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Tech EDGE Use of New Literacies in Elementary Classrooms Today: A partnership to Enhance Student Learning Through Teacher Preparation and Professional Development

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IMPROVING TEACHER QUALITY GRANT: STATE GRANT PROGRAM

Tech EDGE

Use of New Literacies in Elementary Classrooms Today: A partnership to Enhance Student Learning Through Teacher Preparation and Professional Development

Report submitted to
Nebraska's Coordinating Commission for Postsecondary Education

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Executive Summary

Tech EDGE has been able to capitalize on past funding to create significant impact across multiple public and private schools. Support from UNL's resources have enabled us to operate far beyond the official end date so we can keep building on our successes and the energy the project provided for school change. We have trained hundreds of practicing and new teachers to integrate technology and while the work is not done it did a lot to boost the capacity in all the participating districts and teacher education programs. We would like to thank the Post Secondary Commission for the generous support in this and previous grants. The data included in the following pages shows the impact the grant has had. The highlights are summarized here:

- The grant carried out all planned activities. Teachers participated in person and through distance technologies.
- Professional development activities, including iPads in the Classroom webcasts and published conference presentations, are open to all Nebraskan teachers through YouTube and iTunesU channels.
- Lessons were also disseminated in local and national conferences.
- Growth in pre-service confidence in technology integration was large.
- Classroom observations showed that teachers planned instruction that included embedded technology skills and effective use of technology.
- Students were observed using ethical practice behavior, high on-task behavior, problem solving, and engagement.
- Teachers were observed using technology skills embedded design, effective use design, and developmentally appropriate design.
- Scores in problem solving and other learning were higher for upper elementary students.
- Problem solving, collaboration and student tool choice are areas for additional focus.
- Teachers are still challenged by the global opportunities possible with new technologies.
- Teachers express need for additional professional development to keep up with new technologies and opportunities that would impact student achievement.
- Coaching was a promising practice pushing pre- and inservice teachers to integrate technologies into classroom learning quickly and thoughtfully.

Summary of Activities

Online survey of technology integration

The survey of teacher technology integration was implemented in spring 2011 with 309 respondents and in spring 2013 with 342 respondents. The results are discussed in the Outcome session.

Online survey of knowledge for preservice teachers

The TPACK Survey of Preservice Teachers' Knowledge of Teaching and Technology was administered each semester of the project to note preservice teachers' confidence in technology integration. There were 84, 85, and 84 responses for Fall 2013, Spring 2014, and Fall 2014, respectively.

Interviews and observations

During the 2013/2014 school year, we spent an academic year at a local elementary school coaching participants (see Table 5). The school had 571 students in grades PreK-5, 22% minority, 13% special education, 8% gifted, and 32% eligible for free/reduced meals. We worked with 50 elementary classroom teachers, special education teachers, and specialists in media, art, music, and physical education. Meeting at the school one day each month, we used a cascading format to meet with teachers by teams of grade levels, special education, and specials during their planning period. The school principal and assistant principal attended all sessions on each visit. We built relationships, introduced apps, mentored in new literacies integration, helped set teacher iPads to project remotely, troubleshoot teacher questions, and learned from each other. During the spring semester, two teachers volunteered to work with us in addition to the monthly sessions to participate in beginning and ending interviews (N=4) and complete monthly online logs (N=8) noting how they used technology and their goals for the coming week. We responded to these teachers via email suggesting apps/websites and ideas for integrating them into the required curriculum. This effort allowed scalability from our original 2012 coaching of five student teacher/cooperating teacher dyads in four elementary schools to this whole school initiative.

