

Assignment 4: Professional Development Manual

Michael Bermudez, Anna Boscarino, Stephanie Peborde Burke,

Laszlo Pokorny, Yalitza Vega-Bajana

New Jersey City University

Part I

Effective Professional Development in Educational Technology

Introduction

With the passage of NJAchieve and the new stringent teacher evaluation systems, school districts are legally mandated to provide professional development in support of the continuous improvement cycle (AchieveNJ, 2013). In fact, schools are required to establish a School Improvement Panel (SciP) to foster teacher improvement and effectiveness by advising on mentoring, professional development, and the evaluation system (New Jersey Department of Education [NJDOE], n.d.). On the district level, the District Evaluation Advisory Committee (DEAC) is comprised of key stakeholders to help establish an integrated vision for the implementation of various initiatives and using an evaluation system to provide data-driven professional development (New Jersey Department of Education [NJDOE], n.d.). In an effort to fully comply with these objectives, the Overpeck Creek School District's DEAC, in collaboration with the SciPs, created this document to foster consistent and comprehensive professional development that is research-based.

Rationale

In addition to having teachers who are trained to effectively use technology, the US Department of Education's 2017 National Education Technology Plan recommends for teachers to have continuing and connected professional development (U.S. Department of Education, 2017). Continuing training refers to an approach that is ongoing and offers the opportunity to apply newly learned skills in the classroom. The connected teaching and training model emphasizes team activity. The rationale for a team approach to technology professional

development is that teachers need to have a strong support network to provide assistance and feedback when integrating technology in the classroom.

Teachers should have continuous access to the following resources to support their professional development; online courses and tutorials, learning networks, and technology experts (U.S. Department of Education, 2017). Online training maximizes convenience and immediacy of training for teachers. Educators should be active members of online communities, where they can exchange information about best practices and learn technology use strategies from others. In addition to membership in online communities, it is important for teachers to have access to a network of coaches to provide direction for application of technology in the educational setting (U.S. Department of Education, 2017; Ehsanipour, 2017). Based upon this information and the recommendations provided in Beglau et al. (2011), it follows that successful professional development is technology-rich, delivered through coaching, and emphasizes community and social learning.

It is not surprising that strategic professional development is mandated in an effort to improve the educational system in New Jersey. Effective teaching is the most critical factor in the improvement of students' academic performance (Vega, 2015). Student success improves when teachers' skills and knowledge are increased through effective professional development (Mizell, 2010). Throughout their career, teachers need to learn many new concepts including pedagogies, advances in technology, subject content, procedures, and educational laws (Mizell, 2010). Administrators, the second most critical factor in school improvement, are responsible for supporting teachers' learning needs through thoughtfully planned professional development (McCullough, 2014). Professional development, not only helps teachers develop effective

practices, but also serves to help administrators retain educators in a field where 50% leave within the five years of entering the profession (Mizell, 2010).

Professional development is also of paramount importance if initiatives are to be implemented with fidelity. Often times, a district finds research-based solutions to educational problems it is facing but fails to properly train the key stakeholders responsible for implementation. Unfortunately, this frequently results in lack of fidelity. Ultimately, improper or partial implementation invalidates the research substantiating the efficacy of the program. The success of school improvement initiatives is contingent upon the teacher's capability to implement the necessary practices (Killion, 2016).

Systemic Change Begins with Systems Thinking

As this manual relates to professional program development implementation pertaining to educational technology, it can be helpful to have an understanding of existing conceptual and theoretical models in technology integration. Planners and developers of professional development programs for integration of technology in the curriculum may choose to examine theoretical and conceptual models of instructional design before investing time and money in creating these programs. Brown and Green (2012) defined models as "...a reflection of reality—temporary stand-ins for something more specific and real" (p. 7). The authors added that models provide guidelines that help assure levels of quality and uniformity. By looking at different approaches through examination of theoretical models, educators and other school staff can have options other than the traditional approach to professional development. According to Chen and McCray (2012), the traditional approach to professional development mainly emphasizes teachers acquiring skills and knowledge. Instead of relying on acquisition of

knowledge, planners of professional development can use other theoretical lenses, such as the systems thinking theory, to create other programs.

