

How to involve and guide teachers in designing digital adaptive learning

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At Odisee University of Applied Sciences, we currently train and guide teachers in designing digital adaptive learning, i.e., online learning materials that adapt to the preferences, knowledge, and behavior of the students. An adaptive exercise could be, for example, presenting a mathematical problem and automatically providing support (such as the steps and/or formulas to solve the problem) where necessary. As stated in Lucero (2022), adaptive learning is tailor-made learning.

This article explains **how we involve and guide teachers in designing online adaptive learning materials**. A description of these materials can be found on the website of our project "[Adaptive Building Blocks for Blended and Distance Learning](#)" (2021-2023).

Our approach to instructional design

According to Visscher-Voerman, Gustafson, and Plomp (2000), there are four approaches to instructional design. These approaches are:

1. Instrumental: planning-by-objectives.
2. Communicative: communication to reach consensus.
3. Pragmatic: interactive and repeated try-out and revision.
4. Artistic: creation of products based on connoisseurship.

Since we were dealing with new products (adaptive learning materials) that had never been implemented in our context before, the **pragmatic approach** was the most recommendable approach for this project. Visscher-Voerman et al. (2000) consider it especially useful when instructional goals are unclear at the beginning, when dealing with unexplored innovations, and when teachers are unable to formulate exact wishes from the start.

In the pragmatic approach, different prototypes or preliminary versions of the product are evaluated by experts and users before producing a definitive version. We are talking about formative evaluation.

In our project, teachers are continuously invited to ask themselves what they are doing. Would the product work? Would it be helpful? It is a reflection exercise in which theoretical perspectives (learning strategies and principles) get contrasted with the experience and daily practice of the teachers. Later, when some parts of the product are developed, we discuss them with IT and/or content experts (e.g., other teachers). In the next phase, when the prototype is ready, we test it first with one or two students and then with a small group of students. Finally, we deliver a definitive version ready for implementation with a large group.

It happens that designers do not rigidly adhere to one approach in its pure form but develop and prescribe an approach that tends to combine specific ideas and actions from different approaches (Visscher-Voerman et al., 2000). In this case, the pragmatic approach is enriched with the instrumental and communicative approaches.

Even when choosing the pragmatic approach, because it fits best in the given context, it is not possible to ignore some fundamental principles of the **instrumental approach**. The instrumental approach helps us to ensure that we teach what the students need, and that the evaluation is appropriate (Smith & Ragan, 2005). Therefore, during the design, our teachers are asked to regularly check the congruence between objectives, activities, and assessment.

Next to the pragmatic and instrumental approaches, special attention is paid to the **communicative approach**. In the communicative approach, the emphasis is more on the process than on the product. Since our teachers are the main actors in this project and their participation is voluntary, our concern will always be how to manage the process to keep them engaged.

The communicative approach is about managing the social aspect of design and development. It is about managing people with different perceptions and opinions about the problem and the solution. Communication legitimizes the process.

The communicative approach has to do with both project management and relationship building.

According to Kessels (2000), relationship building is essential in instructional design and all stakeholders should be invited to participate. Their perceptions should be taken into consideration when creating a product as it is they who will implement it. There must be agreement on what the problem and the solution are. Regular and extensive communication is needed to reach consensus while legitimizing the decision-making process.

The following competences are required for project management and relationship building:

- Communication skills: listening, observing, interviewing, relating to others, self-expression and exchanging constructive feedback.
- Project management skills: leadership and chairperson skills, planning, monitoring and negotiating skills.
- Consulting skills: building open collaborative relationships, clarifying mutual expectations and responsibilities, and the ability to influence others and gain commitment.
- Facilitating change: encouraging widespread participation in the design and implementation of a project and dealing with friction and resistance.
- Experimental flexibility, self-insight, and self-esteem.
- Ability to create an atmosphere of tact, trust politeness, friendliness, and stability. (Kessels, 2000, p. 66)

Although the communication and relationship with the teachers in our project is currently secure, we still need to approach other stakeholders, such as program directors and students. We will approach the program directors as soon as we have a prototype that has gone through previous evaluations, and we will involve the students during those evaluations. In this way, the communicative and pragmatic approaches complement each other. As Kessels (2000) observes, the use of prototypes “offers users the opportunity to find out what they dislike about the proposed unit, which is easier than exactly indicating what is needed at an initial state. Prototyping can be regarded as a practical way of organizing deliberation among relevant stakeholders.” (p. 90).

As part of the communicative approach, and from a project management perspective, we involved each teacher in the planning of his/her own pilot project. We reached agreement on the following aspects:

- Proposal (What are the problems the teacher experiences in the classroom and what would be the role that adaptive learning could play here?)
- Expected project results (Which adaptive materials do we expect to have at the end of the project? Which ones would be the intermediate results?)
- Resources (What resources does the teacher need to achieve these results?)
- Schedule (How many hours per week will the teacher invest in the project? How often will we meet? What are the busiest and least busy periods in the year?)
- Risk Analysis/Plan B (Are there any risks for the teacher to quit the project in the future? Any personal or professional plans? Who could replace them in case of absence?)
- Evaluation (When and how are we going to evaluate the prototypes? Who will be involved?)

These planning aspects are suggested by Smith & Ragan (2005), who devote an entire chapter of their book to the management of instruction. Project management strategies can increase both the effectiveness of the design and the efficiency of the development processes (Kessels & Plomp, 1999).

In addition to the project plan, we also developed an action plan together, with concrete activities and deadlines, to track our progress. Moreover, to avoid misunderstandings, we keep an agenda and report on each meeting. All these strategies require clear agreements from us about what to achieve, how and when.

From a Project Management Institute (PMI) approach, the project plan can be seen as the project charter and the action plan as the work division structure for each pilot.

In conclusion, we have briefly described the theory and practice of three instructional design approaches: pragmatic, instrumental, and communicative; with emphasis on project management and relationship building. In our experience, these approaches provide sufficient guidance for supporting teachers in designing online adaptive learning materials and are highly recommended.

References

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