Table 1: Time in Field with Participants

Type of Contact	Time Frame for Contact	Frequency of Contact	Length of Contact	Total Hours of Contact
Interview	February 2014 – May 2014	2 times individually (2 teachers)	30 minutes per interview (1 hour each teacher total)	1 hour each
Coaching Sessions by grade level teams	August 2013 – May 2014	Monthly for 10 months (50 teachers, 1 principal, 1 assistant principal)	50 minutes per session x 8 teacher teams (6.7 hours total per month)	67 hours total over 10 months
Total Contact Time Per Participant (N=52)			8.33 hours each teacher, 9.33 hours for 2 interviewed teachers	69 hours

Mixed model of coaching. As technology integration coaches we became the support persons for these grade level teacher teams collaborating to integrate new literacies in the classroom. This role was an important part of the study, because it provided the supported practice and accountability necessary for successful implementation of professional development (Garet, Porter, Desimone, Birman, & Yoon, 2001; Guskey, 2002, 2003; Kelley, Gray, Reid, & Craig, 2010). We incorporated many of Guskey's Characteristics of Effective Professional Development (2003) into our coaching including: follow-up, support, and pressure; enhancing teacher content knowledge and pedagogical knowledge; promoting collegiality and collaboration; meeting on-site; and stressing student learning outcomes. To accomplish these goals we followed Vogt and Shearer's (2011) Mixed Model of Coaching, incorporating both formal and informal methods. Formal coaching procedures that we implemented included: assisting grade level teacher teams in goal setting, co-planning lessons that integrated new literacies into teaching and student learning, and leading professional development. We held interviewed teachers accountable for integrating new literacies by having them complete weekly online Teacher Technology Logs. We held all 50 teachers accountable by meeting with them monthly to discuss their progress and needs, asking them to tell how they used technology since our last meeting.

Informally, we functioned as knowledgeable co-learners, sharing apps and teaching ideas while also gaining ideas about new apps and other technology uses in the classroom from these teachers as the year progressed.

Professional development days

A total of five Technology Education in Digital and Global Environments (Tech EDGE) Conferences were held on the University of Nebraska campus. A combination of classroom teachers, university instructors, students, and educational technology personnel led hands-on and interactive presentations on ways to integrate technology in the classroom. Descriptions of each conference follow.

Four Tech EDGE conferences were held specifically for elementary teachers, methods instructors, principals, and student teachers (see Appendix A for brochures listing each presentation and presenter information):

(1) 9/23/2013 had 128 participants

This conference offered 14 presentations and a Keynote on "From Ancient Scrolls to Digital media: Educating in the 21st Century" by 15 elementary teachers, media specialists, educational technology personnel, university professors and graduate students, district media specialists, and State Department of Education personnel.

(2) 1/27/2014 had 150 participants

This conference offered 18 presentations and one keynote on "Growing up Digital" by 14 elementary teachers, district media specialists, university professors and graduate students, district media specialists, and State Department of Education personnel.

(3) 6/4/2014 had 130 participants

This conference offered 11 presentations plus round table sectionals following. 14 presenters were elementary teachers, instructional technology specialists, and university professors.

(4) 9/22/2014 had 101 participants

This conference offered 21 presentations by 8 presenters including teachers, technology specialists, and university professors.

One Tech EDGE conference was held specifically for teachers from all the participating school districts in Nebraska, and university instructors from Concordia University, University of Nebraska-Kearney, Peru State University, Nebraska Wesleyan University, University of Nebraska-Lincoln, and other teacher preparation colleges in Nebraska (see Appendix B).

(5) 8/20/2013 had **175** participants

Fifty-one presentations were offered at this conference by 60 university professors and instructors, K-12 teachers, graduate students, undergraduate students, high school students, educational technology specialists, media specialists, and State Department of Education personnel.

Table 1: Summary of Professional Development Events

Number	Date	Audience	Number of Presentations	Number of Attendees
1	6/4/2013	Elementary inservice teachers and University instructors	18	130
2	8/20/2013	Inservice teachers, and University Instructors	51	175
3	9/23/2013	Preservice teachers, Elementary inservice teachers, and University instructors	21	128
4	1/27/2014	Preservice teachers, Elementary teachers, University instructors	18	150
5	9/22/2014	Preservice teachers, Elementary teachers, and University instructors	21	101
Total			129	684

Creating professional development videos

Professional development videos are distributed using multiple channels. The video originates on UNL servers, from there it feeds to a YouTube channel for Tech EDGE and an iTunesU course. We use multiple social media channels (Twitter, Facebook, LinkedIn, YouKu) to distribute the professional development content across Nebraska, the US and the world. We have uploaded a total of 91 movies in this timeframe, in addition to 100 movies previously created. Seventy-eight were iPads in the Classroom episodes. Thirteen were video recording from workshops where best methods are shared to preservice teachers, teachers, university method teachers, the general public worldwide.

