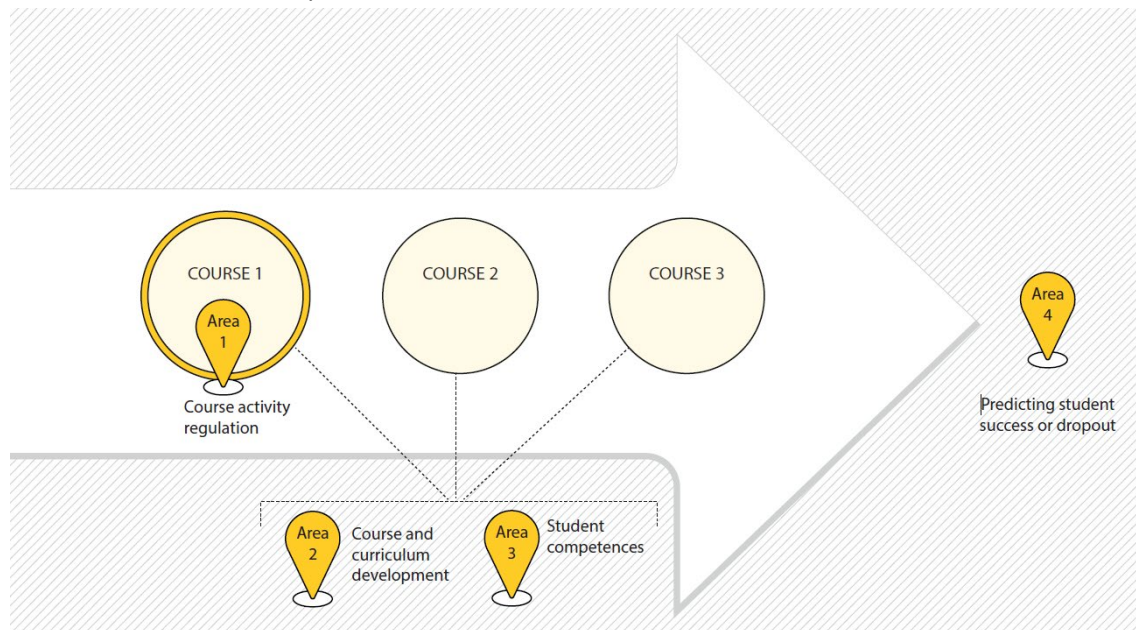

Figure 2. Overview of the four areas of LA projects.

Area 1 focuses on the level of specific courses. It aims to improve the quality of education by enabling course activity regulation *during the course*, and has two goals:
  a. Provide students insight into their activities and progress within courses to regulate their own learning activities.
  b. Provide teachers insight into progress in courses on an individual student' and group level to facilitate personalized education.

Area 2 is aimed at course and curriculum development *after a course has ended*, with the following two goals:
  a. Provide teachers insight into the use and quality of their course materials to keep improving and innovating their practice.
  b. Provide program directors insight into the quality of courses and curricula and development thereof within their program.

Area 3 focuses on student competences *within and across courses*, aiming to:
  a. Provide students insight into their attainment of specific skills, expertise or competencies through a learning analytics dashboard portfolio.
  b. Provide teachers insight into students' development of skills or competences.
  c. Provide tutors insight into students' development of skills or competences.
  d. Provide program director information about study path and connected competencies.

Area 4 relates to predicting student success, study delay and drop-out by:
  a. Using predictive modeling to identify which factors relate to student progress and drop-out.
  b. Identifying students who need further attention with the help of predictive modeling.

3. Ethical and legal framework for learning analytics

Utrecht University attaches great importance to careful handling of personal data and adheres to the GDPR and the SURF reference framework for privacy and ethics for study data[2].

3.1 Ethical Values

Utrecht University employs five ethical values in LA projects:

- Transparency: stakeholders are informed about processing their personal data.
- Responsibility: Utrecht University is responsible and accountable for the processing of personal data.
- Fair consideration: For all LA projects, the interests of the involved stakeholders are carefully considered.
- Reliable and valid analyses: Utrecht University ensures that staff, who process the data, will have the resources available to conduct, understand and, where necessary, improve analyses.
- Human in the loop: In LA projects, humans are always involved in the interpretation of the results and the decisions that are made.

3.2 Privacy principles

Every LA project needs to adhere to the following privacy principles:

- The GDPR distinguishes between three categories of personal data: general, sensitive and special data. For LA projects, *only general personal data* is processed. Processing of special and sensitive personal data lies not in the scope of LA.
- Every LA project requires a lawful base. The lawful base for LA depends on the type of LA project:
  - LA implementation projects: These projects concern long-term implementation of LA. Utrecht University has the public task of providing high quality education. For implementation projects, the lawful base is public interest, because LA can contribute to the quality of education.
  - LA research projects: These projects concern fundamental research, sometimes paired with temporary implementation of LA. For the lawful base of research projects, we adhere to the academic research handbook and the Data Privacy Handbook of Utrecht University[3]. In most cases, research falls under the public task of Utrecht University, and therefore also under the ground of public interest. In exceptional cases, the processing of personal data within the context of research will be based on consent. Please note, that the lawful base of consent is different from informed consent, which is required in all research with humans. Research will not be carried out until a participant has been informed and has given informed consent, as required by the Faculty Ethics Assessment Committee.
- Purpose limitation: personal data may only be processed for specific, explicit and legitimate purposes that are defined beforehand. For every LA project, Utrecht University will perform the necessity check, i.e. whether the use of the personal data is required or if the defined purpose can also be achieved without processing personal data.

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[2] https://www.versnellingsplan.nl/Kennisbank/referentiekader-privacy-en-ethiek-voor-studiedata/
[3] Data Privacy Handbook (utrechtuniversity.github.io)

- Storage limitation: if the data are no longer required for the LA project, they will be deleted or made unrecognizable as soon as possible.
- Transparency: every LA project requires a privacy statement in which it is made clear for the data subjects that personal data are collected, used, consulted or processed in another way than usual, and why and by whom this is done.
- Appropriate technical and organizational measures: personal data are processed in a manner that ensures appropriate security of the personal data, including protection against unauthorized or unlawful processing and against accidental loss, destruction or damage, using appropriate technical or organizational measures.

For every LA project proposal, a privacy scan is carried out to determine whether there is a high risk to the rights and freedom of the involved data subjects and to check whether the project adheres to the privacy principles outlined above.