This manual will explore the following theoretical models that are being utilized in the field of instructional technology: 1) SAMR Model, 2) TPACK Model, 3) Hexagon Tool, and 4) Systems Thinking. Program developers can determine which of these models the school aligns with so that they can create the programs according to the school's needs. These models can also be incorporated into professional development programs. Although all of these models will be discussed, this manual will emphasize the use of the systems thinking and will discuss this model in more detail. The option of adapting theoretical and conceptual frameworks as part of the development of professional development program will be discussed further in Part II of this manual.

The SAMR (**S**ubstitution, **A**ugmentation, **M**odification, **R**edefinition) Model is one theoretical background that can be referred to when developing professional development programs related to technology integration in the curricula. Puentedura (2014) mentioned that the SAMR Model, a taxonomy-based framework, has the following four-levels of technology integration: 1) **S**ubstitution: technology replacing a tool with no functional change; 2) **A**ugmentation: technology substituting a tool while adding functional improvement; 3) **M**odification: technology being used to redesign a task; and 4) **R**edefinition: technologies facilitating the creation of new tasks (as cited in Rhode and Khrisnamurthi, 2017). Kihoza, Zlotnikova, Bada, and Kalegele (2016) stated that the SAMR Model can allow educators to approach learning and instruction differently in a technology-enhanced environment. However, the SAMR model also faces criticisms for its perceived limitations. In their study involving the

critical review of the SAMR model, Hamilton, Rosenberg, and Ackaoglu (2016) explained that the criticisms regarding this framework are the following: 1) absence of context, 2) rigid structure, and 3) emphasis on outcomes and product over process. They suggested that the SAMR model be augmented by adding context to this framework when being applied.

Another framework that professional development program developers can possibly incorporate in their work is the Technological Pedagogical Content Knowledge (TPACK). Koehler and Mishra (2009) explained that TPACK describes how educators can integrate pedagogical, content, and technological knowledge in providing effective technology-based instructions. In their study regarding theoretical frameworks used in technology integration in the curriculum, Rhode and Krishnamurthi (2017) stated that TPACK represents the intersection of the pedagogical, content, and technological knowledge domains and reflects the dynamic relationship happening between these three domains. TPACK has already been integrated in educators' professional development courses. In one study, Gravel, Mayall, and York (2014) explored the effects of aligning the professional development courses of preK-12 educators with the TPACK framework. The authors used pre- and post-test surveys to assess the participants' technology integration knowledge while they were attending a professional development focus group meeting. The researchers concluded that the participating educators' technology integration knowledge increased after attending the professional development course.

The Hexagon Tool provides an evaluation-based framework that education leaders can use in deciding which technologies they can integrate in the curriculum and train their educators in using. According to Blase, Kiser, and Van Dyke (2013), the Hexagon Tool can be used as part of a systemic approach to assist states and districts in the assessment of new interventions.

These interventions are evaluated according to six broad factors: 1) needs of students; 2) fit with existing initiatives values; 3) resource availability for training; 4) evidence regarding the expecting outcomes of intervention implementation; 5) readiness for replication, 6) capacity for implementation. SIG Network (n.d.) recommended that the Hexagon Tool should be used after the following have been performed: 1) identification of students' needs; 2) conduction of root cause analyses; and 3) preliminary selection of programs after research and data analyses.

The systems thinking can also be adapted to create professional development programs that can impact contexts outside the classroom settings. Senge (2006) explained that, "systems thinking is a conceptual framework, a body of knowledge and tools that has been developed over the past fifty years, to make patterns clearer, and to help us see how to change them effectively" (p. 6). In addition, the author enumerated the following components that systems thinking (also referred to by the author as the *Fifth Discipline*) encompasses: 1) personal mastery (one's level of proficiency and enhancement of personal vision); 2) mental models (assumptions, generalizations, and images of how one views and perceives the world); 3) shared vision building (guiding set of principles and practices); and 4) team learning (capacity of group members to "think" together). Although systems thinking appears to encompass these components, systems thinking cannot effectively exist without the other four components. All these components are utilized in an interconnected fashion to ultimately create innovative learning organizations, which includes groups in charge of planning, developing, and implementing professional development programs. Professional program developers can take into consideration the learners' individual competency levels and personal assumptions about the

topic or issue. Also, the developers must be aware of the learning group's mission and the group members' capacity to collaborate in generating ideas.

