



Problem

Implementing Virtual Reality in mainstream education is not gaining the anticipated traction.

Proposed solution

Didactical Design has been proposed as an act of modeling processes in educational settings. It is an interplay of several pedagogical elements to strengthen teaching and learning processes. The term didactic originates from the Scandinavian and German concept of Didaktik; which focuses upon the relationship between content-student-teacher, whilst explicitly emphasizing the distinction between teaching practice and student learning. The Didaktik method embraces what to learn (i.e., curriculum and content), when to learn (e.g., in what kinds of situations and locations), and how learning can be achieved (e.g., self-regulated learning). This work-in-progress proposes Didactical Design as the science of planning and performing, where both teaching and learning is a social practice, subsequently demonstrating a particular design form for education in Virtual Reality.

Research

Hypothesis: Didactical Design of Virtual Reality (VR) immersive technologies as a teaching resource supports learner engagement.

Didactic is the Scandinavian and German concept of Didaktik, which focuses on the relationship between content-student-teacher and emphasizes the differences between teaching activities and learning activities.

Didaktik not only includes methods, but it also embraces the question of

- what to learn (i.e., curriculum and content);
- when and in what kinds of situations and locations;
- how learning can be achieved (e.g., through specific resources): i.e., meta-learning.

Didactical Design is the science of planning and performing, where both teaching and learning is a social practice, and offers a particular design form for education in Virtual Reality.

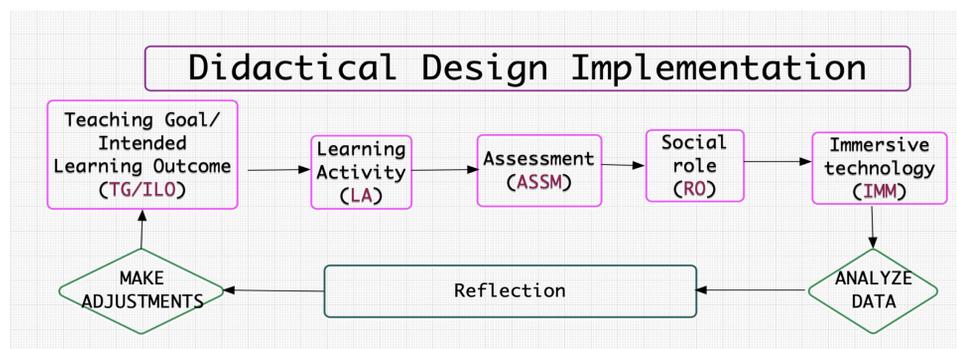


Fig. 2. Implementing Didactical Design



Fig. 3. Communication in VR

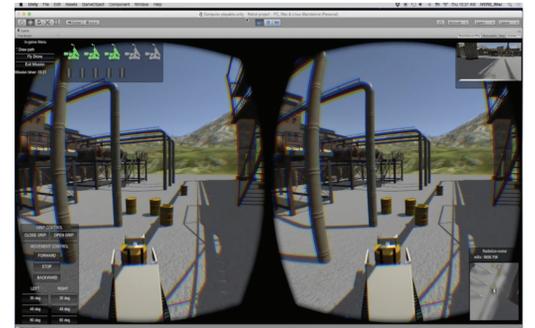


Fig. 4. Experiential activity in VR

	Teaching goals and intended learning outcomes	Learning activities	Assessment	Social roles	Immersive technology
	TG/ILO	LA	ASSM	RO	IMM
1	Not clear, not visible, no communication about teaching goals or learning intentions	Surface learning, e.g., memorizing, remembering, repetition of facts	Summative feedback only	Teacher is in the traditional role of the expert only	Low extent, drill and practice
2	Shows indicators of 3 and 1 but not fully 3 or 1	Shows indicators of 3 and 1 but not fully 3	Shows indicators of 3 and 1 but not fully 3	Shows indicators of 3 and 1 but not fully 3	Shows indicators of 3 and 1 but not fully 3
3	Oral communication only	Signs of meaningful learning (i.e., active, collaborative, authentic, goal-directed, and reflective);	Feedback during the class is only technical	Teacher does not support student engagement to be active	New technology is only a substitute for existing media
4	shows indicators of 5 and 3 but not fully 5 or 3	Shows indicators of 5 and 3 but not fully 5	Shows indicators of 5 and 3 but not fully 5	Shows indicators of 5 and 3 but not fully 5	Shows indicators of 5 and 3 but not fully 5
5	Teaching goals and intended learning outcomes are clear and visible	Learning activities a focus on deep, meaningful learning with indicators such as active, collaborative, goal directed, and reflective;	Criteria for learning progress are visible for students from the beginning of the learning process	Teacher supports student reflection of roles, and development of new roles	High extent, multimodal; students construct, share, create, and publish

Fig. 1. Instrument in Didactical Design

Expected Outcome

The intention is for a pragmatic schema of work that can be accessible for teachers and Higher Education instructors to consider when designing courses which engage learners in Virtual Reality technologies. Generic lesson aims, learning outcomes and supporting assessment criteria will be embedded with the framework; irrespective of topic being taught. The framework will be constructed around Didactical Design involving (a) teaching goals, (b) learning activities, (c) assessment, (d) social relations/roles, and (e) technology, all informed by the data and analysis of this research project.

References

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