

**Acquiring higher order knowledge  
using the system dynamic approach in teaching business subject matters**

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**Research Objectives**

Besides knowledge and skills for handling routines there is a growing need for the ability of qualified office staff, to cope with complex processes (DÖRNER 1997; GOMEZ & PROBST 1987). The approach to cope with this educational objective makes use of computer based modeling and simulation. This provides a learning environment which can foster students to think and handle in and about complex business subject matters. The theoretical anchor is the construct of 'Mental Models'. Its roots can be seen in cognitive sciences (JOHNSON-LAIRD 1983). The system dynamics-notation seems to be intuitive for students. There are some hints in the perceptual psychology which support this idea.

The hypotheses are:

- a) Students can get access to business knowledge in a deeper mode by means of the sd-based approach.
- b) Students acquire different qualities of knowledge (declarative, structural knowledge or knowledge about policy concepts). This is influenced by different instructional approaches, where students work with given models or actively build their own models.

**Theoretical and methodological approach**

The basic educational objective can be defined as teaching and learning of systemic thinking, based on the structure of systems and its principles (FORRESTER 1968). A synopsis will show that the notations of natural language and of SD-models lead to different qualities of knowledge.

## Main results

Data have been collected (n = 89 students)<sup>1</sup> on the processes of active modeling in combination with work sheets. These work sheets are guiding the learning episodes. Results support the assumptions that the System Dynamics-approach is useful for fostering students' insights into business administrations issues. This can be stated in respect to the levels of declarative concepts and its interrelations, as well as for defined and detected policy concepts. These results have been compiled via a verbal protocol analysis approach, by which qualities of knowledge are defined by means of indicators.

## References

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<sup>1</sup> The data has been collected in vocational training over the time-horizon of 2 years