UNCONVENTIONAL THINKING IN ONLINE LABORATORY SCHOOL: FRACTIONS

Zelha Tunç-Pekkan, and Özlem Kayıtmaz

MEF University, Istanbul

For effective teaching, it is necessary to keep students' thinking central to the instruction. Jacobs et al. (2010) introduced professional awareness as: attending to children thinking (identifying), interpreting (making sense), and responding (deciding how to respond). Innovative teacher education programs prioritize preservice teachers (PST) acquisition of these skills as in our institution. This research investigated PSTs' noticing instances of students' unconventional fractional thinking and orchestrating online classroom discussions around those instances in our Online Laboratory School (OLS) setting (Tunç-Pekkan & Taylan, 2022). The OLS is founded during Covid-19 pandemic as a virtual school and has served to hundreds of low-income students since Spring 2020. OLS also aims to provide quality internship experience to mathematics PSTs by planning, teaching, and reflecting on the experience and providing research opportunities related to teacher education. For this project we primarily focus on the videos of teaching experiences of PSTs on the topic of fractions. Thirty percent of middle school curriculum in X which has centralized curriculum is on fractions and students experience most difficulty on this topic. It is also suggested that specifically fractions should be emphasized in teacher preparation programs (Lee & Lee, 2021). There were 10 PSTs who taught middle school mathematics in 8-week OLS and 24 fraction related lessons (video-recordings) were analyzed. Content analysis and grounded theory were utilized. Findings revealed that most common unconventional student thinking were on "operations" and "representation on the number line" categories. On most occasions, PSTs realized those instances in the teaching moment but some of their responding generated further misconceptions in students; when written lesson plans were analyzed, the problem statements were of poor construction. There is often a mismatch between PST intentions and student interpretations. A coordinated analysis of video-recordings and lesson plans also confirmed these patterns. We will discuss implications of findings for teacher education programs.

References

Jacobs, V. R., Lamb, L., & Philipp, R. A. (2010). Professional noticing of children's mathematical thinking. *Journal for Research in Mathematics Education, 41*(2), 169-202.

Lee, M., & Lee, J. (2021). Pre-service teachers' selection, interpretation, and sequence of fraction examples. *Intern. Journal of Science & Mathematics Education, 19*, 539-558.

Tunç-Pekkan, Z., & Taylan, R. D. (2022, in press). A new learning community for educating future teachers: Online laboratory school. *International Journal of Mathematics Education in Science and Technology.*

2022. In C. Fernández, S. Llinares, A. Gutiérrez, & N. Planas (Eds.), *Proceedings of the 45th Conference of the International Group for the Psychology of Mathematics Education* (Vol. 4, p. 304). PME.