Another important concept of systems thinking is the shift in thinking. Senge et al. (2012) explained that change in the way people think occurs when they start to look inward, become aware of tacit information that they might have overlooked, and study the ways they acquire knowledge. Additionally, the authors also mentioned that people can also experience a shift in thinking by experiencing new methods of thinking and interacting and establishing connections with people in the organization and the community. The professional development programs must emphasize the introspective and collaborative components of learning. In effective professional development programs, learners must be able to look inwards and examine their own existing mental models, assumptions, and perceptions about the issues and topics and their own learning processes. The programs must also promote the learners' establishment of new connections and the enhancement of existing ones with peers and community members.

As mentioned earlier, professional development does not exist in isolation. These programs must be seen in the context in which it will be applied. Learning, of course, is not just limited to the student-teacher interaction in the classroom. While introducing the concept of a "school that learns," Senge et al. (2012) described the three systemic components of the school that are all interwoven in the learning and instruction processes: 1) classroom (composed of teachers, students, and parents); 2) school (superintendents, administrators, school board members in addition to all members of the classroom systems); and 3) the community (community members, lifelong learners, and educational professionals in addition to all members of the school system component). The professional development programs must reflect the social

connectivity of learning not just by focusing on the acquisition of knowledge, but also addressing the components of collaboration and personal reflection. For example, as previously stated, Mizell (2010) explained that educators must be aware of new concepts not just in pedagogical advances, but also changes in the community, such as advances in technology and implementation of new educational laws. Educators must be aware of what is happening in their communities in addition to performing their professional responsibilities in the classroom.

Systems thinking can be incorporated as a theoretical framework for the professional development of educators. Kensler, Reames, Murray, and Patrick (2011) conducted a study in which they used a combination of systems, thinking tools, dialogue, and evidence-based practice to create professional development programs. The authors stated that a common objective found in some effective professional development programs implemented in different schools was the facilitation and expansion of communities of practice. Wenger et al. (2002) mentioned that communities of practice encompass “...three fundamental elements: a domain of knowledge, which defines a set of issues; a community of people who care about this domain; and the shared practice that they are developing to be effective in their domain” (p. 27). One can recall the following elements of Senge’s systems thinking when analyzing the incorporation of the expansion of communities of practice as a professional development objective: building a shared vision and team learning.

Delivering professional development in isolation is no longer a viable solution in education. As the complexity of issues increases in the educational field, the more inadequate isolated professional development becomes. Systemic training that takes place over the course months can translate to significant results in the classroom. Yoon, Duncan, Lee, Scarloss, and

Shapley (2007) conducted a literature review analyzing the nine studies on professional development that met the criteria for evidence established by Clearinghouse Works. The findings indicated that students' academic performance improved up to 21 percentile points when teachers received 49 hours of professional development over the course of 6 to 12 months (Yoon et al., 2007). Experts in the field assert it is necessary for administrators to provide ongoing professional development to foster true instructional improvement in the classroom (Zepeda, 2012). Teachers, like their students, need ongoing practice and support for true mastery of skills.

Professional Development Process

Professional development is part of the continuous improvement process. This process begins with a vision that illustrates the direction and educational goals of the district (Vega, 2015). The purpose of the vision statement is threefold. First, it provides key stakeholder with a voice to address ongoing issues and concerns. Next, it generates new ideas and understandings when people discuss their hopes for students. Lastly, the process of creating a vision drives change through action (Senge, 2012).

