What Does Blended Professional Development Look Like?

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Session Goals

• Learn about approaches to professional learning that incorporate face-to-face and online activities

• Gain an understanding of promising practices for professional learning that incorporate technology

• Become aware of potential pitfalls—and strategies to avoid them
Study Overview

• We conducted case studies of five sites that used the NSTA Learning Center as part of a professional learning program for K-12 teachers of science.

• We explored the role of the NSTA Learning Center activities and the extent to which those activities were ‘blended’ with face-to-face professional development activities such as workshops, institutes, and professional learning communities.
What is the study?

- Researchers at the Education Development Center (EDC) along with staff from the NSTA Learning Center studied how schools, districts, states and intermediary organizations employ blended professional learning experiences – that is, a combination of online and face-to-face activities – to help science teachers enhance their content knowledge and knowledge of instruction, with the end goal of improving student learning.
This pilot study was guided by two research questions:

– What approaches and models for blended professional learning experiences show the most promise for teacher and student learning?

– What online tools, features, etc. lend themselves to supporting teacher professional learning experiences that are blended with face-to-face activities?
What We Did – Data Collection

• Kick off phone call with the “point” person at each site and with NSTA staff to establish a relationship.
• Created a survey for the site “point” person to collect site specific information.
• Conducted an hour-long interview with the “point” person.
• Wrote up case studies for each site, shared with each site and received feedback.
What is your experience with blended PD?

• Purpose of PD – content, pedagogy, etc.
• Sponsor – district, state, university, etc.
• Successes
• Challenges
• Reason for participation – required, certification, etc.
Blended Professional Development

What is your definition of blended PD?

– What does it mean to “blend” the online and face to face components?
– What are some advantages of blended PD?
– What are some challenges of blended PD?
Study Sites

- 2 school districts
- 2 state-funded math and science partnerships (MSPs)
- 1 rural state
Applewood County Public Schools, a small district adjacent to a large metropolitan area in the mid-Atlantic region, has made a series of investments in their science programs. The district’s goal for professional development is to provide teachers with continuous learning opportunities to support excellent teaching. The district has both a science coordinator and a science specialist.
<table>
<thead>
<tr>
<th>Focal program</th>
<th>Applewood County Schools – PD for teachers of science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year program started</td>
<td>2010</td>
</tr>
<tr>
<td>Year program ended</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Number of teachers, 2011-12</td>
<td>~ 50</td>
</tr>
<tr>
<td>Audience(s) served</td>
<td>1) Grade 6-12 science teachers</td>
</tr>
<tr>
<td></td>
<td>2) Lead science teachers – one per elementary school (23 schools)</td>
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<tr>
<td>F2F (onsite) activities</td>
<td>1-day orientation workshop from NSTA about how to use the NLC</td>
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<td>Monthly county-wide meetings</td>
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<td>NLC activities</td>
<td>SciPacks</td>
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<td></td>
<td>Journal articles</td>
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<tr>
<td></td>
<td>Interactions with other teachers (e.g., community discussion forums, web seminars, live chat with online advisors or SciPack content mentors)</td>
</tr>
<tr>
<td></td>
<td>PD Indexer</td>
</tr>
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<td></td>
<td>Short Course (first year only)</td>
</tr>
<tr>
<td>Other online activities</td>
<td>Via BlackBoard: teachers read and discuss online.</td>
</tr>
</tbody>
</table>
• District leaders wanted to use the NLC program to encourage teachers to learn new science content and pedagogy or to refresh and extend their science content and pedagogical knowledge.
• The district was given 50 slots and teachers in grades 6-12 self-selected to participate.
Barriers and Challenges

• The Learning Center is a valuable addition to the district’s professional development offerings. District leaders are hoping to make the program cost effective and to find a way to include the program’s cost in the budget in a sustainable way.

• The district has considered encouraging teachers to use the free materials at the site, but realizes that teachers are more likely to participate when the full range of resources are available.

• The district is reflecting on the best ways to engage teachers so that the level of participation is consistently high, given the costs involved.
Lessons Learned

• NLC can be used to provide teachers with flexibility, and a variety of options. It allows for differentiation and can respond to individual teacher needs.

