

Pedagogical Content Knowledge: An investigation of Teachers' Perception for Teaching Chemistry Core Competencies in Senior Secondary Schools

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Background

Teachers play a major role in enhancing students' understanding of chemistry. It is therefore important that teachers structure chemistry lessons to enhance meaningful learning. . Pedagogical content knowledge (PCK) is a vital component of teachers' knowledge base for teaching. Studies have shown that effective teachers tends to be vast in the use of PCK for planning and implementing their teaching activities. This study therefore, investigate teachers' perception of PCK for teaching chemistry core competencies in senior secondary schools.



Objectives of the Study

This study aims to examine teachers' perception of PCK for teaching chemistry core competencies in senior secondary schools in Ilorin, Nigeria. Specifically, the study determined the influence of teachers' qualification, gender and teaching experience on their perception of PCK for teaching chemistry core competencies.

Methodology

The study is a quantitative one, which adopted the descriptive research of the survey type. A sample of 147 chemistry teachers from both private and public secondary schools were randomly selected within Ilorin, metropolis. An adapted questionnaire from He, Zheng and Li (2021) was used to gather data from the respondents. The reliability of the instrument was conducted using an internal consistency reliability and a reliability index of 0.83 was established using Cronbach's Alpha statistics. Data gathered was analyzed using the mean, standard deviation, t-test and Analysis of Variance (ANOVA).

References

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Findings

- Teachers held a positive perception of PCK for teaching chemistry with a mean that is higher than the benchmark of 3.00 ($M= 4.40$, $SD= 0.62$). The teachers felt more confident in their “knowledge of orientations to teaching and learning of chemistry” ($M=4.50$, $SD= 0.62$) compared to the other four subscales. This implies that teachers held a more positive perception of their own knowledge of orientations to chemistry teaching than other constructs of PCK.
- Findings revealed that male teachers held a more positive perception of PCK for teaching chemistry. This is reflected in a higher mean value exhibited by males ($M= 70.95$, $SD= 4.65$) when compared to their female counterparts ($M=69.25$, $SD=6.90$). The difference in mean score was further tested in hypothesis one and findings showed that no significant difference exist in the male and female teachers' perception of PCK for teaching chemistry core competencies ($t_{(145)}=1.695$, $p=.09$). It is obvious in Table 2, that in all the subscales, male teachers showed a more positive perception with a higher mean score than the female teachers, especially in “knowledge of students' understanding in chemistry” subscale which was reported to have the highest mean value ($M=17.23$, $SD=1.56$). Despite this, a significant difference was not reported among the two groups in all the subscales ($P>.05$)
- Furthermore, findings shows that a significant difference was observed based on teachers' experience in favor of experienced teachers ($F=2, 144$, $P= 3.63$).