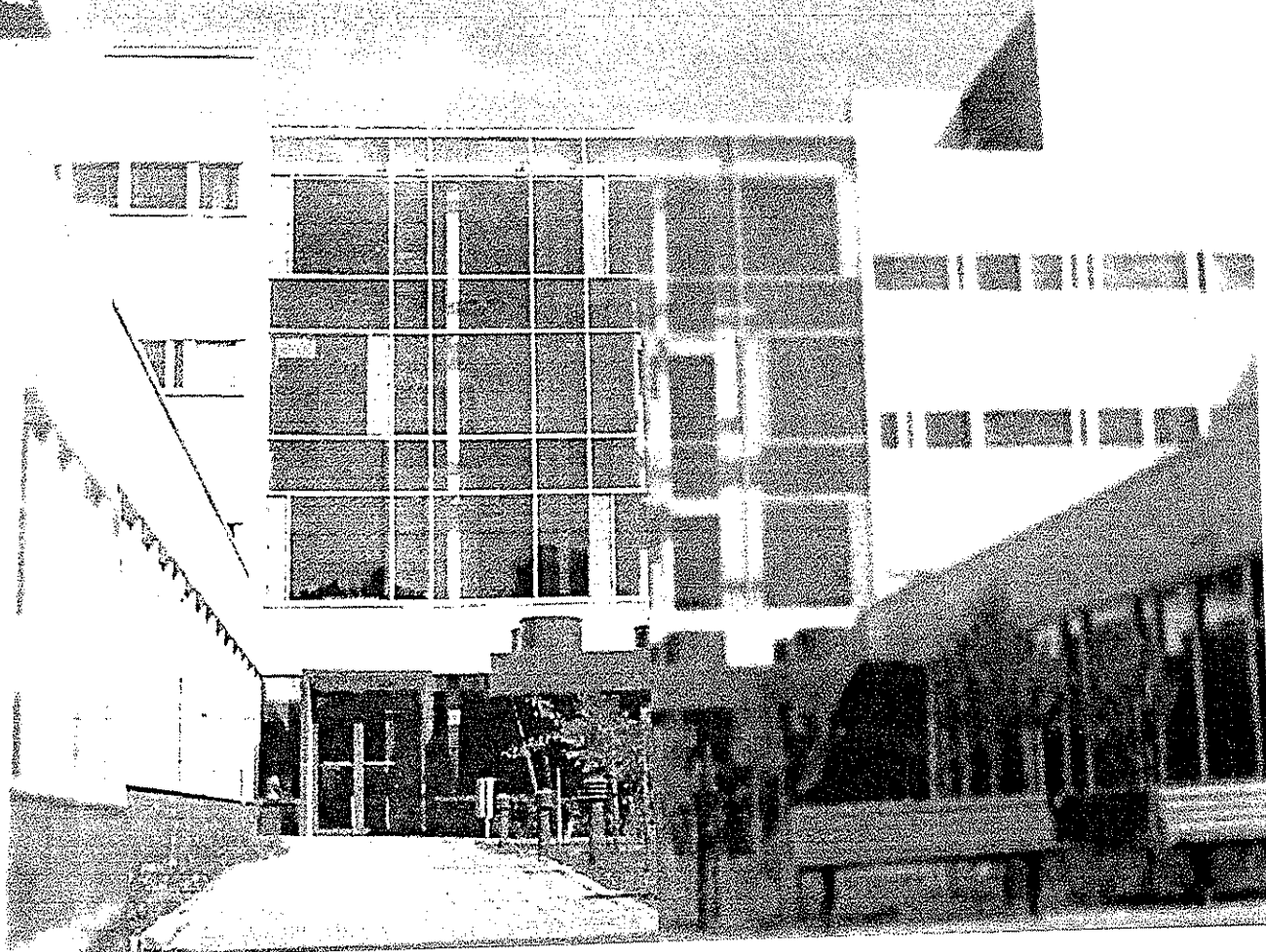


Third European Symposium on
Conceptual Change
A Process approach
to conceptual change

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How does participation in a CSCL project influence Greek teachers' preferences for teaching practices based on conceptual change?

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Abstract

In this study we are investigating whether involvement in the implementation of a CSCL environment will affect the preferences of the participants relative to teaching practices that are suggested by the conceptual change literature. The participants are 12 Greek teachers of primary and secondary education, who are involved in a two-year project (ITCOLE). At this phase of the project, teachers participate in workshops, where they design applications for the ITCOLE software (SYNERGEIA). We designed a questionnaire to investigate whether their initial teaching methods reflect any consideration for the educational consequences of the conceptual change research. After the actual implementation of the learning environment supported by SYNERGEIA, and the interaction with the researchers, we expect to detect changes in the preferred teaching methods of the participants and an improvement in the use of concepts pertaining to conceptual change. We are particularly interested in understanding the kinds of teacher training conditions that make teachers more aware of the problem of conceptual change.

Computer Supported Collaborative Learning (CSCL) environments attempt to synthesize in their implementation a variety of theoretical inputs (Kollias, Vlassa, Vosniadou, 2001). Moreover there is an overlap between design principles of CSCL environments and design principles that aim towards conceptual change (Vosniadou, Ioannides, Dimitrakopoulou & Papademetriou, 2001). Our research aims at detecting whether involvement in the actual implementation of a CSCL environment will affect the preferences of Greek teachers relative to teaching practices that are suggested by the conceptual change literature.

The teachers participate in a two-year project (ITCOLE) that aims to the parallel development of software (SYNERGEIA) that supports collaboration as well as the implementation of collaboration supporting pedagogical models. All members of this group are experienced teachers in primary and secondary education, who are qualified to train fellow teachers in the use of ICT for educational purposes. During this phase of the project, teachers experiment with the current version of the software and participate in workshops with the researchers. In the workshops, we discuss various teaching methods and teachers are introduced to concepts from the research literature that pertain to the design of the collaborative learning environments

In order to follow teachers' changes of preferred teaching methods, we designed a questionnaire, in which we focused on dimensions that we consider to be crucial, from the point of the conceptual change literature. The questionnaire consists of 14 Leackert scale questions and 1 Open-ended question. All participants answered this questionnaire, just before the first phase of the ITCOLE project. In addition to the questionnaire, we also used our notes from the initial design session.

We found out that teachers did not explain the learning difficulties of their students in terms of conceptual change. As a result, using SYNERGEIA to deal with students' misconceptions and facilitate conceptual change was not among their initial goals.

According to our design, no explicit theoretical instruction about conceptual change was provided by the researchers in the workshops. Instead, we created an environment where teachers were engaged in an activity that was meaningful to them –namely, the design of an educational activity

of their choice- and had the chance to interact both with the researchers and their fellow teachers. The researchers encouraged and guided discussions about issues that pertain to conceptual change in the context of the actual activities. We assumed that teachers had prior knowledge about learning difficulties of their students in the area of their teaching expertise and our intention was to help them re-evaluate it from the perspective of conceptual change. We expect that this kind of training conditions, where issues about conceptual change are not addressed merely theoretically, but are grounded in meaningful activities, will make teachers more aware of the conceptual change problem.

All teachers are to be interviewed again, after the actual implementation of the learning environment supported by SYNERGEIA.

We expect this time to detect changes in the preferred teaching methods of the teachers and an improvement in the use of concepts from the conceptual change literature.

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