


# Moving PD from Seat-Time to Demonstrated Competency Using Micro-credentials

*The essential educators' guide to implementing personalized, competency-based professional learning*

February 2016

PUBLISHED BY:  GETTING SMART

IN PARTNERSHIP WITH:  BloomBoard



**Join the Conversation:**

[GettingSmart.com](http://GettingSmart.com)

[Schools.BloomBoard.com](http://Schools.BloomBoard.com)

Facebook:

[Facebook.com/GettingSmart](https://www.facebook.com/GettingSmart)

[Facebook.com/BloomBoard](https://www.facebook.com/BloomBoard)

Twitter:

[@Getting\\_Smart](https://twitter.com/Getting_Smart)

[@BloomBoard](https://twitter.com/BloomBoard)

[#Love2Learn](https://twitter.com/hashtag/Love2Learn)

## Table of Contents

01	Introduction: What are Micro-credentials?
03	The Problem: Disconnected and Disempowering PD
05	The Solution: Competency-based Recognition for Educators
07	Benefits of Micro-credentials
07	For School Leaders
08	For Educators
10	How Micro-credentials Work
11	Getting Started: Six Steps to Earning a Micro-credential
13	Considerations: Best Practices in Micro-credentialing
15	The Call to Action
16	About Getting Smart
16	About BloomBoard
17	Endnotes



All content and graphics are licensed CC BY-NC / Attribution-NonCommercial by BloomBoard and Getting Smart. This license lets others use and build upon this work for non-commercial uses, but only with proper attribution to the original source. Those wishing to use content or graphics must acknowledge and link to the original document and the document's authors.

## Introduction: What are Micro-credentials?

“Teachers earn credentials at the beginning of their careers, but they learn new skills every day. Yet this lifelong commitment to learning is rarely formally recognized. What teachers learn once they are in the classroom does not appear on their resume or in their employment records, and there are limited pathways for them to receive recognition for their professional learning and growth or to share learning with their peers. Over time, a system of micro-credentials has the potential to transform professional learning and strengthen professional practice.”

Karen Cator  
President and CEO of Digital Promise

Source:  
[Micro-credentials for Personalized, Powerful](#)

Micro-credentials are a digital form of certification indicating demonstrated competency in a specific skill or set of skills, such as data literacy, teacher leadership or deeper learning.

As a progress tracking and signaling system, micro-credentials are gaining traction in education and beyond as a result of the transformation of learning opportunities for teachers and students made possible by the digital learning revolution. When comparing traditional in-person cohort and print models with more personalized and digital models, learning opportunities are transformed across five dimensions: experience, content, assessment, progress and providers.

Dimension	Cohort & Print	Personal & Digital
Experience	Passive, just-in-case	Active, just-in-time
Content	Flat, sequential, comprehensive	Engaging, adaptive, modular
Assessment	Annual tests	Ongoing, on-demand assessment
Progress	Time-based cohorts progress together	Individual progress on demonstrated mastery
Providers	Institution's time & place	Individual's time & place in networks

Traditional ways of measuring units of learning are rapidly being outstripped by new opportunities in our just-in-time, continuous feedback, modular learning world. Bite-sized units of learning with associated opportunities to demonstrate growth are the new building blocks of learning for students and professionals.

In [Preparing Teachers for Deeper Learning](#), [Getting Smart](#) and [Digital Promise](#) described a new approach to high-quality teacher preparation and ongoing professional learning opportunities that acknowledges these realities and reflects the personalized, competency-based, blended learning environments that are best for students. The design principles for the next generation of educator preparation and development include:

- » Some element of educator control over time, place, path and/or pace;
- » Balance between teacher-defined goals, goals defined by administration through teacher evaluation efforts and school and district educational goals;
- » Meaningful job-embedded integration into classroom practice; and
- » Competency-based progression.<sup>1</sup>

One promising strategy supporting the development of this system is the design and implementation of micro-credentials displayed as digital badges. Micro-credentials solve a number of current problems with professional development and offer a path to more personalized and powerful professional learning.

