A final project presented to the faculty
of the Instructional Design Masters'
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Scalable Online Training

Student-Centered 1:1 Learning with Google Apps for Education

Submitted by
Bram Moreinis, M.Ed.

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Approved by (Capstone Advisor's name)
Faculty

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Phase I: Analysis

Background Information

Educational Collaborators (EC) is a national firm for school-based technology leaders who consult after work, including providing professional development for one-computer-per-child (1:1) programs. While current professional development is delivered by ad hoc teams using whatever materials they have access to as individuals, this creates scalability and quality assurance issues:

1. How can EC provide professional development to all teachers in a municipality or a state, if an instructional presence is required? It may be possible to create scalable online courses using the MOOC approach: rely on peer evaluation rather than an instructor presence (save where the clients have a budget for high-end services provided by EC consultants.)

2. *How can EC guarantee training effectiveness when trainings are developed from scratch by whichever consultants are hired for the job?* A more standardized, branded approach, with a central repository of learning content and course designs, would serve EC better.

This project proposed to develop a pilot course, working with a school district with an EC collaborator positioned to approve and coordinate the effort. A few modules would be developed by May in completion of this Capstone, and based on reports and evaluations of these, EC may choose to solicit other school clients to fund full development and implementation of the pilot as a summer course.

Affton High School is located in St. Louis, Missouri. Last year, Affton adopted a 1:1 configuration using Google Apps for Education (GAfE) running on Chromebooks. Per Director of Technology Dr. Robert Dillon's estimate, about half the faculty have been motivated to research, experiment, and share their view of best practice as innovators, early adopters, or early majority. Compared with most schools, this is very fast progress.

However, diffusion to the remainder of teachers in the high school has stalled. These comprise two of Everett Rogers' diffusion adoption groups: "late majority" and "laggards". The laggards make up 15-20%: their students do use personal computers at all in class. The late majority (25-30%) direct their students to use the Chromebooks, but in ineffective ways, limited to "substitution" (see SAMR) and without the student-centered approach that 1:1 is designed to make possible.

As Affton moves from Clayton Christensen's "Storm" to "Norm" phase, standards need to be articulated and promoted, both through professional development and eventually by administrative imperative, and the late majority teachers will be expected to step up. This course may provide that platform.

Analysis Plan

Because this is a pilot project for a particular school, the local context is an important consideration. At the same time, the goal of the pilot is to develop a generic course that can fit the needs of entire states, or large municipalities. Elements of the local context that are not likely to exist in most other schools would not be considered as part of the course design, though local interventions would be recommended. Readiness assessments and preparatory consulting will be optional components of the general course offering, so it is appropriate to provide some of that work for this pilot.

Data Gathering took the following forms:

1. **Prior Research** (Appendix 1): annual surveys conducted with Clarity, a commercial instrument.
2. **Interviews** held with Technology Director, 1:1 Coordinator, Target Population (Appendix 2)
3. **Survey** (Appendix 3) taken by all faculty during a full-school faculty meeting.
4. **Focus Groups** (Appendix 4) with Early Adopters, student-centered learning advocates.
5. **Analysis Reflection and Planning Meeting** (Appendix 5) with school administration.

Data Gathering was used to answer the following questions, taking the following analysis forms:

1. **Goal Analysis**: What are the current standards? What do administrators expect?
2. **Learner Analysis** (Interviews, Survey): What is current practice? Is our Target Population (TP) sufficiently Google Apps for Education (GAfE) literate for an online course to be sufficient to help them meet articulated standards?
3. **Barrier Analysis** (Survey): What does TP say prevents them from meeting standards now? What common assumptions, practices or attitudes are held by the TP that could be addressed by online training?
4. **Environmental Analysis** (Survey): Which barriers (real or perceived) are a function of the TP's experience of their environment? Which would block motivation to participate in online training and targeted change? What changes on the ground will be made to overcome these barriers?
5. **Task Analysis**: (Focus Group): What skills, knowledge and attitudes are required at a minimum for standards-compliant student-centered 1:1 learning in a GAfE environment?
6. **Instructional Analysis:** Which knowledge, skills and behaviors will this course target?

A four-page survey (Appendix 2) was conducted with all faculty to address these questions:

1. **Beliefs:** What do teachers say they believe?
2. **Self-Efficacy**: What do teachers say about themselves as tech adopters?
3. **Current Practice:** What do teachers say they are doing in the classroom?
4. **GAfE Skills Readiness**: How GAfE literate are teachers?
5. **Perceived Personal Barriers to Full Adoption:** (Skills, Knowledge, General Attitudes)?
6. **History with Tech Support and PD**: What other Tech PD have they tried, with what success?
7. **Perceived Personal Barriers to Online Training:** What happened in the past? What is in the way now? What would OTPD need to offer and be like to get buy-in?
8. **Interest in a Summer Course:** Would they take one, if compensated? What preferred topic?

Analysis Report

Initial Interviews with Dr. Dillon and Target Population

It was immediately clear that there were no articulated local standards: Affton was still in the "Storm" phase, exploring what works but not requiring diffusion of innovation. There was evolving language, initiated by the technology department, towards standards: "We talk about the importance of students creating, making, and designing using the technology for the purpose of choosing what students learn, how they learn it, and how they showcase their learning with a mention that it can maximize student choice and voice with the result often being greater engagement in learning. This seems to be what 1:1 looks like for us."