Table 3: Viewership of Tech EDGE Professional Development Videos

Source	Downloads/Streams
YouTube	13,007
iTunesU	13,101
Total	26,108

Note: *Totals are of downloads and streaming only, results are as from July 1, 2013 to October 1, 2014

Table 4: Viewership of Workshop Video Recording

Workshop	Title	Presenter	Hits*
Tech EDGE 8	Creating Video for instruction	Paul Holtorf	32
Tech EDGE 8	Writing with Technology	Evi Wusk	21
Tech EDGE 8	Humanities with Technology	Andrew Ratcliff	10
Tech EDGE 8	Keynote	James Paul Gee	193
Tech EDGE 8	Total		256
Tech EDGE 9	Teaching ELL with Technology	Kristina Peters	33
Tech EDGE 9	Keynote	Guy Trainin	99
Tech EDGE 9	iPad for Reading, Writing and presenting	Laura Bartels	44
Tech EDGE 9	iPads in Early Childhood	Jennifer Leeper Miller	42
Tech EDGE 9	Total		218
Tech EDGE 10	Growing Up Digital	Craig Badura	60
Tech EDGE 10	iPad in Classrooms	Abbey Spaulding	34
Tech EDGE 10	App Smashing 101	Craig Badura	250
Tech EDGE 11	PBL and Lego	Will Van	17
Tech EDGE 10-11	Total		361
Tech EDGE 12	Google Drive	Heather Callihan	44
Tech EDGE 12	Open Session	Guy Trainin	39
Tech EDGE 12	Keynote	Kristina Peters	25
Tech EDGE 12	Google Classroom	Jason Wilmot	45
Tech EDGE 12	Google Chrome	Mickie Mueller	26
Tech EDGE 12	Total		179
Grand Total			1014

Table 5: Viewership of the Top Five “iPads in the Classroom” Videos

Episode Number	Title	Presenter	Hits*
49	Top Free Apps for a One iPad Classroom Part 1	Guy Trainin	660
133	Apps for English Language Learners	Guy Trainin	401
110	App Smashing	Guy Trainin	334
94	Real Time Collaboration	Guy Trainin	260
111	Apps for Elementary Classrooms	Guy Trainin	260
Total			1915

Outcomes

Technology available in schools

The results in this section are based on previous data. Based on our classroom observation, current technology used in the classes has not changed significantly in the academic year of 2013-2014. Surveys were sent to all teachers in participating schools and teacher education programs. The online survey was sent in April 2011 and again in March 2013.

Respondents to the April 2011 pre-survey were 89% women in-service teachers with an average of 16 years of teaching experience. 55% of teachers had a pre-service teacher in their classrooms. Key results showed that technology availability was divided into three categories: universal devices that are available in every classroom or almost every classroom, available technologies that are available at the school level but need to be brought into classrooms, and local technologies that are school specific. An example of local technologies would be schools that have purchased interactive whiteboards and use them, but they are not equally distributed between schools.

In 2011 universal equipment included teacher computers, Internet access, and LCD projectors. In 2013 document cameras were added to this list.

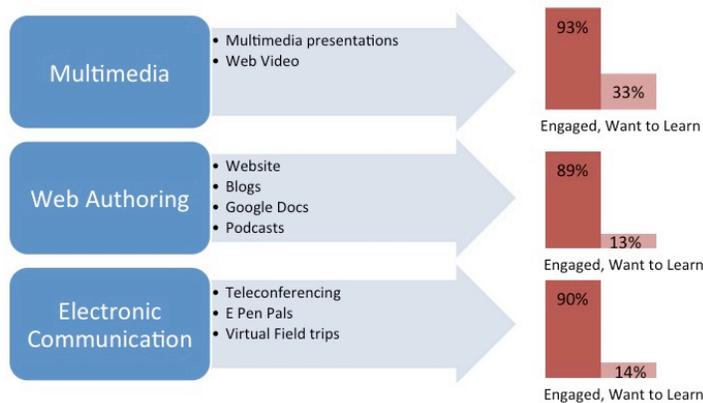
In 2011 technology available at schools included student laptops and different camera devices (flip, camcorders, digital cameras). In 2013 student desktop computers shifted from universal devices to available devices probably signaling a shift to mobile technologies.

