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ASSESSMENT OF CHEMISTRY TEACHERS STOICHIOMETRY PEDAGOGICAL CONTENT KNOWLEDGE AND ITS IMPLICATION CHEMISTRY STUDENTS ACHIEVEMENT IN STOICHIOMETRY

Nathaniel Ayodeji Omilani¹ and **Ajibola Ime²**¹Federal College of Education Abeokuta, Nigeria²University of Ibadan, Nigeria

Understanding stoichiometry is fundamental to chemistry learning just like basic mathematical operation is to mathematics. Students with difficulty in stoichiometry will be unable to solve many problems in various chemistry topics. Unfortunately, chemistry students have difficulty in stoichiometry globally. This problem cannot be solved without a thorough analysis and assessment of chemistry teachers' stoichiometry pedagogical content knowledge (CTSPCK) among other things. This cannot be underscored because of the central role teacher's play in the development of students' understanding of stoichiometry. To this end, this study carried out an assessment of stoichiometry pedagogical content knowledge (SPCK) of chemistry teachers. The components of SPCK measured in this study were: knowledge of instructional strategy in stoichiometry (KISS), knowledge of stoichiometry (KS), and the knowledge of students' understanding in stoichiometry (KSUS). The study further examined the influence of the level of CTSPCK on their students' achievement in stoichiometry. The study adopted an expo-facto approach to survey, the sample comprised of 19 chemistry teachers selected from senior secondary schools Ijebu-Ode Local Government Area of Ogun State and their students (512). The instruments for data collection were: topic specific pedagogical content knowledge for stoichiometry questionnaire and students' knowledge of stoichiometry test. The result revealed that the mean score in KS components of CTSPCK was very good ($x=6.05$). On the other hand, mean

score in the two other essential components of CTSPCK: (KISS; $x=3.17$) and (KSUS; $x=1.21$) were very poor. Based on the total score of teachers' SPCK, they were categorised as: novice (16), basic (2), developing (1) and experts (0). The study also found out that the level of CTSPCK has a significant influence on students achievement in stoichiometry ($F_{(2,518)}=47.11$; $p<0.05$). The main recommendation is an urgent effort to develop CTSPCK most especially KISS and KSUS components.

Biography

Nathaniel Ayodeji Omilani has completed his PhD in Science Education from the University of Ibadan, Ibadan, Oyo State, Nigeria. He currently holds an adjunct position in the Department of Science Mathematics and Technology Education in the same university. He has supervised many undergraduate and graduate students in the area of chemistry education and elementary science education. He has also taught courses preparing preservice chemistry and elementary science teachers both at the Department of Integrated Science, Federal College of Education, Osiele, Abeokuta and University of Ibadan. He has published 12 papers in reputed journals and has also read more than 9 papers in national and international conferences. His areas of interest and expertise in science/chemistry education are conceptual change and misconceptions in chemistry, integration of information communication and technology to science and chemistry, development of science teachers' pedagogical content knowledge and science curriculum (secondary and primary). He is also vast in data analysis in education research and instrumentation.

ayonath2002@yahoo.com.au