Pedagogics of chemical bonding in Chemistry; perspectives and potential for progress: The case of Zimbabwe secondary education

Abstract

In this study, the pedagogics of chemical bonding in Chemistry at Secondary school level, perspectives and potential for progress was investigated. The study was premised on the qualitative design methodology grounded and informed by the interpretive paradigm. It was guided by the constructivist theoretical framework acting as a lens through which we viewed our study. Eight (8) Bachelors degree holders, having taught chemistry at Advanced Level for at least 2 years, were purposively selected to comprise a sample of participants. Narrative interviews, followed by focus group discussions to validate the procedure, were carried out. Thematic approach data analysis from audio-taped – transcriptions resulted in main themes and sub-themes being drawn out. It was found out that teachers teach for examination purposes, hence this followed a simplistic pedagogical approach resulting in misconceptions of chemical bonding being formed by learners. Rigid and dichotomous approach to ionic and covalent bonding, as outlined in textbooks and by teachers, forgetting its continuum scale, resulted in misconceptions in the understanding of chemical bonding. Teachers were found to be contributing factors by virtue of incompetence. Therefore use of learner centred pedagogical bottom-up approach was highlighted. Application of computer-assisted instruction on conceptual understanding of chemical bonding by competent teachers was inexorable.