With a clear vision in place, professional development begins with a data-driven assessment to identify teachers' needs to improve their instructional delivery. Data collections can take many forms including informal and formal discussions, surveys, and observations (Zepeda, 2012). By engaging teachers and other key stakeholders in candid discussions, administrators will be better equipped to identify what learning is required and by whom (Zepeda, 2012). The new evaluation system is also a source of data when conducting a needs assessment (NJDOE, n.d.). Through observations and post-conferencing administrators and

teachers can discuss and identify techniques and strategies that can enhance their teaching methodology (Zepeda, 2012).

Personalizing Professional Development through Micro Credentialing

Organizations should recognize teachers' professional learning through micro credentialing. This approach focuses on teacher learning as opposed to the traditional approach of emphasizing seat-time (Berry, 2016). Teachers can begin by taking a technology proficiency assessment that serves as the baseline to measure their professional growth (Berry, 2016; U.S. Department of Education, 2017). Then they develop goals, obtain district leadership approval, and create benchmarks for progress towards achieving their goals. Teachers earn micro credentials as they demonstrate mastery in specific competencies tied to their goals (Berry, 2016; U.S. Department of Education, 2017). Examples of successful implementation of micro credentialing are provided in Berry (2016) and U.S. Department of Education (2017).

Personalizing Professional Development through EdCamp Unconferences

Teachers should be encouraged to attend EdCamp, which is a vast departure from traditional professional development. Workshops and sessions at EdCamp are created around attendees' interests and needs (Carpenter, 2016; U.S. Department of Education, 2017). Sessions are often organized to help educators collaboratively overcome shared challenges with technology. Teacher networks are formed through EdCamp events, providing additional ongoing peer support for technology implementation and use.

Once the teachers' needs have been identified, administrators are ready for the second stage of planning. The district's system wide priorities, policies, and needs should be reflected in the professional development plan created (Baltimore County Public School [BCPS], 2013). This

consists of not only meeting the global needs of the faculty but the individual needs of specific teachers as noted during classroom observations (Zepeda, 2012). Goals should be developed to facilitate the alignment of activities and strategies to reflect the district's priorities (Learning Forward, n.d.). Measurable objectives should also be identified to guide the evaluation process (BCPS, 2013). Evidenced-based solutions should be selected to improve teachers' effectiveness leading to students' increased academic performance (New Jersey Department of Education [NJDOE], 2014) .

One of the greatest mistakes administrators make when implementing a new initiative is to fail to appropriate the necessary funds and time for professional development. Research suggests districts underfund professional development by approximately 50% (Gartner, 2012). Learning Forward, formerly known as National Staff Development Council (NSDC) suggests districts allocate a minimum of ten percent of their budget to staff training (2001). Furthermore, Learning Forward (2001) suggests 30 percent of the technology budget should be designated for training using technology given the rapid increase of technology in education (as cited in National Staff Development Council, 2001). In terms of time, Learning Forward (2001) also recommends teachers spend 25% of the work day learning and collaborating with co-workers (as cited in National Staff Development Council, 2001). By earmarking the appropriate funds and time, districts will be better equipped to promote effective professional development that leads to improved quality of instruction and ultimately, improved student academic performance.

Exemplary professional development consists of job-embedded learning. This systemic approach to learning makes professional development a ubiquitous component of the school's culture. Job-embedded professional development includes gaining insight through feedback

obtained through the learning process. “Processes that can generate feedback include mentoring, peer coaching, reflection and dialogue, study groups, videotape analysis of teaching and discussion about the events on tape, and journaling” (Zepeda, 2012, p. 345). Newfound skills are put into practice when support and instructional supervision is provided (Zepeda, 2012).

Teacher Coaching

It is important to implement teacher coaching to expediting learning and implementation of new educational technologies. This section explains the attributes and value of an effective teacher coaching program. Multiple benefits are realized through teacher coaching in instructional technology. Firstly, coaching and mentor support for teachers significantly improves the likelihood of successful implementation of technology in the classroom (Beglau et al., 2011; Ehsanipour, 2017; U.S. Department of Education, 2017). It also creates a learning environment for educators that promotes practice and growth, while encouraging integration (Blazar, 2015). The confidence derived from working with a coach also helps teachers overcome anxieties about using new technologies.