Dr. Dillon does not supervise teachers nor speak for school leadership about school building goals. The absence of building administration (principal) buy-in is at variance with the goal of diffusion training, which only makes sense once an organization has arrived at standards and expectations. However, because he was not in a supervisory role, he was better positioned to conduct structured interviews (Appendix 2) with six representatives from the target population (per his judgement), and discussion of these interviews informed rich and deep shared understandings about the target population, performance context, and learning contexts.

Summary of Target Population Interviews

1. ***TP teachers struggle with time required for routine tasks (receiving assignments, managing students at different stages of work).*** If 1:1 management can streamline regular tasks (permit error-free submission of student work which is never lost) and provide clear feedback (showing which students have completed work and now are "on their own"), it will likely be used.
2. ***Most of the TP still run traditional teacher-centered classrooms.*** In a 1:1 configuration, they have all students face the back of the room so they can see student screens. This sacrifices relationship for monitoring. Changes to this practice will indicate success of the course.
3. ***Students understand that each teacher has different expectations for behavior and will adapt to each classroom.*** While teachers complain that there are few enforced shared standards for expectations and discipline, pursuing this difficult goal could be a red herring.
4. ***Using Google Chat is a common way students demonstrate distraction from teacher-directed activities***. Teachers can be counseled to respond to this kind of activity as formative feedback about engagement or clarity of instructions, not as an opportunity for a power struggle.
5. ***Teachers want any professional development to provide subject-specific (e.g. Math) modules.*** Teachers will not respond to generalized examples that do not match their subjects. Therefore, course cohorts should be registered based on their subjects, and examples and models should focus on subjects taught by the registrants in their sections.
6. ***Teachers require timely human responses to online work submissions and requests for assistance***. The role of Early Adopters will be pivotal, not only during the online course (as mentors and technical assistance providers) but as just-in-time supports and integration coaches during the following school year to support transfer.

Gap Analysis: Technology Integration

Dr. Ruben Puentedura's [SAMR model](#) of technology integration describes a continuum from **Substitution** (using a new technology to do what the older did), to **Augmentation** (finding ways for technology to enhance learning in new ways, but with the old tasks), to **Modification** (changing tasks to make use of technology affordances, where significant student achievement improvements occur), and finally to **Redefinition** (where the tasks and classroom structure change in more revolutionary ways).

Dr. Dillon's goal, which has not yet been embraced by the principal and thus cannot be held out to faculty, is that all teachers in the late majority group (who currently use 1:1 for "Substitution" activity only) adopt practices in keeping with Augmentation towards Modification stages reached by the early majority. He would like to see this happen by the end of the next school year.

Further, Dr. Dillon hopes that all early majority and early adopters will move up one stage on the SAMR continuum, and produce plans and student work examples, with supporting data, demonstrating the deeper integration of technology in accordance with Modification and Redefinition stages.

Gap Analysis: Student-Centered Learning

In the process of interviewing Dr. Dillon and co-designing goals for this course, we arrived at three teacher fluencies that support later SAMR stages. Effective 1:1 GAfE teachers in are comfortable with:

1. Supporting student-centered learning as a frequent classroom norm;
2. Using GAfE tools efficiently to manage a blended learning environment;
3. Designing blended learning projects that combined these two fluencies.

As with the Redefinition phase of SAMR, the move from teacher-centered to student-centered learning (embodied in Active Learning, Collaborative Learning, and many other approaches) requires a gradual and sometimes messy paradigm shift with deep changes to beliefs and habits. Contemporary learning theories support the importance of student-centered learning as an instructional strategy, particularly in 1:1 environments. Some studies reinforce this connection, though more research is needed.

Research supporting links between constructivism and instruction is summarized by Nanjappa (2003):

> Constructivist views assert that learning is the active process of constructing rather than passively acquiring knowledge, and instruction is the process of supporting the knowledge constructed by the learners rather than the mere communication of knowledge (Duffy & Cunningham, 1996; Honebein, Duffy & Fishman, 1993; Jonassen, 1999;). … Within this shift in focus from the objectivist to the constructivist context domain, technology can play an integral part in the learning environment (Duffy & Cunningham, 1996). …
>
> By integrating technology with constructivist methods, such as problem-based learning and project-based learning, learners are more responsible for and active in the learning process (Grant, 2002).

Common Framework

With these shared understanding, initial interviews arrived at a framework for task and gap analysis, to support course goal-setting and survey design:

1. **Paradigm Shift**: adopting Student Centered Learning (SCL) with fluency.
2. **1:1 Classroom Management**: using GAfE affordances to streamline procedures effectively.
3. **SCL in a 1:1 Classroom**: designing and implementing Project Based Learning (PBL) with GAfE.

Within each of these stages, three levels could be used by teachers to self-identify readiness:

1. **Not Exploring** (Rogers' "laggard" position).
2. **Exploring** (learning, experimenting, finding personal norms)
3. **Fluent** (capable of reliably effective practice)

Stages 1 and 2 are not sequentially dependent, but fluency at Stage 2 (2.2) requires Stage 1 fluency (1.2). Stage 3 fluency requires fluency at Stages 1 and 2.

With this framework established, it was now possible to sketch out the scope of online course coverage (whether within one course or a series), and provisionally define transference requirements (implementation and support needed for adoption). These rough scaffolds supported design of an anonymous faculty survey to identify barriers, assess readiness, and gauge interest in course content.

Both SAMR progression and the adoption of student-centered learning require experimentation periods during which deep shifts in approach can be made. Teachers need to feel safe (that their performance will not be adversely evaluated during experimentation) and supported (that they have access to local mentors, coaches, and expertise to help with problems that could threaten classroom culture). Any perceived lack of administrative and technical support could be an insurmountable barrier.

