

Proximal Assessment for Learner Diagnosis (PALD): A Study of Classroom Practices
and Early Teacher and Student Outcomes

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Executive Summary

This paper presents results of a formatively-oriented research study examining teacher practices and early outcomes of a dynamic classroom assessment approach, titled *Proximal Assessment for Learner Diagnosis* (PALD). Implemented by participating teachers in an upstate New York school district, the PALD model was developed to help classroom teachers better detect domain-specific learner gaps and support learner development in an ongoing manner in academic subjects. The present research and development project on the PALD intervention was supported by the National Science Foundation.

Guided by the underlying *logic model* as to how the PALD intervention would work in schools, the study employed a mixed-methods design to examine teachers' diagnostic assessment practices, and the influence of PALD practices on student outcomes in long division and geometry domains, and standardized math tests, moderated by teachers' assessment practices and attitudes ($N_{students}=972$, $N_{teachers}=44$). Although results were mixed following the first year, at the end of the 2-year intervention, classroom observations showed visibly higher incidence of PALD practices in participant teacher classrooms as compared to Non-PALD settings (specific indicators where frequencies were higher using the same number of observed classes, were embedded use of paper and pencil assessments during instruction, 11 vs. 1; embedding of probing assessments, 88 vs. 63; use of group mediation, 16 vs. 5; providing task/problem-specific feedback to guide students, 122 vs. 65). Teacher attitudes towards assessment and PALD practices were considerably more positive in PALD than in non-PALD classrooms (+.20 SD units higher on self-efficacy measures of classroom assessment, +.48 SD units higher on PALD self efficacy measures, and +.30 SD units higher on measures of data use).

Controlling for teacher experience and institutional support factors, measured self-efficacy in diagnostic assessment was also found to be significantly higher when teachers were participants in the PALD intervention; likewise, PALD practice measures were found to be higher for teachers who were PALD participants and also reported higher levels of PALD self-efficacy ($p<.05$). These directional results verified hypotheses about how the PALD intervention was expected to function in school settings.

With respect to early student outcomes, 2-level HLMs accounting student nesting in

classrooms and controlling for student background differences, showed that 5th grade students who were in PALD classrooms were +.12 SD units above their Non-PALD peers in geometry (n.s), with 6th graders on a par, at the end of the second year. In long division, PALD 6th graders were +.22 SD units above their peers ($p < .05$), while PALD 5th graders were placed significantly lower than their peers. On math standardized tests, again, PALD 6th graders were found to be +.33 to +.48 SD units above their grade level peers ($p < .05$) in various models, but PALD 5th graders showed no difference from peers. Consistent with the underlying theory, however, students who were taught math by PALD teachers reporting higher levels of self efficacy in classroom assessment and PALD practices, were +.20 SD units above their peers on standardized math tests, controlling for grade level and teacher background factors ($p < .05$).

That teacher outcomes on assessment beliefs and practices were significantly positive and moderated results on student outcome measures is an encouraging validation of the PALD logic model. The student outcomes suggest small to moderate effects in the expected direction for PALD 6th graders, and are both realistic and encouraging at the present early stage of PALD research. These results were statistically significant on a majority of models run and on both internal and external standardized math tests.

The mixed student outcomes in grade 5 are being further investigated with domain-referenced gain analyses. A fact to note is that a subset of students in grade 6 had two-continuing years of PALD exposure, while all PALD 5th graders had only one year of treatment. Also, 5th grade results were likely affected by the lower subject matter (math) knowledge of elementary teachers at this level, which affected their comfort with PALD implementation. This factor will also be explored in appraising the overall merits and utility of the PALD intervention, and future challenges in scaling up and examining long-term efficacy of PALD in school environments.

The PALD approach provides tools to assist teachers and schools in eradicating persistent student achievement gaps in subject area domains, as emphasized nationally via the NCLB Act of 2001 and other school reform initiatives. It is aimed at creating a positive assessment culture in schools that is learning-centered and fosters ongoing student development. Research on PALD is continuing.