

# Learning design twofold strategies for teacher-led inquiry and student active learning

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**Abstract.** This workshop paper states that fostering active student participation both in face-to-face lectures / seminars and outside the classroom (personal and group study at home, the library, etc.) requires a certain level of teacher-led inquiry. The paper presents a set of strategies drawn from real practice in higher education with teacher-led inquiry ingredients that promote active learning. These practices highlight the role of the syllabus, the importance of iterative learning designs, explicit teacher-led inquiry, and the implications of the context, sustainability and practitioners' creativity. The strategies discussed in this paper can serve as input to the workshop as real cases that need to be represented in design and supported in enactment (with and without technologies).

**Keywords:** learning design, teacher-led inquiry, active student participation, higher education, sustainable innovation

## 1 Problem statement and twofold strategies

This position statement aims at contributing to the TILD workshop with a down-to-reality perspective. It discusses a set of strategies that combine learning design and teacher-led inquiry drawn from real needs and practice at the Polytechnic School of Universitat Pompeu Fabra (UPF), Barcelona. In this case, the motivation behind using mechanisms of teacher-led inquiry into student learning derives from a more concrete need than the general goal of improving learning designs [1]. The Bologna Process recognized and made explicit the importance of student active learning by proposing the European Credit Transfer System (ECTS), which models the time (actual number of "quality" hours) that students need (in average) to devote to learning activities that will lead them to specific learning outcomes [2]. Out of these hours of actual students' dedication, only 20-35% correspond to face-to-face lectures and seminars. Spanish universities, and in particular UPF, have seriously adopted the ECTS [3], but most professors share the feeling that, in general, the majority of the students do not spend the expected time (65-80% of the hours indicated by the credits) outside the classroom. This concern has led professors and academic managers to ideate strategies that try to promote students' active dedication to the courses, also outside the classroom. The implementation of the strategies implies different levels of teacher-led inquiry, in which teachers need to apply systematic methods to the evaluation of student learning.

The strategies include:

- Include in the Syllabus the explicit distribution of time (hours) dedication to assignments or the achievement of learning outcomes, according to the course's ECTS credits and competence levels to develop. These explicit indications offer "hints" to students about the efforts they are expected (in average) to devote to the different aspects of the course. More importantly, this information enables teachers and students to inquire and reflect about the time actually used to complete the learning activities proposed along the course. Of course, this implies reflecting about levels of understanding, quality of outcomes, refine the learning designs, etc.
- Systematic continuous monitoring and formative assessment, with partial impact in students' marks. This strategy serves two objectives. First, getting students actively and continuously involved in the course (set of activities scheduled). Second, providing feedback so that students can regulate their

progress and level of involvement in the course. There are several design questions behind this strategy that educators need to consider: What should be the relative weight (“relative obligatory”) of the mark for each formative assessment? How the formative assessment should be designed so that the educators’ workload is sustainable? Should diverse type of activities be proposed so as to favor different students’ preferences / motivations? How should we design to avoid students’ feeling that they are continuously being evaluated vs. continuously learning? etc.

- In addition to assessments, and especially in Polytechnic Schools, seminars and lab sessions are typically the main mechanism that explicitly fosters students’ work on the course topics beyond the face-to-face activities (they need to be prepared to carry out practical activities). However, professors are identifying the need of sub-strategies that could enhance the design of activities both within and outside the classroom. These sub-strategies need to be suitable for their contexts (e.g., number of students, nature of their subject matters), and promote an increased dedication to their courses. Emerging proposals consider two main implicit design guidelines: (1) take advantage of the resources available, such as the Moodle learning management system and other tools to facilitate communication channels outside the classroom, (2) economize time, e.g., reading a text in class vs. outside, 20 minutes discussion in class vs. a week discussion in a forum.

Sustainability is a crucial issue for the success of the synergy between teacher-led inquiry and learning design and its practical adoption. Concrete practices that professors at UPF are applying in different ways (depending on their context and own creativity) are: (a) random collection of “problems” for their assessment (students are expected to complete all), (b) brief tests in plenary sessions, (c) brief test to be answered at home, previously to seminar / lab sessions, about topics studied in plenary lectures and which will be applied to cases, problems, projects, etc. in seminar or lab activities, (d) reflective writings prepared “a posteriori” of the work conducted in face-to-face activities (portfolios, reports, intermediate working documents that relate to several seminars...), (e) self-assessment and peer-assessment with rubrics, (f) let students design the “problem / challenge” to solve (so they are more motivated), ...

The strategies are probably not new, but they are relevant real cases requiring different levels of teacher-led inquiry. They bring light to specific problems and questions that the TILD community should face (e.g., design for sustainability, design for learning vs. assessment). Moreover, the analysis of the listed strategies can show needs for design representations and enactment support (with and without technologies) where inquiry mechanisms must be explicit.

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