

Integrating Professional Growth Into the School Day

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Charge of the Working Group

One of the biggest needs we hear from STEM teachers is for high-quality professional development. But finding relevant opportunities that are integrated into the school day continues to be challenging, if not impossible. 100Kin10's Grand Challenges points to this work-environment issue – how to get teachers quality PD during the school day – as one of the areas with the greatest potential for impact across the system.

This Project Team has explored how to integrate professional growth opportunities during the school day, with a focus on how professional development offerings can occur as a part of regular school-day operations. This project team has investigated how progressive teacher leadership roles and innovative school schedules and can evolve to accommodate and enable these offerings.

Context and Threads

Ongoing, relevant professional learning is critical to supporting teachers and improving student outcomes. The Every Student Succeeds Act (ESSA) has altered the way that educators monitor and measure student outcomes. One of the key tenets of ESSA is the importance of creating personalized professional development (PD) programs for teachers. The legislation offers a new vision of professional development activities that are “sustained, intensive, collaborative, job-embedded, data-driven, and classroom-focused.”

Job-embedded professional growth opportunities refer to teacher learning opportunities that take place during the contracted school day and are grounded in the context of classroom teaching practice. Such professional learning opportunities are designed to enhance teachers' pedagogical content-specific instructional practices with the intent of improving student learning (Darling-Hammond & McLaughlin, 1995; Hirsh, 2009). These types of opportunities take place primarily on the school campus and are integrated into the workday. These opportunities require teacher collaboration for assessing and finding solutions to authentic and problems of practice as part of a cycle of continuous improvement (Hawley & Valli, 1999; National Staff Development Council, 2010).

This research brief provides a short review of the research and policy literature related to embedded professional growth opportunities for STEM Teachers. The brief builds upon research that exists for

embedded professional growth in general with the goal of focusing on the needs of STEM teachers, including non-STEM teachers that teach STEM subjects. In addition to the literature review, the brief provides the results of a national survey provided to the partners of the 100Kin10 network for distribution to stakeholders. The brief also highlights embedded professional growth models from across the nation.

Embedded Professional Growth

Job Embedded Professional Development (JEPD) is professional development situated in schools that is always about the current work of schools (Learning Forward, 2011). JEPD is designed to enhance teachers' content-specific instructional practices with the intent of improving student learning and grounded in everyday teaching practice. JEPD is school-based and takes place in the school and is integrated into the regular teacher workday. JEPD is a shared endeavor that is focused on learning and is directly connected with daily practice. JEPD is collaborative and requires teachers work cooperatively and is inquiry-based. JEPD requires active participation of teachers and support from administrators. Effective JEPD is aligned with standards for student academic achievement.

Effective JEPD has the following characteristics (Learning Forward 2011):

- **Social, situated, and distributed among colleagues.** In other words, in JEPD, teachers' professional development is largely a product of formal and informal social interactions among the teachers, situated in the context of their school and the classrooms in which they teach and distributed across the entire staff.
- JEPD may consist of departmental, cross-departmental, grade-level, or "vertical" (i.e., across grade levels) teams of teachers engaging in "interactive, integrative, practical, and results-oriented" work
- Provides multiple opportunities to learn which are created when **teachers are afforded the time, space, structures, and support to engage in JEPD.**
- Supportive school leaders are instrumental and must foster an **organizational culture of continuous learning and teamwork** through venues such as professional learning communities and professional norms, including, for example, open-door policies for observing each others' classrooms.
- Matches school curriculum, state standards, and assessment of student learning
- **Compatible with daily school operations;** and is framed to address the particular instructional needs of a teacher's given assignment
- **Should begin with an analysis of school needs** in terms of both student and teacher learning based on formative evidence of their performance.

Embedded Professional Growth in STEM

Traditionally, professional growth in STEM teaching has been primarily the responsibility of the teacher. Teachers enroll in professional development programs and/or advanced university coursework to advance their knowledge of STEM content and STEM pedagogical content knowledge. Although this approach to professional learning may help the teacher learn new content and strategies it may or may

not have any impact on student academic performance. Attending workshops and conferences may or may not be aligned with the STEM learning needs of the students in the school and may be disconnected from school student achievement goals.

A central issue in providing effective professional development is how to make professional development available to all STEM teachers that is cost-effective, relevant, and aligned with student learning needs. It should also be noted that STEM teachers face unique challenges that can impact the effectiveness of professional growth opportunities. One of these challenges is the finite resources available to STEM teachers to maintain laboratories and technologies that are consistent with the STEM workplace. One advantage of embedding professional growth opportunities in the school day is that STEM teachers can focus on maximizing the tools that are available in their classroom and school.

JEPD can facilitate STEM teachers working collaboratively with colleagues across the building or district to improve STEM teaching practice and learning outcomes for students in their local context. STEM teacher leaders can provide JEPD in a number of contexts, including coaching, modelling, and facilitation of communities of practice. These activities can lead to changes in teacher practice that improve student learning in STEM disciplines. Developing STEM teacher leaders is a strategy that schools and districts can implement to support other STEM teachers. STEM teacher leaders have content and pedagogical knowledge needed to provide STEM-specific support. STEM teacher leaders also have a command of the STEM-specific pedagogical content knowledge, STEM educational resources, STEM educational programming, and STEM professional development that can facilitate effective STEM teacher practice.

