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Altitude Learning:
Literature Review

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WestEd is a nonpartisan, nonprofit research, development, and service agency that works with education and other communities throughout the United States and abroad to promote excellence, achieve equity, and improve learning for children, youth, and adults. WestEd has more than a dozen offices nationwide, from Massachusetts, Vermont, Georgia, and Washington, DC, to Arizona and California, with headquarters in San Francisco.

Overview of Literature Review Process

From September to November 2019, WestEd staff researched and drafted a literature review for Altitude Learning. WestEd collaborated with Altitude Learning to determine the focus areas for the literature review, as well as to identify any existing company resources or documents that could serve as the basis for the literature review.

The WestEd process entailed first identifying search strings based on the following focus areas:

- Professional learning
- Learner-center teaching practices

The following search terms were then identified and applied in various combinations:

- *(Teacher) Professional learning*, (*teacher) professional development*, *student centered practices*, *learner centered practices*, *personalized learning*, *mastery learning*, and *proficiency-based learning*.

A WestEd researcher spent approximately two days searching these key words in academic databases, such as EBSCO Host (includes APA PsycARTICLES and ERIC) and Google Scholar. When selecting references, the following factors were taken into account:

- Data of publication: Priority was given to references published in the past 20 years.
- Quality of publication: Priority was given to peer-referenced articles.
- Quality of research: Priority was given to the most rigorous study types, such as randomized controlled trials, quasi-experimental designs, correlational designs, descriptive analysis, mixed methods, and literature reviews. Other considerations included the target population and sample, including their relevance to the question, generalizability, and general quality.

In addition to the academic literature, this review sought out "best practices" employed by PL providers in the field through reports from organizations dedicated to the improvement of teaching, such as Learning Forward, the National Council of Teachers of Mathematics (NCTM), and the Learning Policy Institute. The combined findings from these academic and practice-based sources are presented below.

Professional Learning and Learner-Centered Practices

This literature review provides an overview of best practices and common discourses that have shaped professional learning, with an emphasis on teaching that supports learner-centered practices. The literature reviews summarizes these findings by framing the goal of professional learning (PL) for learner-centered practices (LCP) as the development of *focused, flexible professionals*. These three themes—*focused*, *flexible*, and *professionals*—were encountered in various forms across the literature, and they provide a helpful framing for organizing our findings toward the goal of engendering learner-centered practices.

FOCUSED

The literature regularly praises PL that prioritizes the core academic needs of students—namely, the central learning goals and student practices that define academic success. This is in contrast to general PL topics that may be helpful to teachers, but in a more supplementary role (e.g., PL about integrating technology, or "brain-based" teaching tips). Similar to the process of backwards curriculum design, this process is rooted in identifying a select number of learning goals and designing PL that enables teachers to effectively teach these goals. The larger process is reflected in Polly & Hannafin's (2010) discussion of focusing on student outcomes, connecting them to teachers' instructional practices, and creating an environment in which teachers can iteratively strengthen the connection between the two.

A large segment of this literature is related to the idea of "practice-based professional development" (Ball & Cohen, 1999). This research focuses on the tangible actions teachers make in the classroom and how to support these practices. These teacher practices can be organized—*focused*—around several pivots. At the broadest level, teacher practices can be organized around specific curricular standards, such as the Common Core State Standards and the Next Generation Science Standards, and their related assessments. Practices can also be organized around content or subject areas. Lotan & Burns (2019) reported on a state-wide initiative in California that was guided in large part by teacher leaders gathering expertise on particular subject areas; although the teacher leaders worked collaboratively with their local teachers, their leader-level groups helped identify key, specific problems of practice. Their work suggests an avoidance of generic, interdisciplinary professional development programs.

Focus can also be achieved via specific curricular materials. Many articles argued it is critical to ground teachers' practices in concrete lessons and units (Hirsch, 2019; Jackson & Makarin, 2017; Learning Forward, 2018; Darling-Hammond et al., 2017). Although some PL may aim to help teachers implement these very materials, the basic premise is to organize teachers' learning around concrete, high-quality, standards-aligned lessons—a way to bring the idea of a teaching practice out of the ether. An even more granular way to make PL focused is to introduce student work as a source of analysis (Ball & Cohen, 1999; Lewis, 2002; Lotan & Burns, 2019). Since the purpose of PL for LCP is to impact students' thinking and doing, the integration of student work allows teachers to analyze, debate, and generate ideas in an authentic, student-focused way.

