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**An examination of pre-service secondary mathematics teachers' conceptions of angles.**

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Summary: The concept of angles is one of the foundational concepts to develop of geometric knowledge, but it remains a difficult concept for students and teachers to grasp. Existing studies claimed that students' difficulties in learning of the concept of angles are based on learning of the multiple definitions of an angle, describing angles measuring the size of angles, and conceiving different types of angles such as 0-line angles, 1-line angles, and 2-line angles. This study was designed to gain better insight into pre-service secondary mathematics teachers' (PSMTs) mental constructions of the concept of angles from the perspective of Action-Process-Object-Schema (APOS) learning theory. The study also explains what kind of mental constructions of angles is needed in the right-triangle context. The four PSMTs were chosen from two courses at a large public university in the Midwest United States. Using Clements' clinical interview methodology, this study utilized three explanatory interviews to gather evidence of PSMTs' mental constructions of angles and angle measurement. All of the interview data was analyzed using the APOS framework. Consistent with the existing studies, it was found that all PSMTs had a schema for 2-line angles and angle measurement. PSMTs were also less flexible on constructions of 1-line and 0-line angles and angle measurement as it applied to these angles. Additionally, it was also found that although PSMTs do not have a full schema regarding 0-line and 1-line angles and angle measurement, their mental constructions of 1-line and 0-line angles and angle measurement were not required in right triangles, and the schema level for 2-line angles was sufficient for constructions of right triangle context.

*Classification:* G49 C39 B53

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