Effective coaching should be in-context, relevant, and ongoing (Beglau et al., 2011; Ehsanipour, 2017). Context and relevance refers to whether the knowledge is immediately usable and applicable to the current lessons. Ongoing coaching provides teachers with the continuous opportunity and encouragement to practice and apply new skills (Blazar, 2015).

In order to meet ISTE coaching standards, it is recommended to apply the cognitive, instructional, and peer coaching models outlined by Beglau et al. (2011). Cognitive coaching focuses on impacting teachers’ thinking and approach to problem-solving. Technology integration in the areas of classroom management, content planning, instruction, and assessment

is the focus of instructional coaching. Peer coaching fosters a collaborative environment for problem-solving and trains educators to assist their fellow teachers to utilize technology (Yee, 2016).

Professional Learning Communities

Professional learning communities (PLCs) should be implemented to unite teachers and foster idea-sharing and joint problem-solving (Beglau et al., 2011; Williams, 2014). Although PLCs can be formed within organizations and involve in-person meetings, internet based communities of practice (COPs) also provide valuable supports for teachers from different organizations and geographic regions (Beglau et al., 2011; Williams, 2014). PLCs and COPs empower teachers to access knowledge, share knowledge, create knowledge, and build professional relationships through collaboration (Patton and Parker, 2017).

It is recommended to focus on maintaining the seven fundamental components of successful PLCs and COPs. They are clarity in purpose and collective identity, effective leadership, clear policies and practices, sociability, organic growth and innovation, communication, and integration with larger professional networks (Beglau et al., 2011; Patton and Parker, 2017; Williams, 2014; U.S. Department of Education, 2017). The final component emphasizes that PLCs and COPs do not exist in a vacuum, so collaboration and integration with outside organizations should be pursued to maintain vitality and relevance of the network.

Evaluation is another important factor in professional development. Too often districts fail to adequately evaluate newly implemented initiatives and the corresponding professional development provided. Using formative and summative evaluation throughout the process is beneficial for several reasons. Rigorous evaluation aids administrators in assessing how satisfied

teachers are with professional development, determining the efficacy of the training, and help determine if the objectives of the professional development were met (National Staff Development Council [NSDC], 2010).

Technology-Rich Professional Development

Professional development should include hands-on learning with the technologies that teachers plan to implement in their classrooms (Beglau et al., 2011; U.S. Department of Education, 2017). This approach provides teachers with the opportunity to develop confidence to effectively utilize the technology prior to applying it in their classrooms. Applied learning with technology results in higher levels of successful implementation (Beglau et al., 2011; U.S. Department of Education, 2017).

Part II

Guidelines and Principles for Implementing Professional Development

The Overpeck Creek School District will implement a professional development program for technology that prepares its educators and, as a result, its students, to naturally integrate technology into the curriculum (Frazier, 2012). Professional development that is meaningful and effective must focus on the overarching goals of improving student learning and performance instead of simply learning to use the technology itself (Frazier, 2012). To do this work, the Overpeck Creek School District Director of Technology will connect with other district administration and teachers to identify professional development needs, ultimately organizing a specific program that will meet those needs (Frazier, 2012). The professional development program for technology will follow a research-based approach that is tied to the district vision, begin with identifying needs, and conclude by evaluating the effectiveness and success.

Vision

The Overpeck Creek School District's Curriculum and Instruction vision is to ensure that all Pre-K to 12th grade policies, practices, and programs are research-based, challenging, and equitable. The district seeks to cultivate a culture of curiosity and a passion for learning as students are prepared to be college and career-ready contributing members of society. This vision will drive the work of creating and implementing effective and meaningful professional development.