## [ The Problem: Disconnected and Disempowering PD ]

There is no shortage of anecdotal experience or formal research citing the limitations of traditional “sit and get” professional development. Traditional professional development is disconnected from practice. A compliance-based system of impersonal, irrelevant and unconnected professional learning disempowers teachers. This system encourages educators to acquire hours to retain credentials versus empowering teachers to engage in their own relevant and personalized professional growth. A 2014 Bill & Melinda Gates Foundation study on teachers’ views of professional development found that fewer than one in three teachers (30 percent) chose most or all of their professional learning opportunities. Nearly one in five (18 percent) responded that they never had a say in their own professional development. The same study found that those who chose all or most of their professional learning opportunities were more than twice as satisfied with the experience than those with fewer options.<sup>2</sup>

Other well-documented problems related to traditional professional development include lack of collaboration, lack of personalization (often disconnected from practice), little opportunity to demonstrate new knowledge or skills (rarely

including timely topics and relevant practices that evolve over time), lack of leadership opportunities, input-driven versus outcome-driven measures (professional development credit hours versus demonstrations of mastery), and high teacher attrition rates.

**Lack of collaboration.** In a new report entitled [Beyond PD: Teacher Professional Learning in High-Performing Systems](#), researchers looked at professional development in high-performing schools in Shanghai, Hong Kong, British Columbia and Singapore. The authors found that although differences exist, these systems all include a high degree of collaboration for professional learning. Recommendations included creating more time for collaboration and enabling teachers to share the responsibility for creating their own professional learning opportunities. In all four systems, “Collaborative professional learning is built into the daily lives of teachers and school leaders.”<sup>3</sup>

**Lack of personalization.** Despite new data supporting the need for more job-embedded, modular and personalized approaches to educator development, little has changed in the past several decades in terms of how most professional development is delivered and managed -- primarily

via one-size-fits-all workshops or conference presentations. A key prerequisite for effective professional learning, according to the [Learning Forward Standards for Professional Learning](#), is the acknowledgement that “like all learners, educators learn in different ways and at different rates. Because some educators have different learning needs than others, professional learning must engage each educator in timely, high-quality learning that meets his or her particular learning needs. Some may benefit from more time than others, different types of learning experiences or more support as they seek to translate new learning into more productive practices. For some educators, this requires courage to acknowledge their learning needs, and determination and patience to continue learning until the practices are effective and comfortable.”<sup>4</sup>

**Little opportunity to demonstrate new knowledge or skills.** Regardless of new research on the various modalities of how people pursue knowledge, little has changed in how we certify that someone has acquired knowledge. The current system often recognizes attendance and seat time as the sole means of measuring learning and lacks meaningful opportunities for teachers to get recognition for ongoing professional learning.

**Lack of leadership opportunities.** In high-performing schools and systems, there is deep recognition and value placed on teacher expertise and leadership. Teacher leaders are cultivated “with expertise regularly developed through school-based research of how to improve student learning

and then shared and recognized across multiple schools and districts.”<sup>5</sup> Research suggests that these schools help teachers develop highly specific forms of expertise which can then be shared.

**Too much emphasis on inputs versus outputs.** Over \$18,000 per teacher (\$67 billion in total) is spent annually on professional development, yet districts have little to no knowledge or information about what is actually working and whether or not teacher behavior is positively impacted by the offerings provided.<sup>6</sup> The current system tracks and measures professional development efficacy via the inputs (money spent, workshops attended, consultants hired) rather than the outputs (improved practice, increased student engagement and learning).

**Teacher attrition.** It’s estimated that one-third of teachers quit the teaching profession within five years, costing the U.S. up to \$2.2 billion annually.<sup>7</sup> The [Alliance for Excellent Education](#) and the [National Commission on Teaching and America’s Future](#) estimates teacher attrition has grown by 50 percent over the last 15 years. Because teaching quality has been shown to be the most powerful school-based factor in student learning, turnover is a major issue. Teachers cite lack of quality support and collaborative learning opportunities (as illustrated above) as primary causes for leaving.<sup>8</sup> To reduce turnover, the [Alliance for Excellent Education](#) recommends multiple types of support, including access to excellent peers, a collaborative working environment and high-quality mentoring and support from school leaders.