Clarity Survey Results

Analysis began with results from an annual Clarity survey (Appendix 1) administered at the end of last year. Most significant findings (with implications for the teacher survey and course design) are below.

1. *Only 10% of teachers reported their students write online at least weekly, 23% monthly. 62% never do.*   This is significant for the course because writing online is a crucial part of 1:1.
2. *Almost three quarters of AHS teachers report using 1:1 in classes almost daily.* This validated Dr. Dillon's estimate that 50% use 1:1 well, 25-30% use it but not well, and 20% do not use it.
3. *Only 27% of teachers do online assessment with students at least weekly.* Regular Formative Assessment with GAfE is a powerful opportunity to streamline work and increase feedback.
4. *Very few (10%) teachers use Google Apps regularly to facilitate peer feedback.* This is a powerful use of 1:1, but requires comfort with a student-centered approach.
5. *Only 17% of teachers ask students to collect and analyze data at least weekly*. *In contrast, 40% of teachers report that students use web tools to receive online information at least weekly: the key difference is that receiving a lower order thinking skill than analyzing (Bloom).*

Course Survey Results: Gap Analysis

Based on the results of the preceding surveys, interviews, and a research review of common barriers to technology integration diffusion, value lists of beliefs, barriers, and approaches were compiled and then used as choices for survey question items. This survey ([Appendix 3](#)) was delivered via Google Form to all high school teachers (54) during a faculty meeting. Below are key highlights and implications.

1. ***Less than 50% of teachers are fluent in Google Classroom*.** Google Classroom is the ideal method of organizing a 1:1 program using Chromebooks, and this should be a foundation element for the online course.
2. ***63% of teachers are fluent in Google Docs.*** *Therefore, half of the target population is not fluent, and will need some refreshers.*
3. ***Only 22% of respondents are fluent in Google Sheets, and only another 23% are exploring.*** Spreadsheets are powerful for analyzing quiz results and rubric self-assessment. An introduction to sheets should be a key focus of the 1:1 management course.
4. ***32% are using formative assessment, and 13% are exploring it.*** TP is not exposed to this yet. Combining Google Sheets with Formative Assessment will be a powerful offering for the course.
5. ***35% of respondents are fluent in Google Sites, and 41% exploring.*** *Google Sites are key to Project-Based Learning.*

Course Survey Results: Context Analysis

1. **39% would like chat turned off, as this is the primary distractor when students use computers.** Dr. Dillon is against this strategy because it limits possibility (particularly since chat is necessary for Hangouts and Google+ circles), but it may be necessary for buy-in.
2. **26% want to have software to monitor student screens.** This strategy reinforces teacher-centeredness (at desk watching monitor vs, circulating and correcting with soft reminders).
3. **44% of faculty cite time and priority barriers to experimentation and study.** These are beyond an online course's capacity to remedy, but can be influenced by administrative leadership.

Course Survey Results: Needs Analysis

1. **50% of respondents are interested in a summer course.** This includes a majority of the TP.
2. **50% are interested in an online course on managing 1:1 classes.** A majority of the TP.
3. **60% would prefer a course on 1:1 management with Google Classroom for SLC, and 39% prefer Project-Based Learning (PBL) with Google Sites.** This was a "pick only one" question. The latter choice attracted early adopters and early majority.
4. **21 English and Social Studies teacher would take the online course; 13 Math and Science teachers would, along with 12 "specials" teachers.** To support teacher preferences for learning applications in their content areas, the pilot summer course should be humanities focused.

The following tables include analysis of responses in *italics.*

Which of these would you like to explore next?

Program	#	Analysis Notes
Forms	8	*This is good information, and expected, given 1:1 Management issues.*
Hangouts	7	*This is a surprise! Why do teachers want this? Need to find out.*
Sheets	6	*This is a companion to Forms, so represents 14 out of 15 respondents.*
Groups	5	*This is of most interest to teachers who are not using Classroom.*
Classroom	4	*These are teachers who are aware others are using Classroom.*
Google +	3	*Again, this is a surprise. Why do teachers want this? Need to find out.*

Which one of these student-centered activities have you ALREADY tried / MOST like to try with 1:1?

SCL Practice	Now	Try	Analysis Notes
Students as Teachers	3	6	*With Peer Review, this argues for Jigsaw and "Student Work As Study Material" leading to ePortfolios.*
Cooperative Learning	6	5	*Perhaps teachers can build A 1:1 SCL wiki indexed by Cooperative Learning models (e.g. Jigsaw)?*
Peer Review	2	5	*Pair Student-As-Teacher with Peer Teaching (students teach each other in Jigsaw) and Peer Review (students review each others' materials with checklists to determine readiness for full-class..*
Problem Based Learning	0	5	*Pair Cooperative Learning with Problem Based and Discovery Learning as a project model. Teams are given a problem. Within each team, one half does discovery (learn about the content) the other half does PBL (focus on solution) and then they Jigsaw.*
Case Studies	3	4	*Case Studies should include video (Youtube Closed Captioning for first-run transcriptions students later edit) and Group Projects.*
Game-Based Learning	7	4	*High "Already" means Jeopardy-style quizzing, not sims. Webquest Projects can include a role-playing game component.*

Focus Group

As of this writing, the focus group planned to explore practices and paths to student-centered learning among early adopters and early majority (Appendix 4) is still one week off, so this section will have some updates before final publication. This structured group will be conducted by teachers, with no administrators present, to surface "the good, the bad, and the ugly" of SCL adoption by teachers.

