SYMPAB - (16174) - HOW DOES COGNITIVE SUPPORT PROMOTES PRE-SERVICE PHYSICS TEACHERS' CONTENT KNOWLEDGE DEVELOPMENT?

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Short Abstract

This study examines the influence of cognitive support on pre-service physics teachers' content knowledge (CK) development. Teachers' CK is a crucial influencing factor for teaching practice, and thus student learning. Commonly, CK can be described as an understanding about facts and how they can apply in a specific situation. In order to develop CK, teacher education with its formal learning opportunities plays a vital role. Research in the context of school teaching suggests that the design and implementation of learning opportunities are equally important for learning outcomes. In fact, studies indicate that high-quality learning opportunities require a reduction in complexity and cognitive demands. This cognitive support plays a particular role in physics learning since the structure of physics is complex and hierarchically organized. However, it is uncertain how cognitive support in teacher education learning opportunities affects pre-service physics teachers' CK. To address this issue, we analyzed pre- and posttest data of N = 107 pre-service physics teachers by using path models. Our findings showed that cognitive support contributed to CK development beyond the quantity of learning opportunities. Furthermore, the cognitive support enhanced especially the development of an applicable CK. This implies that enhancing cognitive support in learning opportunities is an effective and accessible source for improving pre-service teachers' CK development.