FLEXIBLE

An important goal of focusing on specific content and practices is for teachers to develop principles they can flexibly apply to their work with students. Being a *flexible* teacher means responding to core student needs in the moment, and this can be nurtured by PL that elicits teachers' thinking and doing around the decisions they make. Lambert et al. (2013) used rehearsals as a technique for this development. This involves one teacher presenting a template lesson—which exemplifies the targeted instructional practice—to a group of other teachers and an instructional leader, who all act as students. Unlike microteaching, which is usually an uninterrupted segment of 10–15 minutes, the other teachers and (especially) the instructional leader can frequently pause to prompt discussion, digging into particular instructional decisions with the goal of unearthing the close connection between practices, the content, and underlying principles of effective instruction. A related concept outlined by Janssen et al. (2015) is for PL to address the modularity of teaching: take a lesson and all the moves a teacher might make, break it into smaller pieces, and reconsider how it could be put back together to better support students. This work is complex and forces teachers to wrestle with the underlying reasons why an instructional decision may be better or worse in a given situation. The authors of these two articles argue that teaching is a complex act, so the PL that precedes it should be as well.[1] Although they call such teaching "ambitious instruction," it aligns closely with learner-centered practices.

PROFESSIONALS

If we want to help teachers be focused and flexible, PL providers should be especially thoughtful about creating environments in which advanced professionals can learn. Two themes were mentioned regularly in the literature that support this idea of professionalism and teacher identity as a part of PL. The first theme—*agency*—helps to define what's important, and the second theme—*collaboration*—is a common way to enact these priorities.

Agency

At the core of agency is teachers' ability to make judgements about the type of PL that will most benefit them and their students (Hirsch, 2019). Teachers who feel a sense of ownership may feel more motivated during PL, and it may benefit their adoption of the targeted PL (Polly & Hannafin, 2010). An essential feature of Janssen et al.'s (2015) article on modularity—having teachers decompose and recompose instruction—is teachers connecting a targeted practice to their own, larger goals. Lotan & Burns (2019) reported on a statewide PL model that provides a structure in which PL is organized and supported, but which is driven by a group of teacher leaders who co-develop target areas with the teachers in their school/district (at its core a "train the trainer model"). These teacher leaders then convene in regional groups of mutual interest and use the PL network for support, striking a balance between top-down and bottom-up strategies.

An important point is that *agency* is not the same thing as *a lack of constraints*. Penuel et al. (2011) studied teachers who received PL that provided them either explicit instruction on particular pedagogies, extensive guidance on choice of curriculum materials, both, or neither. As measured by student learning

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[1] Both of the above studies stem from teacher education (e.g., Lambert et al. (2013) worked with master's level novice teachers), so a remaining question is whether the development of practices to principles looks different for veteran teachers.

gains, students with teachers who received explicit instruction on pedagogies had statistically significant learning gains compared to teachers who had neither support or who only had guidance on choice of materials. The authors suggest this structure can be highly effective because teachers are trained in principles of instructional design that they can later adapt to a variety of high-quality materials. PL providers will have to navigate that balance of structure versus choice when it comes to certain pedagogies and materials. Given the numerous curricular options available, one goal of a PL provider should be to help their school clients identify the standards and curricula that best suit their development needs (Killion, 2013).

Effectiveness of Collaboration

There is at least some evidence that teacher collaboration directly benefits students. For example, one study compared student learning outcomes to teachers' ratings of professional collaboration at their schools, and the two were positively correlated (Goddard et al., 2007). A longitudinal study found that "collective pedagogical teacher culture" boosted student achievement and even helped to close racial and socioeconomic achievement gaps (Moller et al., 2013).

Effective collaboration can occur at a variety of scales, from the individual school level to more expansive setups (Darling-Hammond et al., 2017). Within a school, this collaboration can include grade-level meetings, departmental meetings, and/or peer observations—all of which require time to be consciously carved out (Darling-Hammond et al., 2014). Talbert (2002) suggests that collaboration may be easiest to implement on a small scale such as a department-level team, but that school-wide initiatives can also be effective when they are particularly well-conceived and well-executed. This finding can be weighed against the findings presented earlier in this review about the benefits of focusing on specific learning objectives and learner-centered practices. It may be possible to create valuable collaboration when working across departments, grade levels, or school districts; however, careful attention needs to be paid so that core student needs are at the forefront, and that the endeavor isn't collaboration for its own sake.

SUMMARY

The articles in this review suggested that PL should help teachers further become *focused, flexible professionals*. By being *focused* on particular learning goals, standards, and materials, PL can give space for teachers to use limited PL time on what their students need most. This grounding in core outcomes can help teachers develop nuanced principles that they are able to apply *flexibly* as part of an ongoing, long-term improvement of their practice. Ideally, this PL would ensure teachers have agency in deciding what core student needs to focus on, and collaboration would give teachers confidence that they are learning from their colleagues—two PL features that are markers of the complex, *professionalized* work required of learner-centered teachers.

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