

Development of Technological Pedagogical Content Knowledge (TPACK) for Teachers and Prospective Teachers in Integrating Local Mediated Context-Based Learning Socioscientific Issues

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ABSTRACT

The 21st century educational paradigm requires students to have good transferable skills. Context-based chemistry learning that links various aspects that are relevant to students' lives can increase students' interest, motivation, and literacy. Open and controversial Socio-scientific Issues (SSI) increase the effectiveness of context-based learning in developing transferable skills, especially in scientific argumentation, informal reasoning, decision making, and chemical literacy. Furthermore, SSI's local integration (L-SSI) which is very close to students' lives has the potential to better develop student skills. Therefore, prospective teachers and chemistry teachers are required to have good competence in developing context-based chemistry learning using L-SSI as a context. Technological Pedagogical Content Knowledge (TPACK) as a representation of the competence of chemistry teachers and prospective teachers is still low. Meanwhile, there is no research that specifically analyzes TPACK for context-based learning (TPACK-CBL), especially using L-SSI as a context.

This study aims to produce a guidebook for the development of SSI local mediated Context-Based Learning Chemistry (PKbKtL-SSI) as a learning resource in the development of TPACK-CBL teachers and chemistry teachers and to test its effectiveness in increasing the competency achievement of prospective chemistry teachers and developing the professionalism of chemistry teachers. Through this research it is hoped that it will also have an impact on increasing students' transferable skills and supporting the implementation of the Merdeka Learning Campus Merdeka (MBKM) curriculum. Students can gain experience in research and educational internships with research partners as well as user partners, namely lecturers from user campuses and teachers from user schools.

This study was designed for 3 years using mixed methods - exploratory design. In the first year, an exploration of the problem was carried out as a basis for developing a guidebook product for the preparation of the PKbKtL-SSI and the TPACK-CBL instrument. The guidebook and instrument products have been reviewed for the feasibility of content and constructs by experts and readability by teachers. The TPACK-CBL efficacy instrument and teachers' perceptions of CBL-SSI were declared valid and reliable based on empirical tests.

Mandatory output in the first year in the form of a copyright from the PKbKtL-SSI development manual (published). The additional outputs are scientific articles in reputable international journals (Educational Researcher – Q1 Scopus) with under review status. The Technology Readiness Level (TKT) achieved in the first year's research reached level 4, namely the stage of primary data collection and testing of design and product reliability.

Kata Kunci: Local socioscientific-issue, context-based learning, technological pedagogical content knowledge, transferable skills