Needs Assessment

The district Director of Technology, Assistant Superintendent of Curriculum and Instruction, and Director of Human Resources and Professional Development will work collaboratively using a data-driven model to examine gaps in student achievement and identify the needs of faculty and staff. Key stakeholders will also be included to help identify areas of strengths and weaknesses. Quantitative and qualitative data will be collected to help inform the creation and implementation of a high-quality professional development plan. One new tool the district has available is the BrightBytes Clarity survey which will help identify what is being done well and where improvement is needed with district wide technology (BrightBytes, 2017). All faculty, staff, and students will partake in the Clarity survey multiple times throughout the year. Data sources that may be used for needs assessment purposes include, but are not limited to:

- Informal and formal discussions
- Surveys (to identify areas of need and current abilities and skills levels)
- State teacher evaluations

- Micro Credentialing
- Observations
- Student assessments (standardized test scores, formative and summative assessment data, ability observations, etc.)
- Demographics
- Standards for all disciplines (national and state: New Jersey Department of Education, International Society for Technology in Education, Common Core, Next Generation Science Standards)
- Professional reports (NMS/CoSN Horizon Report)
- BrightBytes Clarity survey

Professional Development

In creating meaningful and effective professional development it will be important to consider the district vision and refer to the results of the needs assessment. The findings of the needs assessment will drive the types of global and individual professional development offered while also using systems thinking that takes into account classroom, school, and community. Systems thinking will also ensure that no professional development is delivered in isolation as it involves many stakeholders, disciplines, and issues. Additionally, time and money must be taken into account when planning professional development.

Professional Development Planning:

- Assemble a professional development team comprised of representatives from all academic disciplines
- Identify a leader of the professional development team

- Identify activities to be conducted
- Identify target group for each activity
- Create a follow-up process for each activity
- Create measurable objectives to guide professional development and evaluation process

Professional development will be designed using the following frameworks:

- SAMR
- TPACK
- Hexagon Tool
- Systems Thinking

Professional development that occurs outside of the regular school/work day can take the form of the following types of programs:

- EdCamps
- Workshops
- Traditional conferences
- Lean & Play afternoons
- Study Groups
- Peer or Teacher Coaching
- Professional Learning Communities (PLCs)

Funds to support professional development will be allocated through the following sources:

- Combination of state and federal funds
- Office of Curriculum and Instruction
- Title II funds

- Individual school professional development budgets

These funds will cover costs of the following activities and items:

- External providers' in-district and out-of-district trainings
- Materials
- Technology resources
- Travel expenses
- Online resources
- Staff stipends

Job-Embedded Learning

Professional development will also take place during the school/work day. The Assistant Superintendent for Curriculum and Instruction will work with the Director of Technology and the Director for Human Resources and Professional Development to ensure there are several days and opportunities for professional development to be built into the district calendar and building schedules. While Superintendent's Conference Days are necessary to address all faculty and staff, meeting and collaborative time for smaller groups like teams of teachers, departments, and specific disciplines will be regularly available and built into the schedule.

Job-embedded learning may take the form of the following:

- Mentoring
- Peer coaching/teacher coaching
- Study groups
- Reflection and dialogue
- Video analysis

- Professional Learning Communities (PLCs)
- Communities of Practice (COPs)

Evaluation

Through both formative and summative evaluation, the district will examine the success of professional development by assessing teacher satisfaction, training efficacy, and whether objectives were met. Specifically, the district will evaluate the professional development based on the four levels of the *Ohio ABLÉ Professional Development Evaluation Framework* outlined by Mullins, Lepicki, and Glandon (2010). The levels include: Satisfaction, Learning, Behavior, and Impact. Online survey tools will be created to collect and assess data about the success and effectiveness of professional development programs and offerings. Survey questions will address participants' reactions, knowledge and skills acquired, knowledge and skills application, and the effect on student and program performance. Additionally, the district will, again, use the BrightBytes Clarity survey to provide insight into how technology is used and implemented throughout the district. This tool will provide insights, recommendations, and evidence of effectiveness. (BrightBytes, 2017). Once data has been collected and analyzed, it will be available to administrators for follow-up and to drive future needs for professional development.

