

## **Analyzing students' shared activity while modeling a biological process in a Computer-Supported Educational Environment**

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Constructing models that describe, explain or predict the behavior of complex dynamic systems is considered a significant part of the scientific enterprise, often mediated by elaborated tools. Being inherent in the process of knowledge construction, model-based reasoning is also of great educational interest and consequently has become a contemporary trend in science education research. Accordingly, our focus is set on how collaborating students perform modeling when coping with biological processes in a computer-supported educational environment.

This paper reports on a case study of two high-school students (age 14) collaborating on a plant-growth modeling task in the environment of the educational software *Models Creator*. Students' shared activity towards the construction of a model that explains how plant growth relates to environmental factors is carried out in the presence of a researcher mainly acting as a facilitator for the use of the software. The objective is to highlight the ways in which the collaborating students are engaged in the computer-supported modeling activity, which is set in the context of a complex biological process.

Our analysis is carried out with a two-level analytic tool, which has been derived from refining the *OCAF* scheme for basic modeling actions (Avouris et al., 2003) and merging it with an elaborated version of the scheme of Stratford et al. (1998) for cognitive processes in modeling. Thus, it possible for us to monitor peers' collaborative actions (*i.e. proposing, inserting, justifying, challenging objects, properties or relationships*), as well as to reconstruct the higher-order modeling processes (*analysis, synthesis, test-interpretation*) carried out through the specific actions.

Finally, implications regarding the biological content of the activity and particularly peers' capability of shifting between concrete and abstract levels while modeling plant-growth are also discussed.