• The district’s ability to devote resources and manpower to the use of the NLC is critical to the success of the program.

• Incentives or other prompts for regular use are necessary to keep some teachers consistently using the NLC.

• The success of the blended approach is dependent upon the commitment and the support of the school district.
Bentley School System

• The Bentley School System is an urban district in a mid-Atlantic border state.

• The backbone of the district’s math and science professional development programs is a cadre of 45 K-12 resource teachers and staff developers.

• These teachers provide professional development, facilitate school-based professional learning communities, and model and co-teach in classrooms.
<table>
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<tr>
<th><strong>Focal program</strong></th>
<th><strong>Bentley School System – Resource Teachers and Staff Developers</strong></th>
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<tbody>
<tr>
<td><strong>Year program started</strong></td>
<td>2010</td>
</tr>
<tr>
<td><strong>Year program ended</strong></td>
<td>2012</td>
</tr>
<tr>
<td><strong>Number of teachers, 2011-12</strong></td>
<td>~ 45 total</td>
</tr>
<tr>
<td><strong>Audience(s) served</strong></td>
<td>Resource Teachers and Staff Developers, who are elementary instructional coaches of math &amp; science and MS/HS science -instructional coaches</td>
</tr>
</tbody>
</table>
| **F2F (onsite) activities** | 1-day orientation workshop from NSTA  
Meetings on Fridays as PLCs |
| **NLC activities** | SciPacks  
Pre-/post-assessments  
PD Plan and Portfolio tool |
| **Other online activities** | none |
How the District uses the NLC

• The use of the Learning Center is flexible, allowing teachers to personalize their professional development. Educators choose one of four options, based on their schedule and learning preference, and earn nine professional development credits for each completed SciPack. They may complete as many Sci Packs as they wish.

• *Option 1: Independent Online PD* – Sci Pack and Introduction to Standards – This option allows teachers to work individually and at their own pace.

• *Option 2: Online/F2F Blended professional learning community PD* – Sci Pack and K–12 Vertical Standards Progression – This option lets teachers work within a professional learning community (PLC) during Friday work time. This option is considered blended because it allows PLC members flexibility to further blend independent and online Sci Pack work time with PLC face-to-face Friday time. Teachers organize themselves into learning groups based on their need, interest or a SciPack’s content. Each PLC may complete as many Sci Packs as it wishes and determine Friday PLC PD schedule.
Bentley cont.’

• **Option 3: Combo Pack – Options 1 and 2** – This option provides teachers with the opportunity to work within a PLC during Friday work time and complete additional SciPacks individually.

• **Option 4: Option 1, 2, or 3 with Delayed Start Time** – SciPack and K–12 Vertical Standards Progression – This option allows teachers to choose any option and delay their PD until later in the school year.
Barriers to Implementation

- The professional development experience was too drawn out, resulting in some teachers starting but not completing a SciPack.
- Finding a format that worked for everybody, getting teachers to write meaningful responses, and having forum facilitators devoting enough time to the effort to make the experience valuable for participants.
- Staff developers were uncertain about the future of their positions, which may have made them unwilling to invest in further professional development.
Lessons Learned

• Given a range of options, teachers at this site most often chose to work both in groups and independently.

• Teachers who used SciPacks the most at this site were those who worked both in groups and independently.

• An initial training followed by independent follow-up was not an effective implementation strategy.

• Although flexibility is beneficial, it has limits. When the time available to complete professional development became too long, teachers dropped off rather than completing.
Math-Science Partnership: Geosciences, Physics and Chemistry for Middle School Teachers Program