Planning Meetings

Two meetings are bridging the gap between analysis and design. The first ([Appendix 5](#)), held on March 17th, brought together the instructional designer (via Hangout), principal, vice principal, and technology team (Dr. Dillon and the 1:1 coordinator) to review survey results and consider the role of administrative leadership in supporting the diffusion of innovation towards full adoption of 1:1 by faculty. Dr. Dillon felt the meeting was very positive and helped him advance shared understandings that had thus far eluded the administrative team.

As a result of this meeting, the principal agreed that a transition from Christenson's "Storm" phase to "Norm" phase should be undertaken next school year, and that this course would be an appropriate step to support that transition. She also approved some of the elements of the course design that will be described in the next phase.

Relying on Early Adopters is a key aspect of the course strategy to make it scalable. The final planned meeting, which depended on the approvals and leadership agreements just made, will be conducted again via Google Hangout between the instructional designer and six Early Adopters identified by Dr. Dillon who agree to participate in the course as facilitators and mentors, and continue to support their colleagues as coaches following the summer session. This meeting will explore some of the proposed roles and responsibilities, and obtain reactions and new ideas from this group.

Design Implications from Survey

Two questions addressed the design of the online course. The first was free response. Of 54, 44 respondents identified problems with online courses, summarized below. Those in **boldface** can be met with a design that includes adequate directions, well-designed activities and bulletin board discussions, employs hangouts for tech support and group check-ins, and offers effective LMS navigation training tutorials. Motivation can be rekindled with quality, engaging "sales talk" videos starting each module.

When online courses don't work for me, it is usually because....

1. ***Directions are inadequate***   *9*
2. ***I need personal contact***   *8*
3. ***Lack of motivation to complete course*** *4*
4. ***Poor design of course activities***   *4*
5. ***Discussion boards are busywork***   *3*
6. ***Difficulty navigating the LMS***   *2*

The second question addressed teacher preferences. Possible answers were given via checkboxes based on a survey of research about online courses, and often they were presented in mutually exclusive pairs.

Which of these design elements would you want to see in the next online course you take?

1. *Start with the basics* — 12 — 22%
2. *Assume we know the basics* — 13 — 24%
3. *Flexible Schedule (go at own pace)* — 25 — 46%
4. *Regular weekly schedule (all together)* — 4 — 7%
5. *Everyone learns the same thing together* — 2 — 4%
6. *Separate sections based on learner needs* — 24 — 44%
7. *Optional after-school Hangouts* — 5 — 9%
8. *Optional evening Hangouts* — 4 — 7%
9. *Use Google Classroom as Home Base* — 18 — 33%

Responses revealed a clear preference (46%) for flexible scheduling over weekly scheduling (7%). During the school year, the preferred strategy can be used; for summer courses, there is not enough time to support flexibility. As there will not be competing school demands in August, this may work fine.

There was also a clear preference for separate course sections (44%) geared for teacher subject areas over generic examples (7%). We can address this by combining Humanities (English and Social Studies) in the summer course section, and STEM (Math, Science, applied studies) in the fall section.

A split existed between "start with the basics" (22%) and "assume we know the basics" (24%). This can be addressed by providing optional but clearly marked help text. Initial instructions for activities can be minimal, with links to video walkthroughs and other expanded supports. A clear preference for Google Classroom (18%) supports teachers learning Google Classroom as student first, teachers second. However, Classroom is not a robust learning content management system, and it needs to be paired with a Learning Content Management System (LCMS).

Taken together, 16% of respondents would find Google Hangouts helpful, with a split over afternoon (9%) and evening (7%). Because of the importance of involving Early Adopters and supporting Face-to-Face contact, we will hold one weekly recorded hangout-on-air at each time, staffed by an Early Adopter, and encourage teachers to watch the hangout of their choice if they did not participate in one live. This will boost participation in the next hangout, or indicate we should do something differently.

Final Analysis Thoughts

There is a continual tension between customizing this course based on the pilot school analysis and withholding consideration of environment and other contextual factors to maintain the broader generic reach the course ultimately strives for. As stated previously, part of that end model includes hiring EC collaborators to customize the course and organize the local early adopters where a budget exists for it. On the other hand, the success of the pilot will not be definitive in forecasting how effective this course would be for the generic implementations. Significant redesign will be needed for the next pilot.

Phase II: Design

Course Goal

This course supports schools and districts using Google Apps for Education (GAfE) to support Student Centered Learning (SCL) in a 1:1 environment by accelerating adoption of local standards and best practices by "late majority" teachers.

Course Framework

The course addresses these components:

    A. **Pedagogy Shift to SCL Paradigm:** Promote and support adoption of student-centered learning.
    B. **GAfE Technology Skills for 1:1 Management:** Using GAfE to manage digital workflows.

Because many members of the target population have not had good experience with online courses (per survey), there is a fourth set of skill, outside the Framework:

    C. **Online Learning Skills**: Prepare participants to participate fully using course tools.

NOTE: Initially, the course was also projected to address a third Framework component:

    D. ***Design Skills for Project-Based Learning:*** *Designing and building PBL units with GAfE.*

However, this puts the scope far beyond what is possible within the allotted time-frame. By separating this from its prerequisites, teachers can arrive at fluency before taking their practice to new levels.

Performance Objectives

I. *Pedagogy Shift to SCL Paradigm*

A. STUDENT-CENTERED LEARNING

    1. Accurately describe Constructivist Learning Theory and list three pedagogic implications.
    2. Given SAMR stages, correctly describe each, and give an appropriate 1:1 example for each.
    3. Given a SCL model, describe it accurately, citing benefits and implications for teaching.