In 2011 school specific local devices included interactive whiteboards, iPods, iPads, Clickers, and eBooks. This category has changed in 2013 with Clickers and eBooks almost disappearing and iPods and iPads doubling in classroom penetration.

In 2011 teachers noted three areas for training: (1) multimedia including presentation and video applications; (2) web authoring including creating websites, blogs, podcasts, and using Google docs; and finally (3) electronic communication including teleconferencing, electronic Pen Pals, and virtual fieldtrips. These were the topics for which we tried to provide sectionals in the Tech EDGE conferences.

Figure 1: Teacher Training Needs Spring 2013

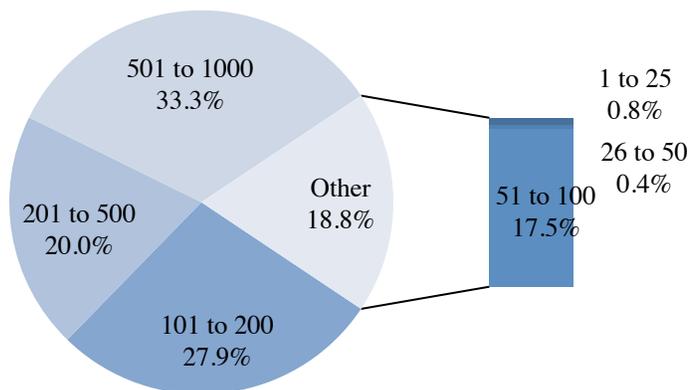
Teacher Training Needs K6



Profile of elementary teachers

Participating preservice teachers were 94.6% White non-Hispanic, 2.7% Asian/Pacific Islander, 2% Hispanic, and .7% African American. In addition, 10.7% were male and 89.3% were female. The participants were teaching diverse subjects, with 57.6% teaching mathematics, 45.3% teaching social studies, 40.4% teaching science, and 42.1% teaching others. For teaching experience, 27.7% of teachers had teaching experience of 1 to 10 years; 32.2% had teaching experience of 11 to 20 years; and 40.1% had teaching experience of 21 to 40 years. Forty-four percent of them had no preservice teachers in their classroom; 28.7% of them had a practicum student; and 26.9 % had student teachers in their classroom. Sixty five percent of teachers were from public schools and 35% were from private schools. Distribution of school size is shown in figure 2.

Figure 2: School Size



Profile of preservice teachers

Participating preservice teachers were 95.7% White non-Hispanic, 2.1% Hispanic, 1.2% Native American, .8% African American, .4% Asian/Pacific Islander. Among them, 10.3% were male and 89.7% were female. In addition, 94.8% of the participants were between 20 and 25 years old, 3.6% between 26 and 30 years old, and 1.6% between 31 and 48 years old.

Profile of university instructors

Participating university instructors were 91.7% White non-Hispanic, 1.2% Asian/Pacific Islander, 6% Hispanic, and 1.2% African American. 54.7% were male (n=47) and 45.3% were female (n=39). Years of experience for university instructors attending Tech EDGE conferences was as follows: 1.2% first year teaching, 1.2% second year teaching, 5.8% three to five years teaching, 23.3% six to ten years teaching, 21% eleven to twenty years teaching, and 48% twenty plus years of teaching.

Quantity and quality of integration in elementary classrooms

We used the Observation Protocol for Technology in the Classroom (OPTIC, 2004) to observe 50 teachers over an academic period. Results in table 6 show that overall teacher design and student behavior in the classrooms in 2014 has significant improvement than that in 2012 except for student behavior of ethnic practice. For teacher design, the highest scores were Technology Skills Embedded, Effective Use, and Developmentally appropriate. The effect sizes were all fairly large except for Technology Skills Embedded ($d=.17$), which is probably because the score in 2012 was so high (4.25 on a scale of 5) that a ceiling effect was reached. For student behaviors, the effect sizes were large for most categories except Ethnical Practice, and On Task. Again, ceiling effect occurred here; the scores for both Ethnical Practice and On Task were 4.83, and 4.68 in 2012 and 4.80 and 4.73 in 2014 (on a scale of 5).