## The Solution: Competency-based Recognition for Educators

“If we want more students to experience powerful learning, we need to create development pathways that allow school and district leaders to benefit from the same blended, competency-based and deeper learning experiences that they seek to create for students.”

Source:  
[Preparing Leaders for Deeper Learning](#)

Imagine a map of what a learner needs to know, the different ways to learn each skill and a collection of ways to demonstrate his or her competence in those skills. Those three ingredients are key to any competency-based environment, from the K-12 education system to other forms of professional training (see figure below). For decades, military and corporate trainers have back-mapped what learning experiences are necessary to fulfill job requirements. Doctors, lawyers and accountants have long been required to pass competency exams as they progress through their professions. Educators should also have opportunities to backwards-design learning experiences to fulfill their role in an ever-changing education landscape. Like in other professions, opportunities for educators to showcase new skills and key learnings should be applauded and publicized, thus allowing them to showcase their individual expertise and specialties.

# Competency-based Development System

A Competency-based System for Teachers would include the following:



Adapted with permission from original source: [Preparing Teachers for Deeper Learning](#)



## Benefits of Micro-credentials

### For School Leaders

Micro-credentials empower school leaders and enable them to support talent development and build staff capacity.

***Offer truly differentiated PD for teachers.***

Support each of your educators on the individual goals which are most impactful to his or her craft.

***Provide a path for educators to demonstrate competency*** in skills aligned with specific district initiatives, challenges and goals both inside and outside the classroom.

***Ensure your educators receive real-time, relevant and iterative feedback on their own practice*** based on the portfolios they upload for each micro-credential.

***Understand which competencies your teachers find valuable*** and which they've mastered by analyzing which micro-credentials educators at your district apply for and earn. These insights can lead to informed decisions on small group or whole-school goals as well as professional development trainings.

***Recognize teachers for skills they've mastered*** in alignment with personal or organizational goals. Educators receive credit for what they really

know, ultimately cultivating more meaningful growth for the educator and greater efficiency for the school.

***Form powerful professional mentorships.*** By building a community based on competencies, educators have a clear picture of what mastery looks like for skills they have not yet attained and can proactively find mentors in those areas. Public micro-credentials allow struggling educators to connect to others who have already demonstrated competency in a skill, enabling powerful mentorship opportunities and peer-to-peer growth.

***Offer formal continuing education credit*** to your teachers based on their earned micro-credentials. Many districts and a growing number of states are beginning to accept micro-credentials towards the acquisition of CEUs or professional development credits.

***Minimize costs while maximizing educators' time with students.*** The more time teachers have with students, the greater impact they can have on student success and achievement. This can reduce both the amount of money spent on in-person, one-size-fits-all professional development and the amount of time teachers are taken out of the classroom by offering teachers the ability to choose more flexible, modular learning pathways that they can earn recognition for through micro-credentials. Micro-credentials give educators the power to decide when and how they learn.

## For Educators

*“With micro-credentials, we have the opportunity to actually see how teachers change their practice with students.*

*Developing the artifacts to submit may encourage or nudge teachers to go the extra step and try what they are learning with students.” Dr. Mary Ann Wolf, Director of Digital Learning Programs at the Friday Institute*

Source: [What You Need to Know When Developing Micro-Credentials](#)

Micro-credentials empower educators in deep and meaningful ways.

**Improve practice.** Competency-based approaches to learning have been proven to have a greater impact in knowledge retention and performance than traditional approaches.<sup>9</sup>

**Showcase competencies in their craft.**

By demonstrating proficiency in specific competencies in an evidence-based, targeted, and meaningful way, educators can showcase the skills and competencies they have developed to current and potential employers. Micro-credentials not only highlight expertise, but also show how an educator demonstrated a particular competency within the context of the classroom.