• Funded through a state Math-Science Partnership (MSP) grant, the program provides three years of professional development for approximately 60 middle school science teachers. Each summer, teachers throughout this southern state come together at the flagship state university campus for two weeks to focus on one branch of the natural sciences—geosciences, physics, or chemistry—as well as two specific approaches to teaching and learning that are mandated by the state program.
<table>
<thead>
<tr>
<th>Focal program</th>
<th>MSP: Geosciences, Physics and Chemistry for Middle School Teachers Program</th>
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<tbody>
<tr>
<td>Year program started</td>
<td>2010</td>
</tr>
<tr>
<td>Year program ended</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Number of teachers, 2011-12</td>
<td>57</td>
</tr>
<tr>
<td>Audience(s) served</td>
<td>Middle school science teachers</td>
</tr>
<tr>
<td></td>
<td>All participants teach at least one science class in grade 6, 7, and/or 8 in public schools</td>
</tr>
<tr>
<td>F2F (onsite) activities</td>
<td>Two-week summer academy</td>
</tr>
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<td></td>
<td>Three day-long workshops (August, October or November, February)</td>
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<td></td>
<td>Co-teaching with university professors in teacher classrooms</td>
</tr>
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<td></td>
<td>Participation in the State’s Science Teachers Association annual conference (October)</td>
</tr>
<tr>
<td>NLC activities</td>
<td>• Sci Packs</td>
</tr>
<tr>
<td></td>
<td>• Pre-/post-tests</td>
</tr>
<tr>
<td>Other online activities</td>
<td>Outside of NSTA: Daily weather show construction during summer academy/academic workshops; volcano investigations</td>
</tr>
</tbody>
</table>
How GPC Uses the NLC

• The GPC Leadership Team uses the NSTA Learning Center to reinforce and extend the content knowledge learning GPC teachers experience during the summer institute and in the three academic-year workshops. Teachers first encounter the NSTA Learning Center during the face-to-face summer institute.

• Each year, teachers complete a SciPack between the end of the institute and the first workshop in August, and another between the first and second workshops in October for each of the three years of the program. During the planning stage of the project, each professor chooses one SciPack to assign that is related to the topic they will cover in the face-to-face components of GPC.
How GPC Uses the NLC cont.’

- The GPC program was not designed with an emphasis on the broad range of additional activities afforded by the NSTA Learning Center. Revision of the program from year to year focused on pressing priorities, such as recruiting additional teachers and refining the face-to-face professional development activities based on participant feedback.
Barriers to Implementation

• There were no barriers to implementation.
Lessons Learned

• Learning Center use can complement and augment the face-to-face learning opportunities of participating teachers even when the two types of learning experiences are structurally separated.

• In a structured environment such as the GPC program, teachers can reliably complete Sci Packs in a limited period of time. The use of pre- and posttests that are viewed by instructors may help to ensure completion.
Math-Science Partnership Program at the Insight Center

• The **Insight Center**, located on a state university campus in a rural corner of a southwestern state, hosts a variety of projects related to strengthening STEM learning. One of these is a regional Math-Science Partnership (MSP) program. When the center applied for an MSP grant, the Insight Center director and a professor at the university, realized that the NSTA Learning Center could help to accomplish the goals they were setting. He had known about and been involved with the Learning Center since its inception, and regarded it as a robust, affordable, stable, and high-quality professional development portal.

• The state’s MSP program targets schools and districts that receive Title I funding (an indicator of poverty) and focuses on a different science concept each year. Once district administrators opt into the program, the program is free to the district’s teachers.
<table>
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<tr>
<th><strong>Focal program</strong></th>
<th>The Insight Center</th>
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<tbody>
<tr>
<td><strong>Year program started</strong></td>
<td>2010</td>
</tr>
<tr>
<td><strong>Year program ended</strong></td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>Number of teachers, 2011-12</strong></td>
<td>25 annually</td>
</tr>
</tbody>
</table>
| **Audience(s) served** | 1) Science Teacher Mentors (TRC)  
2) Teachers who participate in STEM Center activities |
| **F2F (onsite) activities** | Traditional Professional Development workshops focused on improving teacher content knowledge and pedagogical content knowledge.  
1) For STM’s:  
2) For STEM Academy participants: |
| **NLC activities** | We use the indexer to determine what teachers know. We use the system to remediate lower level content for High School Teachers and to teach content to Elementary and Middle School Teachers. Teachers also create learning goals and a portfolio.  
1) For STM’s  
2) For STEM Academy participants: |
| **Other online activities** | We use many of the videos. Sometimes we use the PHET site and many free content sites developed by federal STEM agencies NASA, NOAA, NSDL, USGS, etc. |
How the Insight Center Uses the NLC

• The Learning Center fills a number of program needs, chief among them providing high-quality, relevant, and accessible science content for both elementary level teachers of science, who may not know it to begin with, and high school teachers in need of remediation.