When observed, students were using technology responsibly and safely especially when using the Internet to locate information. In one lesson a teacher taught digital citizenship using the district poster as a guide for students. Students were on task, focused on the intended curricular objectives of the lesson. One teacher challenged his students to create a video demonstrating their process of working three math problems. Students focused on the task of solving the problems and went beyond to explain their thinking process by recording their voice in the video. Most students were highly engaged in the use of technology to learn. Students were creating eBooks using the iPad provided to the dyad during coaching. They used a “voice to text” app to get their story down, edited the story, then cut and pasted the text into the eBook format. They enjoyed locating pictures to insert into the eBook to further add detail to their writing. And finally, teachers embedded specific technology skills within the context of the core curriculum so students learned these additional 21st century skills right along with lesson objectives. A kindergarten teacher taught students how to log into the computer, insert passwords, and use Google Images within a lesson to create an online presentation of the word family they were studying.

Table 6: Observation Protocol for Technology in the Classroom Descriptive Statistics

	2012	2014	SD	Effect size
Teacher Design				
Tech Skills Embedded	4.27	4.35	.47	.17
Effective Use	3.93	4.20	.55	.49
Developmentally Appropriate	3.67	4.11	.56	.79
Value Added	2.65	3.51	.81	1.06
Student Behavior				
Ethical Practice	4.83	4.80	.53	-.06
On Task	4.67	4.73	.57	.11

Engagement	3.82	4.57	.79	.95
Problem Solving	2.81	3.21	1.20	.33
Collaboration	2.38	3.11	.89	.82
Planning	1.38	2.59	1.40	.86
Choice	1.20	2.10	.86	1.05
Overall Score	3.09	3.75	.78	.84

Note: OPTIC Items were renamed to better represent the constructs. Score scale (1-5).

Two areas with the lowest scores were Choice and Planning. The result shows that although the involvement by students in the selection and planning process has been significantly increased compared to 2012, the teachers in most of these classrooms are choosing the technologies and uses to meet learning objectives. These are areas for further research and professional development.

Quantity and quality of integration in preservice teachers

We used the Technology Integration Survey to examine preservice teachers' ability to integrate technology in their teaching. The Survey included four main sections. In the first section, students reported on their self-efficacy to use technology on a scale from 1 (strongly disagree) to 5 (strongly agree). This section had ten items including "I can learn new technologies easily" and negative ones such as "I often need help getting my technology going." In the second section, students reported about their competence in designing and teaching technology-integrated lessons on a scale from 1 (Highly ineffective) to 5 (Highly effective) and the frequency of such lessons on a scale from 1 (Never) to 4 (In all lessons). In the third section, students reported which university classes modeled technology integration most effectively. In the fourth section, students were asked to respond in writing describing the most effective lesson.

The self-efficacy survey was highly reliable and included only one factor. Students' self-efficacy to use technology was high with a mean score of 3.83 out of 5 possible. The highest confidence items were "I can learn new technologies easily" (4.18) and "I have the technical skills I need to teach well" (4.01). The lowest item was "Colleagues often ask me to help them with technology" (3.39) which is still a positive response and may have more to do with students being inexperienced in teaching.

Confidence in integrating technology in lessons was fairly high in all areas (Table 7). Frequency in integrating technology in lessons was fairly high in all areas as well. Science was slightly higher in both frequency and confidence. The higher frequency to teach science might explain why students have more confidence in using technology in the area. Practice does increase efficacy.