What can school leaders do to support job-embedded professional growth opportunities?

School administrators must create a school culture that prioritizes teacher growth opportunities. This includes developing the appropriate STEM teacher support structures and dedicated time for STEM teachers to collaborate within the school day. Schools that are focused on student achievement need to build in significant time for STEM teachers to collaborate. This means that teachers must have common planning times beyond their designated conference/planning period within the school day. Teachers need time to collaborate and utilize student data to improve effectiveness.

At a minimum, schools should provide 60 minutes of uninterrupted common teacher learning time once per week. This may require administrators to rethink the Master Schedule in order to provide this time within the school day. Some strategies include:

- Early release days weekly or monthly to provide teachers with uninterrupted time for professional learning;
- An additional period a day to provide STEM teachers with a common planning time for professional learning.
- Innovative block schedules that facilitate additional planning time each week.

These scheduling strategies allow teachers to participate in Professional Learning Communities to better assist their students. This includes the use student performance data to inform decisions about needed areas for professional learning and identify student needs for academic interventions.

Providing more time for STEM teacher professional growth is just the first step. Administrators must also align the teacher appraisal system with the teacher learning occurring in job-embedded professional development so teachers can strengthen their practice. In other words there must be accountability that what is learned is implemented to improve student learning outcomes. It is important to measure the progress of teacher and student learning to ensure success for all.

Exemplars

Case 1

The University Academy Charter Schools managed by the University of Texas at Tyler are open-enrollment STEM focused K-12 Academies preparing students for university STEM majors in engineering and biomedical sciences. The academies have received an overall “A” Accountability Rating from the Texas Education Agency in 2019. The academies have implemented a daily schedule that releases students from academic subjects one hour earlier than most surrounding schools. This extra hour is utilized for embedded Teacher Professional Growth Monday through Thursday. This time is in addition to their conference/planning period. The academies also employ one instructional coach per campus to focus on pedagogy and student outcomes. These coaches were previously classroom teachers leaders in the academy that have been reassigned to assist teachers and facilitate JEPD. Teachers are also expected to work on a Master’s Degree at no-cost to the teacher and time is made available for teachers complete their advanced studies. The result has been an increase in student achievement scores as measured by state exams each year since 2012.

Case 2

Montgomery High School in Skillman, NJ implemented an innovative daily schedule in 2011. The school day is divided into four 84 minute instructional blocks with classes meeting on an alternating A/B Day schedule for the entire year. The innovative aspect of the schedule involves the lunch period situated between the 2nd and 3rd instructional blocks. The 52-minute lunch period is referred to as “Unit Lunch”, pausing instruction for all 1700 MHS students at the same time. The Unit Lunch period is designated exclusively for instructional staff to participate in Collaborative Learning Teams (CLTs) four days per week (Garet, Porter, Desimone, Birman, & Kwang, 2001; Wood, n.d.). The CLT time is distinct from teacher preparation time and no student contact time is permitted except for one day per week when teachers supervise Unit Lunch. Embedding approximately 200 minutes of professional learning time each week has provided opportunities to develop curricula, analyze student data, improve instructional consistency between individual instructors, and generate common unit level assessments. Subject area CLTs assign roles and responsibilities within their teams and use informal reporting structures to communicate CLT work to department supervisors. The CLT structure has provided teachers the opportunity to coordinate instruction and share instructional strategies. Historically, Montgomery HS has been academically among the highest-performing schools in New Jersey. The embedded professional learning during CLTs has allowed the school to maintain high

academic performance, limit instructional inconsistencies, and implement pedagogical reforms aligned with modern state and national content standards.

Case 3

Hopewell Valley Regional School District (HVRSD) has developed an embedded professional learning model exclusively for STEM in the primary grades. Targeting primary grade STEM instruction aligns with research indicating generalized low teacher self-efficacy and low pedagogical contentment among primary grade teachers in STEM subjects (Lumpe, Haney, & Czerniak, 2000; Southerland, Sowell, & Enderle, 2011; van Aalderen-Smeets & van der Molen, 2015). The embedded learning is facilitated by a group of lead teachers with STEM instructional and curricular expertise. The lead teachers are not assigned any students and classroom teachers are still responsible for STEM instruction in their classrooms. The K-5 STEM Facilitators create professional learning opportunities formally during district professional learning days and assist the assistant superintendent of curriculum to articulate STEM instruction for the entire K-12 program. The most common role for K-5 STEM Facilitators is to co-teach lessons with the general classroom teachers and provide informal support in response to individual teacher needs. The K-5 STEM Facilitators also work collaboratively to build teacher confidence while also providing a consistent STEM learning experience for students in all 4 of the district K-5 schools. The HVRSD K-5 STEM Facilitators program was established for the 2018-19 school-year providing initial positive results; however, additional time is required to evaluate student learning data.

