

Teaching Biology at a distance:
Biology teachers' professional knowledge
and the coping with Transactional Distance

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MSc

by

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Summary

The Covid-19 pandemic had affected the education system due to a sudden shift to distance teaching and learning (Distance education, DE). Distance teaching leads to an increase in the Transactional Distance (TD): a collection of psychological, cognitive, and emotional gaps between the teacher and the student. Since teaching is stemmed

from the teacher's professional knowledge, teachers likely harness this knowledge to deal with changes in the teaching environment, including increasing the TD. This qualitative study is aimed to examine the changes in the TD in Biology classes from the teachers' point of view, and to characterize their professional knowledge, as reflected in teaching Biology at a distance-based setting, during the pandemic. Six experienced Biology teachers were interviewed at three time points: right after the transition to DE (April 2020), during the summer break (July 2020), and at the end of the following semester (January 2021). The data from the semi-structured interviews were crossed with recorded lessons and activities that took place during the DE and were analyzed with respect to the TD theory and the professional knowledge that was expressed by the teachers. The data analysis revealed that the shift to DE increased the TD in Biology classes and disrupted the enactment of experienced teachers' professional knowledge. Ten months after the transition to DE, it appeared that teachers had expanded the range of their instructional strategies, increased the use of strategies that encourage interactions, and the TD appeared to have been reduced by some extent and approached its pre-DE level. Thus, this study suggests that teachers use their professional knowledge to reduce TD. Characterization of the instructional strategies that possibly lead to the decrease of TD, may be useful for teachers' professional development, especially due to the encouragement of blended learning.