

**Pedagogical content knowledge of mathematics educators and students achievement in
Nairobi County
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Pedagogical content knowledge (PCK) and content knowledge (CK) are key components of teacher competence that affect student progress. However, little is known about how teacher education affects the development of CK and PCK. The imperative in recent years about improving student outcomes is also about improving the quality of the teaching workforce. Schulman (1986) believed that teachers needed more than just knowledge of their content area and generalized knowledge of pedagogy to be a good teacher. He believed that they also needed the ways of presenting and formulating the subject and make it comprehensible to them (Shulman, 1986) as well as what makes the concept easy or difficult for others and possible misconceptions that the students may have. The aim of the study is to examine prospective mathematics teachers pedagogical content knowledge in terms of knowledge of understanding students and knowledge of instructional strategies which are the subcomponents of pedagogical content knowledge. The research will seek to explore (a) To determine the teachers competency of pedagogical content knowledge in Mathematics. (b) To determine how teachers use mathematical content knowledge in dealing with some teaching problems and achievement of students in mathematics. (c) To investigate the interrelationship between mathematical knowledge and pedagogical content knowledge. (d) To investigate the minimal knowledge requirement of mathematics teachers. To address this question, the researcher will construct tests to directly assess mathematics teachers CK and PCK. Based on these tests, the researcher will compare the PCK and CK of four groups of mathematics teachers at different points in their teaching careers in Nairobi County. The target population will be one thousand four hundred which will comprise of teachers and students in Nairobi County. The respondents will be selected with the purposive sampling. Case study method, which is based on the qualitative research approach will also be used. Data will be collected using questionnaires, interview schedules and lesson observation schedules. The obtained data will be analysed using SPSS computer software and the findings will be represented in tables and charts. The recommendation of the study will be to Mathematics educators.

Keywords: PCK- pedagogical content knowledge; Ck -content knowledge; knowledge understanding.