# Toward an Environmental and Intentional Approach of Learning Design

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"Learning Design" (henceforth LD) is one misleading term of the educational research vocabulary, for two reasons at least. Firstly, it takes for granted that learners' activity can be fully designed, or prescribed, in advance by teachers or instructional designers. As Wenger (1998, p. 229) pointed out, "*Learning cannot be designed*: it can only be designed *for*—that is, facilitated or frustrated." (original italics) Secondly, and mostly because of the first reason, LD activities are actually the mere definition and planning of *teaching* activities, than of learning ones. The actual rule of thought for LD research might be formulated as follows:

> *Rely on predetermined action schemes (or objects, etc.), organized at a higher level in scenarios (or scripts, etc.), and use them to help teachers design their teaching and (hopefully) foster the intended learning activity.*

A way to insure that learning properly flows and occurs is to enable and instrument *Teacher inquiry into student learning* (henceforth TISL). This activity occurs *during and after* the learning process whereas LD mainly occurs before. Since both LD and TISL are exclusively teacher-driven, associating them to improve instruction entails a major problem: it leaves learners out. This concern has other side effects often debated in the literature: LD languages are not "agnostic" (Nunes & McPherson, 2007), that is, depend more or less on the pedagogical assumptions of their authors (expressiveness, see van Es & Koper, 2006). As a consequence, teachers hardly use LD-like formalisms to design their teaching because they can feel themselves too constrained by it (for attempts to address this point, see Emin, Pernin, Aguirre, 2010; Emin, Pernin & Guéraud, 2009).

Three arguments support our position: firstly, (socio-)constructivist situations have become one of the mainstream models and leave some freedom to the learner (Duffy & Cunningham, 1996); secondly, self-regulated learning, that is, the way learners regulate, inflect or even inquire by themselves their activity flow is more and more often studied (Dettori & Persico, 2011); thirdly, recent computer-based environments enable sophisticated feedback that can direct, at least partially, the learner's activity (Narciss, 2008). So we consider *delegating* a specific role to the learner and, in so doing, proposing to rephrase the original TISL framework as "Teacher *& Student* Inquiry into Student Learning" (T&SISL), and to propose an alternate rule to the aforementioned:

> *Rely on cognitive models of learner activity determined from theory and cognitive task analysis, and use them to provide learners with open environments that deliver feedback prompts to (hopefully) foster the related learning activity.*

Our approach is to leave as often as possible the activity of design to the learner after, of course, this activity has been carefully modeled (Karagiorgi & Symeou, 2005). When immersed in an environment, a learner can design by herself the workflow she needs for learning. The design actually *emerges* from the learner's task and the learner *intentionally* achieves learning in the environment (Martinez, 1997). Nonetheless, the identification of patterns of use in this environment is still possible (Wilson, 2008). We formulate some principles and a procedure that helps define a new environmental and intentional LD perspective, as shown in Table 1.

This procedure will be illustrated by the presentation of *ReaderBench* (Dessus et al., 2012; Trausan-Matu, Dascalu & Dessus, 2012), a system that helps teachers automatically select texts according to their textual complexity automatically and analyses the pupils' self-explanations after reading narrative texts in order to detect their reading strategies.

Eventually, some theoretical and empirical implications of this LD-T&SISL approach will be presented and discussed.

**Table 1– Principles and Underlying Steps of the Procedure.**

| Principles | Steps of the Procedure |
|---|---|
| Be as close as possible to both teaching and learning activities (no *generic* tools) | Cognitive activity modeled carefully through task analysis procedures |
| Rely on learners' activity and possible guidance from (semi-)automated feedback modeled | Model and implement learner's activity analysis with computational cognitive methods (e.g., Latent Semantic Analysis) |
| Provide valid information from the activity | Test the models against human behavior (learners, teachers, experts) |
| Promote intentional learning (motivated and self-directed learners within an environment) | Design a system (e.g., a Personal Learning Environment) supporting the learner-oriented activities |

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