Table 7: Efficacy and Frequency of Technology Integration by Subject

	Efficacy (1-5) 1=Highly Ineffective 5=Highly Effective	Frequency (1-4) 1=Never 4=In All Lessons
Literacy	4.15 (.78)	2.26 (.73)
Math	4.16 (.88)	2.24 (.91)
Science	4.21 (.78)	3.00 (1.05)
Social Studies	4.13 (.81)	2.88 (1.09)

Growth in technology use in preservice teachers

One of the main thrusts of this grant is to improve the ability of preservice teachers' ability to integrate technology into their lessons. Using the results of the Technology Pedagogical Content Knowledge survey it is clear that students graduating in 2014 are better equipped to integrate technology than those graduating in 2011 (baseline), and 2013.

The effect size is very large for most areas and a bit lower for science and social studies lessons compared to literacy and mathematics. The lower results for science and social studies may be a result of fewer opportunities to teach in these areas regardless of technology needs. The full results are in Table 5 below. The average effect size is 2.88 when comparing the baseline and result in 2014, a large effect size in line with our goals but considerably beyond the expectations in the grant proposal. The average effect size between 2013 and 2014 is .44, which is fairly large considering the probability of the ceiling effect. For instance, the average score was between 3.71 to 3.95 in 2013 and between 4.15 to 4.22 in 2014 out of a possible score of 5.

This positive result is a clear indication that the approach of improving the quality of technology integration in Teacher Education, hand in hand with changes in technology integration in schools had a multiplicative effect on outcomes!

Table 8: Technology Integration by Cohort

Subject Matter	Elementary Graduates 2011 Mean (SD)	Elementary Graduates 2013 Mean (SD)	Elementary Graduates 2014 Mean (SD)	Effect Size (2011 to 2014)	Effect Size (2013 to 2014)
Literacy & Technology	1.79 (.74)	3.95 (.87)	4.22 (.71)	3.35	.34
Math & Technology	1.75 (.62)	3.91 (1.02)	4.18 (.86)	3.24	.29
Science & Technology	2.11 (.89)	3.74 (.86)	4.22 (.68)	2.41	.62
Social Studies & Technology	2.04 (.98)	3.71 (.91)	4.15 (.76)	2.52	.52
Average				2.88	.44

Coaching Outcomes

After examining our qualitative coaching data working with elementary teachers, their principal, and assistant principal, four themes emerged.

1. Teacher growth as leaders. Grade-level teams plan together so new technology ideas were shared on a regular basis. The teachers we interviewed worked with their grade level team to integrate technology. The 5th grade teacher noted that all 5th grade teachers participated, while the 1st grade teacher reported that only some 1st grade teachers were interested. Both said they grew closer as grade-level teams with technology. Both of these interviewed teachers requested: articles about new literacies, technology ideas for using their teacher iPad as a learning station and for whole class activities, and support to try these ideas in their classrooms. "Give me more!" (Interview, 2.4.2014) Both interviewed teachers presented for the first time at the Nebraska Educational Technology Association conference with us to talk about how technology is being used in elementary schools. The 5th grade teacher expressed her growth noting that she was "pleased that the PTA came through with iPads. We have come a long way!" (Interview, 5.8.2014).

2. Movement from using technology as a substitution for paper/pencil activities to modification of lessons from teacher-centered to student-centered. In February interviewed teachers stated that they used technology mainly for games to practice skills and were beginning to teach math using Educreations. Because the iPads were new and they had only one, these teachers tended to use their iPad as a teaching tool. The 1st grade teacher reported using Google Earth in Social Studies after we demonstrated it during a coaching session and using Wonders online components. Each progressive month these teachers noted in their Logs more iPad use by students to create projects. The 1st grade teacher used Story Creator for kids to tell what they will do when they graduate and then created an eBook. The 5th grade teacher had students complete a research project using Google Docs for note taking, citing sources, drawing illustrations, and publishing, writing and videotaping. This teacher also involved students in creating in other ways as she notes:

The students used the template that I designed to start their Creative Non Fiction Picture Book. They were able to change and design their own book. They also are working on a poetry book---word processing and designing. I introduced a QR code maker, and we used a QR Code in their poetry. They loved this!! I also had the students write their own multiple-choice questions for our Reading Unit Vocabulary. I then transferred this into a Kahoot game. They thought it was great to see their own questions used for vocabulary review.” (Technology Use Log, April)