What are the outcomes of job-embedded professional growth?

Improving the Student Achievement

As demonstrated by the three exemplars, effective JEPD can increase teacher collaboration, efficacy and effectiveness. Successes in STEM professional development that leads to student achievement is content focused and job embedded meaning that the teachers are learning and growing at the same time as their students. Teachers have the opportunity to study their student's work, (Darling-Hammond et. al, 2017.)

If schools are strategic in implementing JSPD learning outcomes for all students should improve. This occurs when schools connect teachers' work to the district curriculum. Teachers collaborate to address horizontal and vertical curriculum issues and student needs. In other words, teachers meet with other teachers who share the same grade level of students (horizontal) and teachers meet in Pre-K-12 groups teaching the same content area across grade levels (vertical). Horizontal discussions allow teachers to better understand their colleagues and can result in the sharing of effective practices that can be utilized school-wide. Vertical conversations, allow teachers to better understand the preparation of students in earlier grades and foster appreciation for the learning progression needs of students in later years. This also facilitates aligning JEPD to both teacher and student needs.

Focusing JEPD on student outcomes can positively impact school improvement efforts towards a common goal. Teachers working together can develop and implement higher quality solutions to instructional problems that are barriers to improving student achievement.

Improving Teacher Quality

Teacher collaboration is essential for effective job-embedded professional development. Collaboration allows for the problem solving and evaluation of problems of practice to improve teacher quality. Ensuring that teachers are able to participate in meaningful and collaborative working groups is one of the key elements to meeting professional needs for continuing growth.

To foster improving teacher quality schools may make available one or more of the following professional practices to meet those needs (Hammond, et al. 2017):

- **Professional Learning Communities (PLCs):** Teacher collaboration meetings to analyze classroom practice, learn new instructional strategies and tactics, field-test them in the classroom and report the results to each other.
- **Teacher observations:** Frequent observations by a peer linked with deep conversations about the art and craft of teaching that takes one's practice to a higher level of performance.
- **Coaching:** A peer that provides ongoing consistent follow-up with teachers by way of demonstrations, observations, and conversations as teachers implement new strategies and knowledge.
- **Mentoring:** A peer support relationship with a new teacher in real-time classroom support to increase teacher effectiveness with instruction and classroom best practices.
- **Examining student work:** A process that enables teachers to develop a common understanding of quality student work, identify student misconceptions and evaluate their teaching methods.
- **Data teams and assessment development:** Teachers who meet together and analyze results for standardized tests or teacher-created assessments and use the evidence to determine teaching strategies that will improve student achievement.
- **Modeling and Inquiry Workshops:** Teachers are immersed as active learners to learn content and review upcoming lessons with peers.

Survey

In order to make recommendations regarding how STEM professional development might be embedded in the school day, it was important to gather information on what is already happening in the field. The project team developed and distributed a survey to teachers, school leaders, district-level professionals, and professional development providers designed to collect innovative examples of JEPD along with descriptions of personnel positions created to facilitate the program. The survey questions were also designed to gather information on existing best practices within job-embedded PD; for the purpose of better understanding how schools make use of time during the school day for professional development, our questions allowed for respondents to provide information on programs both within and beyond explicitly STEM focused programs. The questions were designed to retrieve information regarding the purpose, structure, schedule, and frequency of job-embedded PD. The survey also included sections where participants could upload supporting documents from the programs, as well as share any ideas they may have for additional job-embedded PD opportunities.

The Project Team is continuing to collect survey data and you are interested in completing the survey, please click this link: [Integrating Professional Growth into the School Day](#)

Initial Survey Results

To date, the survey has generated a limited number of responses (as of 8/28/19 N=15). Due to the small sample size, the Project Team is not yet able to provide a comprehensive survey report. Although the number of respondents is limited, initial comments appear to align with key research findings on JEPD. A few key themes linked to successful JEPD have emerged from initial survey responses:

- Administrator support is essential for program success
- Financial constraints can limit program influence
- Educators respond positively to JEPD that demonstrates gains in student learning
- An institutional culture for learning supports high quality JEPD
- Identifying and mobilizing local professional expertise can help sustain and expand JEPD

The Project Team will continue to receive survey responses and explore additional options for identifying innovative JEPD programs. The Project Team is specifically interested in additional examples of JEPD programs, finding creative solutions that adapt school schedules to accommodate ongoing JEPD, and gathering additional examples of job descriptions JEPD program leaders can use when designing JEPD opportunities.

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Web Resources

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- <https://learningforward.org/wp-content/uploads/2017/08/job-embedded-professional-development.pdf>
- https://www.niet.org/assets/PDFs/beyond_job_embedded_professional_development.pdf
- <http://k12education.gatesfoundation.org/blog/building-connected-professional-learning-system/>
- https://learningpolicyinstitute.org/sites/default/files/product-files/Effective_Teacher_Professional_Development_R_EPORT.pdf