In a [recent Getting Smart](#) podcast, Jennifer Kabaker, Director of Educator Micro-Credentials at Digital Promise and Jason Lange, BloomBoard CEO, described micro-credentials, how research can be used to support personalization of teacher development, and why this will impact the future of educator development.

## GETTING SMART



## PODCAST



[Rethinking Educator Professional Development with Micro-credentials](#)

**Receive the recognition they deserve.** Micro-credentials that recognize an educator's competence in discrete skills can spark conversations about mentorship roles and even advances in career ladders or pay scales. Increasingly, micro-credentials are being accepted towards the acquisition of formal professional development credits.

**Build a portable portfolio.** Micro-credentials can be shared anywhere, building identity and reputation within learning communities and creating pathways for leadership and mentorship roles. More than just a piece of paper, they create a robust portfolio of educator growth and achievement throughout one's career.

**Spend more time with students and collaborating with peers.** Instead of spending time in one-size-fits-all PD trainings or seminars, educators can demonstrate skills and competencies and earn credentials for work they're already doing with students in the classroom. Alternatively, by utilizing micro-credentials educators can use release time much more strategically to collaborate with colleagues on various problems of practice.

**Accommodate a busy schedule.** The artifacts educators provide as evidence towards earning a specific micro-credential can be gathered from the work they're already doing, providing flexibility in where they learn and how they demonstrate learning. Educators can seek and demonstrate professional growth anytime, anywhere.

**Staying on top of emerging needs within the profession.** Just as the learning requirements for students are continuously changing, new demands and requirements for teaching are constantly

emerging. Educators may change schools or classrooms from year to year, requiring new skills or training (e.g., ELL, special education, classroom behavior techniques). Micro-credentials can be built and made available quickly, empowering educators to get up to speed on emerging important topics (like new state standards), as well as the topics they need to master in their personal career.

**A school district or network with a unique instructional model could create its own competency map, ensure model-specific training and conduct its own assessments. In such a case, there is close connection between all three of these elements. For example, [Summit Public Schools](#) has four articulated levels of expertise across seven dimensions of effective teaching, and assessment of competency is based on multiple observations and data sources. In other cases, the decoupling of the three elements could provide flexibility in terms of hours, timelines, modalities and sources, creating freedom from restrictions such as how skills are learned and how subsequent credit is earned. Numerous variations of this developmental framework could be made available to aspiring, as well as in-service, educators.**

**Source:**  
[Preparing Leaders for Deeper Learning](#)

## How Micro-credentials Work

Let's follow a typical educator: Kerry is a first year 5th grade ELA teacher completing the micro-credential process.



First, Kerry considers the feedback data she has available about her practice (observation results, student surveys, induction conversations) and selects an appropriate micro-credential aligned with her professional learning goal. In this case, Kerry is working on her questioning strategies, so she selects the [Checking for Understanding Using Ask, Ask, Ask Micro-credential](#) issued by [Relay Graduate School of Education](#) (Relay GSE).



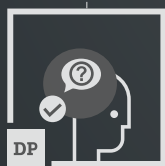
Next, Kerry researches this questioning strategy to understand what the best practice implementation looks like, and once she's ready she tries it out in her classroom.



Once she's confident that she can demonstrate the skill properly, she collects and submits the required artifacts, including in this case two video clips of her demonstrating the skill and an analysis of each clip that reflects on her instructional moves and the corresponding student response to the strategy.



After the micro-credential submission is uploaded it is sent to Relay GSE, where it is assigned to a specific assessor for review--in this case it's Ruth, a 20-year instructional coach who has worked with Relay GSE for 2 years.



Ruth receives the micro-credential submission and then reviews the uploaded evidence using the published rubric for that micro-credential. In the process, she provides Kerry with personalized feedback as to what went well and where there were opportunities for improvement, if any. In this case, Kerry executed the competency very well, so Ruth makes a recommendation that she should be awarded the micro-credential.

Only a few days after Kerry's initial submission, an administrator from Relay GSE receives Ruth's recommendation and awards the micro-credential to Kerry.