B. STUDENT-CENTERED LEARNING in a 1:1 CLASSROOM

    1. Summarizing a Group discussion, accurately list challenges with SCL in a 1:1 classroom.
    2. Given a list of SCL 1:1 challenges, list and describe structures and supports to address them.
    3. Given a SLC model, design an application for a 1:1 environment, and describe how that environment supports the benefits of the model using the design.
    4. Given a self-designed SCL lesson, correctly identify the SAMR stage associated with it, and redesign the lesson as an appropriate example of the next SAMR stage.

II. *GAfE Technology Skills for 1:1 Management*

A. DOCUMENTS, GROUPS AND DRIVE

1. Given student emails, create a Google Group with a clear subject prefix and direct-add students.
2. Given a read-only shared Google Document, make a copy, place it in "My Drive" and rename it.
3. Given a class Group, share a Document with it, as "Comment Only", with a share message.
4. Given a shared document, add it to "My Drive" and place it in a self-named folder.
5. Given a Group-shared document, initiate posts and reply to comments in the share thread.
6. Given a shared document, subscribe to notifications, add and reply to comments.

C. CLASSROOM

1. Given peer emails, create a Google Classroom course and invite partner and 2 peers as students.
2. Create a Document-based assignment template within the appropriate Classroom-linked folder, and post it to Classroom with appropriate instructions for students. Complete 3 assignments.
3. Given a posted assignment, clarify in comments, and receive submissions.
4. Given assignment submissions, use comments to respond and request revisions.
5. Given document revisions and comments, assign and record a grade in the Classroom gradebook.

D. SLIDES

1. Given a list of Slide design criteria and a model, create a Rubric with Sheets.
2. Given a content outline, create a Slide Deck with animated bullets and illustrations.
3. Given a shared Slide Deck and Rubric, Comment on slides to inform redesign.
4. Given slide comments, redesign Slide Deck and resolve comments.
5. Given Screencastify and a Slide Deck, record a screencast, share to Youtube, add to Classroom.

E. FORMS AND SHEETS

1. Given a list of criteria for an assignment workflow and a model, create a rubric with Sheets.
2. Given a Classroom assignment workflow rubric, design a learner response survey using Forms.
3. Given a Form Survey, use Classroom to request responses as a course assignment.
4. Given Form MC responses, view Summary of Responses to evaluate assignment effectiveness.
5. Given Form TXT responses, reformat response Sheet to read each response by student and make Sheet-based comments as appropriate.
6. Given Form, create a copy as a Quiz target responses to a worksheet in the old Response Sheet.

F. GRADING AND FEEDBACK

1. Given Flubaroo and a Response Sheet, install Flubaroo, configure and apply to quiz grading.
2. Given a graded Quiz Response Sheet, share grades & apply to the Classroom Gradebook.
3. Given a set of assignments as a Unit, review and provide individual student feedback.

III. Online Learning Skills

1. Given an invitation, enroll in a Google Classroom course and be able to return to it.
2. Find given course Group from "My Groups", post to it, find an identified post, and reply to it.
3. Given a template provided, create a new Site and rename it to use as a course ePortfolio.
4. Given an Announcement page to use as a Blog, create and manage blog posts.
5. Given a Blog post, Copy and paste the full URL into a Google Classroom post comment.
6. Given a partner email address, Initiate and respond effectively to Hangout invitations.
7. Given a live Hangout, adjust audio and video settings, toggle the chat window, and share screen.

Instructional Strategy

Course Design Process

To reinforce the consideration of factors revealed in research and analysis, and to maintain a comprehensive view of entry behaviors and performance requirements associated with each task, the following approach was used to define modules, which are components of each course topic:

1. Design Course Module Creator form with fields for all indicated considerations.

2. Submit modules via Module Creator based on Course Outline and saved items in subfolders. Merge module creator form results into text docs, move these into Course Topic folders.

3. Link Course Topics modules to associated resources to be shared. Move other resources to "background" subfolders and/or Gappsfored.com.

4. Develop Articulate Storyline module for each topic that requires it.

5. Develop Activity Diagram for each module (if appropriate)

Course Delivery Components

1. **LMS**: **Google Classroom.** Since GAfE is a major course delivery goal, it is appropriate to familiarize teachers with the environment and tools as learners. All work will be done with GAfE.

2. **LCMS: Custom Drupal Site** (Gappsfored.com). Since Google Classroom is very limited in the display of hypertext (assignments are text-only) and curation of content (all content is presented as a stream, rather than as a library), an external site targeted by Classroom provides these features and persists after the course ends as a go-to resource for job aids and refreshers.

3. **eLearning Module Platform: Articulate Storyline**. To facilitate interactivity and rich media using a structured presentation, a Storyline Template will simplify and model the GAfE interface.

4. **Software Training Platform**: **Adobe Captivate.** Captivate is an easy way to create click-through tutorials and performance assessments, needed by teachers who are not facile with new tools. Captivate will be delivered within Storyline.

Instructional Approaches

1. **Early Adopter TAs**: The course is designed to be scalable, based on MOOC models, without an instructor presence required. MOOCs rely on peer feedback to provide a human component. Because all schools who are ready for 1:1 adoption will already have early adopters who can serve as mentors and coaches, the course is designed to enroll these as mentors and facilitators. Early adopters often seek leadership opportunities and are willing to serve as teaching assistants (TA). A ratio of 6 teachers per TA is sought, with TAs that share the content area specialties of the course section.