3. Teacher needs progressed from how to use technology to how to teach with technology. In grade-level coaching we worked a lot with getting iPads to project using Reflector, presenting apps, and answering questions. Working with individual teachers we could go a step further to help them plan lessons to meet curriculum goals. The 5th grade teacher expressed an interest in taking her students even further:

As we wrap things up I want the students to be able to "create" something that doesn't have anything to do with a test!!! We continue to write on Storybird and use Edmodo, but I am looking for another way for them to "create". I'm thinking about Animoto or Prezi....something.... (Technology Use Log, April)

Some goals the interviewed teachers set for next year included communicating with parents at home, continuing to use their iPad in stations, researching new apps, using IXL graphs to see how students are doing, having students use Wonders and IXL in school and at home, exploring the flipped classroom format of teaching, using technology with poetry, differentiating learning using new apps for special needs and for higher learners.

4. Coaching for new literacies integration makes a difference. Both interviewed teachers mentioned how helpful it was to have coaching while implementing the new Wonders online reading curriculum and IXL math online. Materials are going online and support was critical. They both loved the final coaching meeting with all teachers where we had teachers or grade-level teams share how they used technology with their students during the year. Teachers now were recognized as experts using certain apps/websites that other teachers could go to with questions.

We are always sharing ideas among team members and amongst staff at team meetings.

The most helpful collaboration that only focuses on technology happens during our monthly meetings with Guy and Laurie. (Technology Use Log, March)

Table 9 Collaboration noted in Logs

Collaboration Source	% Noted
Grade level teacher in your school	71%
Coach (Guy, Laurie, school coach)	57%
Another teacher from your school	43%
Teachers from another school	43%
Student teacher/Practicum preservice teacher	29%
I did not collaborate with anyone	0%

Professional presentations

In the proposal we guaranteed three professional conference presentations to disseminate our findings and lessons learned. We succeeded in disseminating to Nebraska audiences four times in addition to two national presentations.

National

Friedrich, L.A. & Trainin, G. (2015, April). *Preparing student teachers and cooperating teachers for new literacies integration*. Paper to be presented at the annual meeting of the American Education Research Association (AERA), Chicago, IL.

Trainin, G. & Friedrich, L.A. (2014, April). *Technological pedagogical content knowledge in teacher preparation: Impact of coaching professional development and mobile devices*. Paper presented at the annual meeting of the American Education Research Association (AERA), Philadelphia, PA.

Regional

Friedrich, L.A., & Trainin, G. (2014, October). *Project-Based Learning with Technology*. Presented at Nebraska District Educators' Conference, Grand Island, NE.

Trainin, G. & Friedrich, L. A. (2014, February). *Writing with Technology*. Presented at the Mid-Winter Conference, Scottsbluff, NE.

Trainin, G. & Friedrich, L.A. (2014, April). *Teacher Education In and Through Technology*. Presented at the Nebraska Educational Technology Association (NETA), Omaha, NE.

Trainin, G. & Friedrich, L.A. (2013, October). *iDevices for Students with Learning Disabilities*. Presented at Nebraska Fall Ed Tech Conference, Kearney, NE.

References

- Garet, M., Porter, A., Desimone, L., Birman, B., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Education Research Journal*, 38, 915-945.
- Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Teaching: theory and practice*, 8, 381-391.
- Guskey, T. R. (2003). What Makes Professional Development Effective? *Phi Delta Kappan*, 84, 748-750.
- Kelley, M., Gray, P. D., Reid, D. J., & Craig, C. J. (2010). Within k-12 schools for school reform: What does it take? (pp 273-298). In N. Lyons (ed.), *Handbook of reflection and reflective inquiry: Mapping a way of knowing for professional reflective inquiry*. Springer: Science & Business Media.
- Observational Protocol for Technology Integration in the Classroom (OPTIC). (2004). Portland, OR: Northwest Regional Educational Laboratory. Retrieved from http://members.tripod.com/sjbrooks_young/observationrubric.pdf
- Vogt, B., & Shearer, B. A. (2011). *Reading specialists and literacy coaches in the real world*. Boston, MA: Pearson.