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Paper title: "Unveiling Research Potentials on Chemical Literacy Assessment: A Systematic Review Using PRISMA Guidelines"

The development of research on assessment in chemistry learning currently shows continuous efforts that are arranged in accordance with the demands of the curriculum. The design of assessment instruments that are valid, reliable, and have good item properties requires a strong basis both from the theoretical foundation and practical issues. This systematic review aims to investigate the theoretical foundations underlying the design of chemistry learning instruments, the collection of frameworks that are often used, and the limitations of each previous study. The systematic review process is based on the PRISMA guidelines. A review analysed 747 articles obtained from education-specific and broad scope data bases. Thirty-nine articles were included after comprehensive screening using inclusion and exclusion criteria. The results showed that most of the instrument development in chemistry learning in the context of chemical literacy used the theoretical foundation of constructivism, there were also several other studies integrating constructivism theories with humanistic or cognitivism or social-culturalism theories. Practical issues that often arise are the need for valid and reliable measurement tools for the assessment of students' ability to understand chemical concepts in real-world contexts and social settings. The framework introduced by Shwartz, Ben-Zvi and Hofstein (2006) has been used to develop chemical literacy assessments. The limitations of prior studies have highlighted the challenges in implementing chemical literacies, particularly in achieving the four main dimensions of chemical literacies. The review concludes by highlighting some of the theoretical challenges in the assessment of chemistry education and suggests avenues for future research.