Kerry has many options for sharing the micro-credential (with the associated evidence and feedback) either privately or publicly through email and social media channels. Since Kerry is proud of her new accomplishment, she shares the micro-credential with her induction coach.

In addition, because Kerry's state recently approved statewide credit hour equivalency for all micro-credentials, Kerry sends the micro-credential to her district office to record the five credit hours she earned by completing it.

## Getting Started: Six Steps to Earning a Micro-credential

The [Digital Promise & BloomBoard micro-credential program](#) currently offers educators more than 120 options for micro-credentials from over a dozen partners. Educators can earn these digital badges across a growing set of competencies-- from teacher leadership to data literacy and STEM. This micro-credential ecosystem involves four roles: earners (educator who selects the micro-credential); issuers (organization with the content expertise to design and award the micro-credential); assessors (individual selected by the issuer to evaluate the micro-credential submission) and recognizers (institutions/ organizations that provide the earner with specific value for the micro-credential). For more on this system, see Digital Promise's [infographic \*Micro-credentials: Competency-based Recognition for Educators\*](#).



There are six steps to earning a micro-credential, starting with a pain point, identified need or professional learning interest.

1. **Identify skill gap.** Educators personally identify -- or receive -- data-driven recommendations for the specific competencies they want or need to develop.
2. **Understand learning need.** Educators review the criteria for micro-credentials around those specific competencies that align with their learning needs and career goals.
3. **Engage in learning experiences.** Educators develop knowledge and skill through blended experiences from one or more sources.
4. **Submit evidence.** Educators upload and submit a portfolio of evidence following a required set of criteria to demonstrate competency of that discrete skill set. Submissions of evidence include a diverse set of content types to provide a holistic view of the educator's competency within his or her specific environment. Most importantly, most micro-credentials require some proof of student outcome (such as a student assignment, reflection, video or assessment) to be included in the submitted evidence.
5. **Complete evaluation.** The evidence is evaluated against a predefined rubric by trained reviewers with expertise in the topic and each teacher receives personalized feedback on the submission whether a micro-credential is awarded or not.
6. **Receive recognition.** Once the educator demonstrates competency, he or she earns a micro-credential and receives recognition of competency in that discrete skill. Credentials are aggregated in an online portfolio that can stay with an educator throughout his or her career and shared both privately and publicly. In many districts these micro-credentials can be translated to a professional development credit hour equivalency, allowing the acquisition of formal professional development credits based on competency rather than attendance.

## Considerations: Best Practices in Micro-credentialing

Not all micro-credentials are created equally.

There are five keys to identifying a high-quality micro-credential offering:

- » **Quality third-party content** from trusted, thought-leading organizations.
- » **Focus on feedback** as a key element to the micro-credential. Growth comes from the process of preparing for a micro-credential and receiving feedback on the submitted evidence, whether or not the actual micro-credential is granted.
- » **Evidence-based** via a submitted and reviewed portfolio of demonstrated practice with a focus on student-outcome evidence related to the competency.
- » **Research-backed** competencies form the basis for the micro-credential.
- » **Breadth and variety** of micro-credentials for educators in various fields and stages of career.

## Seven Lessons Learned from Implementing Micro-credentials.

With over 300 submissions from teachers during the implementation in the fall of 2015, the [Friday Institute](#) learned many lessons that have provided insight for those considering or developing micro-credentials. The whitepaper [Seven Lessons Learned from Implementing Micro-credentials](#) provides specific examples and in-depth discussion about each of the following:

1. Teachers who earn micro-credentials want to earn more.
2. Micro-credentials facilitate concrete applications to classroom practice.
3. Micro-credentials scaffold teachers to engage at an increased level of rigor.
4. Teachers can demonstrate competency/mastery in a variety of ways.
5. Instructional design and online platform matter.
6. Micro-credentials should not have a one-size-fits-all approach.
7. Many questions still exist around micro-credentials.