References

- AchieveNJ, N.J.A.C. 6A State Code § 10 (2013). Educator effectiveness. Retrieved from <http://www.state.nj.us/education/code/current/title6a/chap10.pdf>
- Baltimore County Public Schools. (2013). Guide to high-quality professional development. Retrieved from <http://www.bcps.org/offices/dpd/pdf/HQPD-Guide.pdf>
- Beglau, M., Hare, J. C., Foltos, L., Gann, K., James, J., Jobe, H., Knight, J., & Smith, B. (2011). Technology, coaching, and community: Power partners for improved professional development in primary and secondary education. *International Society for Technology in Education (ISTE) White Paper*. Retrieved from: <https://www.iste.org/resources/attachmentdownload?ID=2157>
- Berry, B. (2016). Micro-credentials: The badges of professional growth. *School Administrator*, 73(10), 19-24.
- Blase, K., Kiser, L. & Van Dyke, M. (2013). *The Hexagon Tool: Exploring Context*. Chapel Hill, NC: National Implementation Research Network, FPG Child Development Institute, University of North Carolina at Chapel Hill.
- Blazar, D., & Kraft, M. A. (2015). Exploring mechanisms of effective teacher coaching: A tale of two cohorts from a randomized experiment. *Educational Evaluation and Policy Analysis*, 37(4), 542-566.
- BrightBytes. (2017). The BrightBytes Approach. Retrieved from <http://www.brightbytes.net/approach>
- Brown, A., & Green, T. D. (2011). *The essentials of instructional design: Connecting*

fundamental principles with process and practice (2nd ed.). Boston, MA: Pearson Education, Inc.

Carpenter, J. P. & Linton, J. N. (2016). Edcamp unconferences: Educators' perspectives on an untraditional professional learning experience. *Teaching and Teacher Education*, 57, 97-108.

Chen, J., & McCray, J. (2012). A conceptual framework for teacher professional development: The whole teacher approach. *Developing Early Education Teachers*, 15(1), 8-23.

Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/15240754.2011.636491>

District Evaluation Advisory Committee (DEAC). Retrieved December, 3, 2017, from <http://www.nj.gov/education/AchieveNJ/deac/> New Jersey Department of Education.

Ehsanipour, T. & Zaccarelli, F. G. (2017). Exploring coaching for powerful technology use in education. *Digital Promise*. Retrieved from: <http://digitalpromise.org/wp-content/uploads/2017/07/Dynamic-Learning-Project-Paper-Final.pdf>

Frazier, M. (2012). *The Technology Coordinator's Handbook* (2nd ed.). Washington, DC: ISTE.

Gartner. (2012). Closing the gap: turning data into action. Retrieved from https://blackboardwww.njcu.edu/webapps/blackboard/content/listContent.jsp?course_id=_18431_1&content_id=_521779_1

Gravel, R. J., Mayall, H. J., & York, C. S. (2014). *The effects of pre-kindergarten through twelfth grade in-service teachers' participation in a professional development course aligned with the TPACK framework*

Hamilton, E. R., Rosenberg, J. M., & Akcaoglu, M. (2016). The Substitution Augmentation

- Modification Redefinition (SAMR) model: A critical review and suggestions for its use. *Tech Trends*, 60, 433-441.
- Kensler, L. A. W., Reames, E., Murray, J., & Patrick, L., (2012). Systems thinking tools for improving evidence-based practice: A cross-case analysis of two high school leadership teams. *The High School Journal*, 95(2), 32-53. Retrieved from <https://search.proquest.com/docview/917449509?accountid=12793>
- Kihoza, P., Zlotnikova, I., Bada, J., & Kalegele, K. (2016). Classroom ICT integration in Tanzania: Opportunities and challenges from the perspectives of TPACK and SAMR models. *International Journal of Education and Development using Information and Communication Technology*, 12(1), 107-128. Retrieved from <https://search.proquest.com/docview/1792791474?accountid=12793>
- Killion, J. (2016). Implementation fidelity affects the degree of change in teacher practice. Retrieved from <https://learningforward.org/docs/default-source/jsd-june-2016/implementation-fidelity-affects-the-degree-of-change-in-teacher-practicejune16.pdf>
- Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education*, 9(1), 60-70.
- Learning Forward. (n.d.). A cycle of continuous improvement. Retrieved from <https://learningforward.org/docs/default-source/publicationssection/Transform/toolcycle-of-continuous-improvement.pdf?sfvrsn=0>
- McCollough, S. (2014). School wide teacher growth and the road to continuous improvement.

