Learning Design for Sustainable Educational and Professional Development

Centre for **Science Education**

This poster presents the impact of two learning design initiatives at Faculty of Science and Technology, Aarhus University: the professional development module 'Digital Learning Design' (DiLD) for assistant professors and postdocs, and the STREAM learning design model for enhancing and transforming modules. Both DiLD and the STREAM model have proven to be effective for encouraging educators across all career steps to embrace the potential of educational technology in science higher education and for improving teaching and learning.

Challenges

- Quality
- Sustainability
- Scalability
- Effectiveness (impact)

STREAM as the Learning Design Model

STREAM is a so-called framework-based learning design model outlining 'how parts of or an entire [module] can be transformed into blended or online learning' (Godsk, 2013; p. 723) by means of two cyclic processes: a feedback loop and the out-of-class loop. STREAM is build on well-known and robust pedagogical strategies such as Just-in-Time Teaching (Novak et al., 1999), Active Learning (Bonwell & Eison, 1991), Flipped Classroom, and Peer Instruction (Mazur & Hilborn, 1997).

The STREAM model (Godsk, 2013).

In context of Faculty of Science and Technology the model serves as both a model for inspiration to the educators and a concrete guide for enhancing and transforming modules with educational technology. As common to learning design initiatives in general, STREAM aims at:

- pedagogy theory-informing teaching through concrete and operational aids,
- supporting educators as active developers of their teaching practice, and
- making the learning design and teaching practices reusable and sharable (Godsk, 2015).

STREAM for Professional Development

DiLD is designed as an online module in Blackboard Learn according to the STREAM model with learning design for educational technology as the overarching theme.
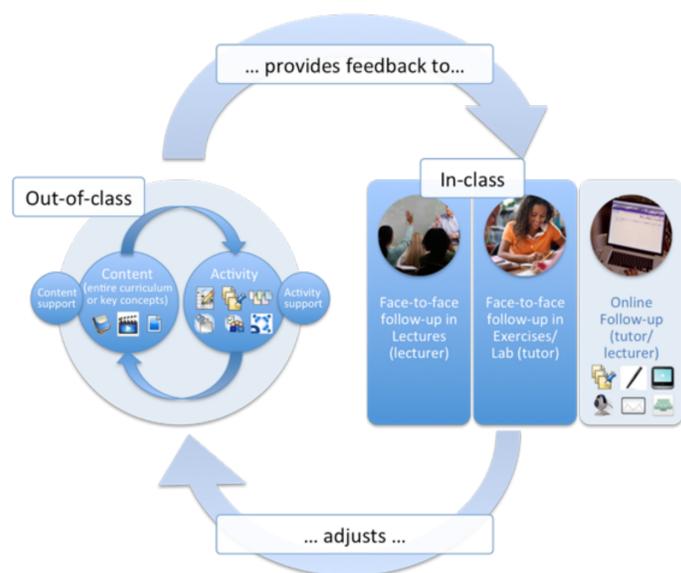
Assistant professors and postdocs participating in DiLD expressed in a pre-survey limited experience with educational technology and almost no prior knowledge of learning design. The post-survey, however, showed that the vast majority of the participants, respectively 93% and 88%, now saw a potential for educational technology and learning design in science education.

I see a potential for educational technology in science education
I see a potential for learning design in science education

In addition, 80% expressed that they were planning to adopt a learning design in their teaching practice and 45% were expecting this to happen within the next 6 months (Bjælde et al., 2015).

STREAM for Educational Development

A core characteristic of STREAM is its versatility. Educators on all career steps may use it by themselves and thus not necessarily involve educational developers to assist with the transformation. To our knowledge more than 10 modules and two entire programmes have been or are currently being transformed into blended and online learning using STREAM. Nine of these modules have been thorough evaluated and the results show an overall positive impact on teaching and learning. This included:

- increased student satisfaction,
- increased flexibility in time, place, and pace,
- more collaboration among students, and
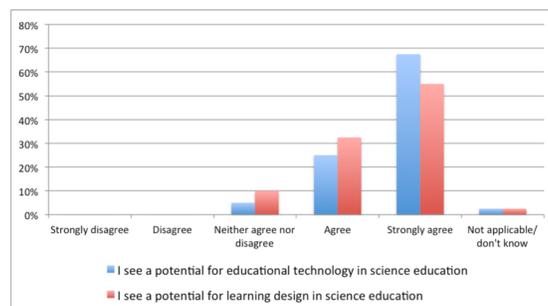- improved grades and/or pass rates.

In terms of impact this means that approximately 15,705 ECTS (261.75 FTEs) were positively impacted by STREAM solely on these nine transformed modules (Bjælde et al., 2015; Godsk, 2014a; Godsk, 2014b).

Learn more

- Twitter: #thestreammodel
- Web: streammodel.net

Six advantages of STREAM

1. STREAM provides a uniform and common language to articulate educational development in the initial phase of implementation as well as later phases of refinements and exchange of experience;
2. STREAM provides the opportunity to more uniformly facilitate technology-based educational development through standard templates and guidelines;
3. the overall learning design (the fixed/invariant parts) is developed by educational experts who can prioritise, integrate and balance the various aspects in an optimal overall design;
4. the specific learning design (refinement of the variant parts) is left to the educators to accommodate specific needs. These can be subject-specific needs or individual preferences or beliefs;
5. STREAM provides a common structure that addresses analytical and management issues (quality assurance, accreditation, etc.);
6. STREAM ensures a common and recognisable overall LMS structure for students while still providing opportunities for detailed variation to accommodate individual needs and preferences.

(Bjælde et al., 2015)
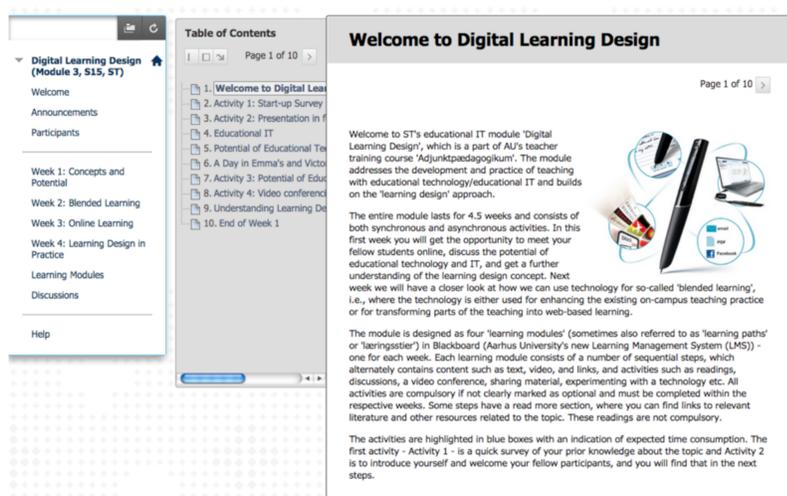
'Digital Learning Design' as implemented in Blackboard Learn (Bjælde et al., 2015).

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