

Support for chemistry teachers in Professional Learning Communities (PLCs) in routine and during the COVID-19 Crisis

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During lockdowns implemented to contain the COVID-19 pandemic, and schools were forced to implement Emergency Remote Teaching (ERT) which affected all aspects of teachers' work, and led teachers to seek support (Hodges et al., 2021; Rap et al., 2020). Professional Learning Communities (PLCs) were a channel that provided this assistance. In a PLC, teachers meet regularly for discussions and joint learning (Hord, 2009; Orland-Barak, 2020). Meetings facilitate relationships between teachers and promote collaboration (Wenger et al., 2011).

Teachers' perceptions of their membership in a network of PLCs of teachers teaching chemistry was analyzed using the Refined Consensus Model for PCK (Carlson & Daehler, 2019) and Communities of Practice framework (Lave & Wenger, 1991). Research questions were:

1. How did the various members of the PLC network perceive participation regarding support for teachers and relationships between PLC activities and teachers' needs?
2. In what ways did the ERT experience influence members' perceptions of PLC goals and activities?

The studied network combines two types of PLCs: "Chemistry Teachers' Communities" (CTCs), open to all teachers, and a "Leading Teachers' Community" (LTC) of experienced teachers who lead CTCs.

Northern Israel's LTC and Haifa's CTC were studied; both included about 20 members each and met biweekly at the Technion or via Zoom. Data was collected using interviews, observation records of meetings, teacher reflections, and discourse using social media. The data was analyzed using thematic analysis. Comparison of data from a variety of tools provided a comprehensive view of activities.

This study's significance is twofold. First, results highlighted the importance of balancing "top-down" and "bottom-up" approaches in managing PLC activities. Analysis of teaching and assessment activities introduced in the community, and teachers' reflections provided practical insights. Secondly, sharing, and ties between PLC members supported them in routine and emergency situations. PLC membership contributed to teachers' collective and personal PCK. The importance of relationships within a diverse PLCs' network to the support and members' well-being was evident. Since PLCs proved to be valuable in routine and crisis situations, we recommend expanding the PLCs network to make it more accessible.

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