## The Call to Action

“If we truly are to harness the power that technology brings and seize the moment wrought by new college and career-ready standards supported by aligned assessments, we must reexamine the processes and methods used to prepare teachers, accredit institutions doing the preparing and support continuous development of teacher competency throughout their professional careers.”

Source:  
[Preparing Leaders for Deeper Learning](#)

**Badging Gaining Traction.** According to a 2012 report by McKinsey, companies are having difficulty filling job vacancies, citing the main reason as “lack of skills.”<sup>10</sup> Both employers and universities preparing graduates for the workforce are interested in the potential of micro-credentials to signal competence within specific skill sets.

Technology companies have been leading champions for badges as a measure of learning. For instance, AT&T, Google and Salesforce have partnered with [Udacity](#) to launch nanodegrees, a category of online degrees focused on entry level software skills. [IBM](#) partnered with Acclaim to develop and launch a digital badge program to increase employee recognition and motivate skill progression across its ecosystem.<sup>11</sup>

A [Jobs for the Future](#) report describes the emergence of career pathways anchored by portable and stackable credentials. These career pathways, often in technical fields, “can be an individualized course of study and training that builds upon a person’s unique talents and strengths at their own pace, incenting them along the way to continue onward and upward to increasing rewards.”<sup>12</sup>

Universities, such as [UC Davis](#) and [Purdue](#), have also experimented with quantifying completion of certain majors and degrees in terms of badges that require learners to demonstrate specific skills and competencies.



**Micro-credentialing In Education.** Educator professional development is playing an increasingly larger role in the micro-credential and badging movement. [Digital Promise](#), in partnership with [BloomBoard](#), recently launched a micro-credential system for educators, allowing them to explore and apply for more than 120 micro-credentials.

Badges and micro-credentials aren't just a trend--they have gained a significant amount of momentum in a relatively small amount of time, and they will likely continue to gain prominence in the future as an alternative (or supplement) to traditional degrees and certification. However, with the novelty and growing popularity of digital badges and micro-credentials, it is more important than ever to place a high degree of importance on the quality and validity of these offerings to ensure the work learners put into the submission process and the recognition they receive remains meaningful and legitimate.

Digital Promise's report [Making Professional Learning Count: Recognizing Educators' Skills with Micro-credentials](#), released in October 2015, shares the results of a nationally representative survey of teachers' views on professional development and micro-credentials. The results confirm that teachers see micro-credentials as a way to power more personalized, professional learning. However, not many teachers are familiar with them.

- » Nearly two-thirds (65 percent) of responding K-12 U.S. teachers say they're likely to try micro-credentials as part of their ongoing professional development after becoming familiar with the concept.
- » Despite this high interest in micro-credentials, just 15 percent of teachers surveyed initially considered themselves even "somewhat" familiar with micro-credentials.
- » According to teachers, some of the most appealing aspects of micro-credentials are opportunities to learn new skills or hone existing ones.<sup>13</sup>

Professional preparation and growth are moving from time-based practices to verified learning.

The three key elements of this new approach are:

- » What educators need to know;
- » How they can learn what they need to know using a variety of personalized tools and methods; and
- » Ways they can demonstrate their learnings, powered by micro-credentials.

This will soon be the way most professional growth occurs and is shared. Eventually it will be the way educators are trained and credentialed. Personalized learning and micro-credentials put teachers in the driver's seat, give them a map and provide them a visual way to share the journey.

## About Getting Smart

As a mission-driven organization [Getting Smart](#)<sup>®</sup> is passionate about accelerating and amplifying innovations in teaching and learning. We design, implement and amplify thought leadership campaigns, education initiatives, powerful learning experiences, and forward-learning strategies with schools, districts and impact-oriented partners. Our unique approach combines a range of services to help people and organizations learn, grow, and innovate.

GettingSmart.com is a community of learners and contributors that cover important events, trends, products and publications across K-12, early, post-secondary education and lifelong learning opportunities.