Retrieved from

<http://abcte.org/school-wide-teacher-growth-and-the-road-to-continuousimprovement-3814/>

Mizell, H. (2010). *Why professional development matters*. Oxford, OH: Learning Forward.

Retrieved from www.learningforward.org/advancing/whypdmatters.cfm

Mullins, D., Lepicki, T., & Glandon, A. (2010). A professional development evaluation framework for the Ohio ABLE system. *The Ohio State University: Center on Education and Training for Employment*.

National Staff Development Council. (2001). *Standards for staff development* (Rev. ed.).

Retrieved from

<http://www.friscoisd.org/ly/departments/professionaldev/documents/nsdcstandards.pdf>

National Staff Development Council. (2010). *Teacher professional development evaluation guide*. Retrieved from https://dashboard.learningforward.org/wp-content/uploads/sites/12/2017/08/teacher-professional-development-evaluationguide.pdf?_ga=2.63256618.485089187.1512773563-1947536934.1512773563

New Jersey Department of Education. (2014). *Definitions of professional development and standards for professional learning*. Retrieved from

<http://www.nj.gov/education/profdev/regs/def.pdf> New Jersey Department of Education.

Patton, K. & Parker, M. (2017). Teacher education communities of practice: More than a culture of collaboration. *Teaching and Teacher Education*, 67, 351-360.

Puentedura, R. (2014). *Building transformations: An introduction to the SAMR model*. Retrieved

from <http://www.hippasus.com/rrpweblog/archives/2014/06/29/LearningTechnologySAMRModel.pdf>

Rhode, J., & Krishnamurthi, M. (2017). From frameworks to practice: Selecting technology tools for instructional integration. Paper presented at the 11-15. doi:10.1145/3029387.3029396 School Improvement Panel (ScIP). Retrieved December 3, 2017, from

<http://www.nj.gov/education/AchieveNJ/scip/>

Senge, P. M. (2006). *The fifth discipline: The art and practice of the learning organization*. New York, NY: Crown Business.

Senge, P., Cambron-McCabe, N., Lucas, T., Smith, B., Dutton, J., & Kleiner, A. (2012). *Schools that learn: A fifth discipline fieldbook for educators, parents, and everyone who care about education*. New York, NY: Crown Business.

SIG Network (n.d.). Stages of implementation: Tools and resources. Retrieved from [hexagon discussion and analysis tool](#)

U.S. Department of Education. (2017). Reimagining the role of technology in education: 2017 national education technology plan update. *Office of Educational Technology*.

Vega, V. (2015). *Teacher development research review: keys to educator success*. Retrieved from

<https://www.edutopia.org/teacher-development-research-keys-success>

Wenger, E., McDermott, R. A., & Snyder, W. M. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Boston, MA: Harvard Business Press.

Williams, D. J. (2014). Urban Education and Professional Learning Communities. *International Journal for Professional Educators*, 79(2), 31-39.

Yee, L. W. (2016). Peer coaching for improvement of teaching and learning. *Journal of Interdisciplinary Research in Education*, 6(1), 64-70.

Yoon, K. S., Duncan, T., Lee, S. W., Scarloss, B., & Shapley, K. (2007). *Reviewing the Evidence on How Teacher Professional Development Affects Student Achievement*.

Retrieved from:

https://ies.ed.gov/ncee/edlabs/regions/southwest/pdf/rel_2007033_sum.pdf

Zepeda, S. J. (2012). *Instructional supervision: Applying tools and concepts* (3rd ed.).

Larchmont, NY: Eye on Education.