2. **Use of Google Hangouts**: All participants will have access to on-demand videoconferencing with each other and with course TAs through Google Hangouts. The on-site orientation will include training in Hangouts for technical assistance, and the course will include two weekly optional hangouts, one in the afternoon and one in the evening, which will also be recorded for participants who cannot attend either. These will help develop a live community cohort, beyond the text and document commenting exchanges that are a key part of the course design.

3. **Performance Data**: Because Google Classroom is not a robust LMS, it is not designed to receive data from eLearning modules like Captivate or Storyline. However, because the course is ungraded, this is not a concern. Students will provide artifacts and activity through the Google Classroom interface, and evaluate each other's' work using rubrics and forms that generate performance data. TAs will access course data to initiate offers of support and coaching to participants, and course designers can access it to inform redesign.

4. **Transference Plan**: An online course alone is insufficient for transfer. The online component is part of an extended design, where teachers are coached by TAs to design, develop, implement, assess and showcase their work during the school year. School principals have an active role, along with technology coordinators, in preparing each school for the course, by enlisting early adopters, setting aside time for pre-course surveys, and promoting course goals and building leadership objectives. After the course, principals will be encouraged to set aside time for teachers to collaborate on designs, and to plan a district or regional conference where teacher showcases can be shared and discussed.*

* NOTE: This last strategy requires early buy-in and very active involvement by actors in the performance environment. All aspects of this strategy are documented best practices for teacher professional development, but not all school clients will be ready to adopt them. Introductory materials about the course will clearly state the importance of these elements in achieving goals, and require sign-off by building administrators as part of the enrollment process.

During the course, these factors will also be introduced, in the context of Activity Diagrams associated with each module. These diagrams acknowledge that many factors beyond software and pedagogy training are necessary for a 1:1 adoption to succeed, and empower learners to consider and pursue address of environmental factors as a component of applying the course to their practice.

Instructional Units – PRE-COURSE

1. *Early Adopter TA Orientation (Online – Series of Hangouts)*

The pivotal role of Early Adopters in the course design as Teaching Assistants (TAs) includes facilitating hangouts, contributing to discussions, modelling interactions, and providing technical support as needed.   Resources in **Bold**, where exist, **Hyperlinked**. Sequence:

1. **Planning Hangout**
    a. **(Pilot) – Agenda**: Discuss **Syllabus**, roles, needs and supports for TAs and learners, with course designer providing and modeling. A recorded version of this conversation will support later course iterations.
    b. **(Future):** Excerpts from the recording of the above Hangout will seed creation of a video that initiates a Webinar, with a volunteer TA facilitating.

2. **TA Discussion Facilitation Webinar**:
    a. **(Pilot) Agenda,** discuss best practices for maintaining high quality, authentic discussions in Google Groups and Hangouts. **Discussion** facilitation resource will seed a **Video** followed by discussion posts in **Group**. Instructor-led for the Pilot only; a recorded version of this conversation will support later course iterations.
    b. **(Future):** Excerpts from the **Recording** of the above Hangout will seed creation of a **Video** that initiates a Webinar, with a volunteer TA facilitating Agenda.

3. **Orientation Preparation**
    a. **(Pilot) Agenda** preparing TAs to facilitate orientation prep Hangout. Review **Captivate Tutorial**s for ePortfolio Site creation, Hangout Training, Google Group, Survey, Video. This session is instructor-led via Hangout for the Pilot only; a recorded version of this conversation will support later course iterations.
    b. **(Future):** Excerpts from the **Recording** of the above Hangout will seed creation of a **Video** that initiates the Training Prep Hangout, with a volunteer TA facilitating.

4. *Learner Cohort Orientation (On Site)*

A face-to-face orientation session ensures all participants are technologically ready and motivated to succeed. A face-to-face meeting will be held at the end of the school term before the course begins run by Early Adopter Teaching Assistants (TA) in their new leadership and support roles. Sequence:

    a. **Syllabus Introduction**: Orient to course structure, topics, supports. By TA.
    b. **Create ePortfolios**: **Captivate Tutorial** Creates ePortfolio Site from the **Template** provided.
    c. **Choose Partners**. Students are asked to think about what they need/want in a study partner.
    d. **Learn/Practice Hangouts**: **Captivate Tutorial**. Critical for Tech Support / Group Check-Ins.
    e. **Group Kick-off**: Introduce **Class Google Group** for clarification, brainstorming, and practice.
    f. **Pre-Survey on Course Topics:** Self-assess SCL / SAMR / GAfE stages.
    g. **Homework:** Watch Motivational Video: Value of Collaborative Cloud, post response in Group.

Online Topics (By Week in Summer Course) and Materials Needed

1. *Early Adopter TA Orientation (Online – Series of Hangouts)*

Title	Components To Develop	Objectives
Planning Meeting	Hangout on Air, Agenda, Syllabus	N/A
Discussion Facilitation Training	Hangout on Air, Video, Google Group	N/A
Orientation Preparation	Agenda, Captivate Tutorials, Hangout on Air	N/A

2. *Learner Cohort Orientation (On Site, By TAs)*

This session, facilitated by the high-tech teachers who will serve as online guides for the course, introduces participants to the peer-supported (early adopters), cohort-based nature of the course (local teachers "reinventing" 1:1 learning together in action research) and provides participants with the basic tools to take the course (joining Hangouts, finding course materials, setting up your ePortfolio, time- and self-management for success in an online course). It concludes with a participant survey to determine prior courses that relate to the material, and self-assessed competence with key technologies, ending with a self-gauge of commitment towards the course and implementation.