## About BloomBoard

Founded in 2010, [BloomBoard](#) is the leading professional development platform for empowering continuous, personalized, competency-based learning for K-12 educators. With BloomBoard, district administrators can provide meaningful professional learning experiences, improving how they support, scale, and grow effective teachers. For educators, BloomBoard provides a place to learn, share and discuss the best teaching ideas and earn micro-credentials aligned to skills and competencies they've learned. For more information, visit [schools.bloomboard.com](https://schools.bloomboard.com) and follow [@bloomboard](https://twitter.com/bloomboard) for updates.

Disclosures: Tom Vander Ark, Getting Smart CEO is on the board of directors for BloomBoard.

## Endnotes

1. Cator, K., Schneider, C., Vander Ark, T., Preparing Teachers for Deeper Learning (Getting Smart, May 2014) <http://gettingsmart.com/publication/preparing-teachers-deeper-learning/>
2. Teachers Know Best: Teachers' View on Professional Development (Boston Consulting Group and Bill & Melinda Gates Foundation, December 2014) <https://s3.amazonaws.com/edtech-production/reports/Gates-PDMarketResearch-Dec5.pdf>
3. Jensen, B., Sonnemann, J., Roberts-Hull, K., Hunter, A. *Beyond PD: Teacher Professional Learning in High-Performing Systems* (National Center on Education and the Economy, 2016) <http://www.ncee.org/wp-content/uploads/2015/08/BeyondPDWeb.pdf>
4. Standards for Professional Learning: Quick Reference Guide (Learning Forward) <http://learningforward.org/docs/pdf/standardsreferenceguide.pdf>
5. Jensen, B., Sonnemann, J., Roberts-Hull, K., Hunter, A. *Beyond PD: Teacher Professional Learning in High-Performing Systems* (National Center on Education and the Economy, 2016) <http://www.ncee.org/wp-content/uploads/2015/08/BeyondPDWeb.pdf>
6. "The Mirage: Confronting the Hard Truth About Our Quest for Teacher Development" (TNTP, 2015) [http://tntp.org/assets/documents/TNTP-Mirage\\_2015.pdf](http://tntp.org/assets/documents/TNTP-Mirage_2015.pdf)
7. Hanna, R., Pennington, K. "Despite Reports to the Contrary New Teachers are Staying in their Jobs Longer" (Center for American Progress, January 8, 2015) <https://www.americanprogress.org/issues/education/news/2015/01/08/103421/despite-reports-to-the-contrary-new-teachers-are-staying-in-their-jobs-longer/>
8. Kopkowski, C. "Why They Leave" (NEA Today, April 5, 2008) <http://www.nea.org/home/12630.htm>
9. See [Digital Promise--Schools See Results with Competency-Based Learning](#).
10. Tsai, C., "The Case for Social Innovation Micro-Credentials" (Stanford Social Innovation Review, July 1, 2014) [http://ssir.org/articles/entry/the\\_case\\_for\\_social\\_innovation\\_micro\\_credentials#sthash.EVOcSe3i.dpu](http://ssir.org/articles/entry/the_case_for_social_innovation_micro_credentials#sthash.EVOcSe3i.dpu)
11. "Case study: IBM employs digital badges, drives measurable results" (Acclaim Blog, November 2, 2015) <http://blog.youracclaim.com/news-and-notes-on-badging-from-the-acclaim-team/case-study-ibm-employs-digital-badges-drives-measurable-results>
12. Austin, J., Mellow, G., Rosin, M., Seltzer, M. Portable, Stackable Credentials (McGraw-Hill Research Foundation, November 28, 2012) <http://www.jff.org/sites/default/files/publications/materials/Portable%20Stackable%20Credentials.pdf>
13. Making Professional Learning Count: Recognizing Educators' Skills with Micro-credentials (Grunwald Associates LLC and Digital Promise, 2015) [http://www.digitalpromise.org/page/-/dpcdocuments/microcredentials/making\\_professional\\_learning\\_count.pdf%3Fnocdn%3D1](http://www.digitalpromise.org/page/-/dpcdocuments/microcredentials/making_professional_learning_count.pdf%3Fnocdn%3D1)