• The MSP’s region is large and rural, making travel—for both facilitators and teachers—an issue in terms of time and expense. Using the Learning Center allows the program to use the time at university- and school-based trainings more effectively and efficiently.
How the Insight Center uses the NLC cont.’

• Teachers in the intensive program use the NLC Indexer tool, which indicates which SciPacks might be useful for them based on their content knowledge.

• They complete four SciPacks and create an electronic portfolio in which they set three professional development goals and then upload student work to show evidence for achieving those goals.

• At the first face-to-face training in June, teachers explore the Learning Center and take a pretest.
Barriers to Implementation

• There were no barriers to implementation.
Lessons Learned

• Using the Learning Center is a cost-efficient way for this organization to help teachers strengthen their science content knowledge. Previously, in order to achieve the requisite number of hours required for the Science Teacher Mentor program, conference attendance could be counted as professional development. Murphy noted that conference learning was difficult to document and quantify.

• The content focus of the Learning Center is perceived to be a good fit with the structure and purpose of their overall program.

• Back-end data from the Learning Center is useful for both formative and summative purposes.

• Non-financial incentives appear to be effective for teachers investing in sustained professional development. In this case, they are not tied to online activity specifically but to the overall professional development sequence.
A Rural State

• This is an original Partnership for 21st Century Skills state, and its department of education has been involved in many nationally recognized statewide educational technology projects over the years. In its formal professional development sessions for science teachers, the state uses a variety of technologies, both for the affordances the tools provide and because of their belief that “all teachers are responsible for teaching all students 21st century skills and technology tools.”

• The state uses a kit-based curriculum for elementary science. Implementation of the kits involves a train-the-trainer model, led by a cadre of master trainers.
<table>
<thead>
<tr>
<th>Focal program</th>
<th>A Rural State</th>
</tr>
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<tbody>
<tr>
<td>Year program started</td>
<td>2008</td>
</tr>
<tr>
<td>Year program ended</td>
<td>2012</td>
</tr>
<tr>
<td>Number of teachers, 2011-12</td>
<td>44</td>
</tr>
</tbody>
</table>
| Audience(s) served    | 1) Middle school, special education, and elementary school teachers of science across the state from 2008 -2010  
                              No program during the 2010-2011 school year  
                              2) Master Trainers in the program 2011-2012 |
| F2F (onsite) activities | 1) One-day summer workshop, to introduce teachers to NSTA Learning Center  
                                  2) One week PD on science kits |
| NLC activities        | Sci Packs in relevant content areas                    |
| Other online activities | No other online programs were used.                    |
How the Rural State Used the NLC

• When the State science coordinator reviewed the SciPack program, she determined that the NSTA Learning Center could help elementary school teachers of science strengthen their grasp of the content of the science kits. This was especially critical, in her eyes, for the Master Trainers.

• Teachers from across the state come together for content and pedagogy training from time to time, but their time together is limited, and the time and expenses involved in travel are big obstacles for local educators as well as professional development providers.
How the Rural State Used the NLC

• One-day spring workshop: overview of NSTA Learning Center

• Summer semester:
  – Completion of two Sci Packs—which could be selected because they (1) aligned to a Kit program; (2) aligned to grade-level objectives; and/or (3) address a personal interest—along with pre- and posttests
  – Use of the NSTA Learning Center to add resources to “my library;” store personal resources; attend one Web seminar; post on a forum; create and make public two collections; and complete other activities, such as create a portfolio and complete the “Indexer” diagnostic test
Barriers to Implementation

• Some of the teachers are not “tech savvy” and “it would have taken a lot more in-person face-to-face time to get them to have an understanding” of the Learning Center navigation.
Lessons Learned

• A one-day workshop introducing teachers to the NSTA Learning Center was helpful for the Sci Packs but not sufficient for using the other NSTA Learning Center components effectively.

• Program developers viewed other Learning Center assets as “extras” and used them as secondary experiences that would expose teachers to the general experience of learning online.

• An incentive structure that reimburses teachers for money they have laid out for graduate credit was more effective than one that provided stipends and paid for graduate credit up front.