Title	Components To Develop	Objectives
Syllabus Orientation	Agenda, Syllabus, Video on Study Habits	N/A
Choose Partners	Google Form	N/A
Learn & Practice Hangouts	Captivate Tutorial	N/A
Group Discussion Kick-Off	Class Google Group	N/A
Pre-Course Self-Assessment	Google Survey, Intro Video	N/A
HW: Motivational Video, Post	Video, Group Post Prompt	N/A

3. *Student-Centered Learning: Week 1*

To establish shared values, This module will reinforce the value of student-centered learning for motivation, personalization, social learning, constructivism, and differentiation. A shared vocabulary will develop from reflections on readings and online discussions. To establish shared visions, a guided tour of highly effective activities by discipline, highlight structure (e.g. cooperative learning), technology (e.g. document commenting), readiness skills (student and teacher) and assessment methods (e.g. artifact examples and rubrics). Each resource will have a "tour page" on gappsforedu.com including a case study and resources and guides. This module will explore the benefits and challenges of student-centered one-to-one classrooms, and feature participant sharing of tips and experiences, as well as troubleshooting. Google Group Focus.

Title	Components To Develop	Objectives
Constructivist Theory & Practice	Storyline Module 1, Video, Form	I.A.1
SAMR Stages	Video, Group Post, Post Comment	I.A.2
SCL Models	Video, Form Response, Sheet Comment	I.A.3
SCL Challenges & Supports	Group Hangout, Group Post, Post Comment	I.B.1 – B.2
SCL Adaptation for 1:1	Document Submit, Peer Comment	I.B.3 – B.4

4. *Google Docs, Drive and Groups: Week 2*

Participants will use a Google Group as a discussion board, and a shared Google Drive folder as a shared repository for course materials. These two resources will be used to model activities participants will then conduct in their own environments, with their own resources.

Title	Components To Develop	Objectives
Group Creation & Invites	Storyline Module 2, Video Captivate, Class Group	II.A.1
Shared Drive => My Drive	Captivate, Assignment Template Doc	II.A.2, A.4
Docs Sharing with Groups	Captivate	II.A.3
Group Posting on Docs	Captivate	II.A.5
Document Commenting	Captivate	II.A.6

5. Classroom and Slides: Week 3

Participants will use Google Classroom as students of this module, create Classroom instances as teachers with peers as students, and set up Classrooms to be used for a target project or as a standard practice, depending on how frequently they plan to run 1:1 classes. Classroom will be fairly positioned for its strengths and its limitations, as an early strategy.

Title	Components To Develop	Objectives
Course Creation	Storyline Module 3, Video, Captivate, Form	II.B.1 – B.2
Course Assignment Mgt.	Captivate, Assignment Checklist	II.B.3 – B.5
Slide Rubrics	Storyline Module 4, Rubric Template, Criteria	II.C.1
Slide Deck Creation	Content Outline, Captivate	II.C.2
Slide Commenting & Revision	Captivate, Group Shares	II.C.3 – C.4
Screencasting	Screencastify, Captivate	II.C.5

6. Forms, Sheets and Grading: Week 4

Participants will set up "Bell Ringers" and/or "Exit Tickets" using Google Forms. WIth the addition of Flubaroo, an auto-grading add-on, teachers can quickly assess student readiness for and achievement of learning objectives for a given class, and adjust lesson plans and contact objectives accordingly. The form results create an ongoing record of readiness and performance for each student, along with an opportunity to provide questions and comments to teachers.

Title	Components To Develop	Objectives
Create Assignment Rubric	Storyline Module 5, Criteria, Model	II.D.1
Assignment Review Forms	Rubric, Captivate, Survey model	II.D.2, D.3
Summary of Response Analysis	Captivate, Example	II.D. 4
Text Response Analysis	Captivate, Model, Example	II.D.5
Form Copy & Re-Use	Captivate, Model	II.D.6
Install & Configure Flubaroo	Flubaroo, Response Sheet, Captivate	II.E.1
Grade Sharing & Gradebook	Flubaroo, Captivate	II.E.2
Unit Assignments Feedback	Captivate	II.E.3.
Follow-Up Planning & Survey	Agenda, Post-Course Survey	[Hangout]

Additional Strategies for Development

These strategies were taken mostly from research, and also responses to surveys. They have informed the thinking above, but also need to inform development at a more detailed level.

A. Clearly relate applications of technology highlighted in course to subject areas, and use teacher-submitted ideas whenever possible. Examples from interviews:
1. SOCIAL STUDIES and ENGLISH
    a. REFERENCE ARTIFACTS: Display reference artifact on projector screen, students then web-search for comparatives and discuss similarities and differences.
    b. STUDENT LINK SHARING: Use Goo.GL and write on baord, or send via Form.
    c. TRANSCRIPTION FROM VIDEO CLIPS: Use Youtube Captioning. Student teams get initial caption and fix grammar (ELA). Teacher uses best transcript for case study.
    d. MANAGING COMPLETION: Students use a form for "I'm done with assignment, working on this [specific thing] now.

B. Instructor Presence / Rapid Feedback important:
1. Feature Interactive eLearning at the start of each module to get past passivity.
2. Host online help hangouts staffed by early adopters using Google Calendar for sign-ups. These need to be "high touch" to compensate for lack of instructor presence.
3. Host weekly course hangouts-on-air, one in afternoon and one in evening, with course-supplied starter agendas, facilitated by early adopters.

C. Culture Change Focus should lead workshop.

The task of making the transition from traditional teaching to teaching with technology is much tougher than it seems. This is because the transition is as much a cultural one as one of mere methodologies. It involves a shift in paradigms, in the way of thinking about teaching. Use images (teacher in front of room) to convey difference.

D. Establish a GAfE Vision Early, both for student benefit and workflow streamlining.

Most teachers do not have a clear understanding of curricular uses of technology within the curriculum. "An important step in achieving meaningful technology use is to develop a vision of how to use technology to achieve important educational goals" (Ertmer, 1999, p. 54). "Teachers lack models showing the value of technology for their own professional use" (Office of Technology Assessment [OTA], 1995, p. 28). **When presented applications of technology streamline routine tasks and provide clear feedback about student progress, they will likely be adopted.**

E. Create Personal Time Management Plans during Course

Teachers need time to experiment with computers, share experiences with other teachers, plan and debug lessons using methods that incorporate computers, and attend training and workshop sessions (Ertmer, 1999; Fabry & Higgs, 1997; OTA, 1995).

F. Focus on Student Assessment with GAfE.

Teachers need opportunities to learn strategies for evaluating the results of the implementation of technology in the classroom. Rubrics, electronic portfolios, process oriented feedback, and performance tasks can be used to examine student learning with new technologies (Ertmer, 1999). "Existing standardized measurements of student achievement may not reflect what has been learned with technology. Teachers are held accountable for change that takes time to show results" (OTA, 1995, p. 41).

G. Course Activities Should Model Target Instructional Activities

Technology training often focuses on basic operation rather than curriculum integration. Teachers need ongoing opportunities to use technology in ways that model the type of learning experiences we are asking them to create (Ertmer, 1999; Fabry & Higgs, 1997).

H. Build Community for Sharing Models and Coaching

Teachers must be provided with pedagogical support through observation of technology-enriched lessons, curriculums, and classrooms as well as consultation opportunities with experienced mentors in the integration of technology (Brunner, 1992). Research has shown that teachers need both inservice training in the use of technology applications and ongoing curriculum support in order to be able to incorporate technology into the curriculum in meaningful ways (Ertmer, 1999).

I. Apply Prochaska's Stages of Change for Pre-Post Assessment and for Design for SCL

ASSESSMENT: Framing the move to SCL as behavior change, determine:
1. What actions should be taken by learners to change behavior;
2. What psychosocial, structural or other determinants and factors make the most difference in the target group's choice to act; and
3. What strategies will be effective in addressing those determinants and factors.

INITIATION: Begin with a Sales Pitch about the benefits of Student-Centered Learning:
Build the awareness that the advantages (the "pros") of changing outweigh the disadvantages (the "cons")—the TTM calls this decisional balance. Once all learners have indicated their readiness and interest in this process, work through Stages. For those who are not ready for Student Centered Learning, allow an "opt-out" for that module.

J. Provide Sufficient Practice for Confidence

Training opportunities need to allow teachers to build skill and confidence in the use of technology (Haugland, 1999).

K. Keep It Simple, but Deal with the What-Ifs

At the practical level, it needs to be understood that teachers operate in tightly constrained environments where there is little time for things to go wrong, therefore they require their tools to be simple, reliable, durable, and versatile. Information technology, and the Internet specifically, can be all these things with proper professional development. Some suggestions for addressing the practical include using a problem-solving approach in training teachers to troubleshoot.

L. Support Self-Efficacy

To gain the confidence and comfort to adopt this new approach, teachers need to gain a feeling of power and command over it. Use eLearning to help conceptualize and motivate learners, as well as to provide software training and plenty of practice, providing efficacy through accurate readiness assessment. Learners need to know they are making progress. How to reward them? Gamification, okay - but also fixing things they complain about. Building something to their specs. Content curation.

M. Address Beliefs, Assumptions, Attitudes

More than any other single factor, teachers' beliefs influence what they do in classrooms. Teachers hold beliefs about students, teaching, and technology that are imbedded in the powerful images of what they would want to happen if they had ideal conditions. Linking those beliefs to information technology is perhaps the most critical aspect of professional development in this area. Help teachers uncover their personal beliefs about teaching; encourage them to describe their experiences with technology and the assumptions they have about technology, and allow time for reflection.

N. Demonstrate Personalization and Responsiveness

Research from the International Society of Technology Education (ISTE) also reveals that high quality professional development is job-embedded, personalized, and designed to promote skill transfer. Professional learning experiences must respond to teachers' interests, needs, and classroom settings. In many cases, these types of learning experiences can extend beyond the traditional school in-service setting to include webinars, Twitter chats, and other virtual experiences.

O. Identifying compelling best practices / GAfE patterns.

Course Activities will have compelling individual benefits (e.g. personal drive management), or engaging collegial benefits (Group discussions and Wiki document building). Which activities will be explored in the course? How will adoption benefits be forecast and demonstrated?

P. Model gentle instructional management, MOOC and SCL inspired

- MOTIVATION: Start with "Why" before "How" using eLearning and video (example https://www.youtube.com/watch?v=eRqUE6IHTEA)
- READINESS: Assess student readiness for each task, and provide resources and alternatives when readiness is not met. This models differentiation in classrooms.
- SIMPLICITY: Stick with the needs implied by the activity. Leave out exploration of other features of tools … but point to resources about these. Use a fresh Google account for simplicity's sake. Good mix of Screencasts and Slides to allow eyes to rest. Slides illustrate (image / diagram) or punctuate (animated bullets) the voiceover.
- GENTLE LANGUAGE, CONTINUAL SALES: Do not assume that learners have agreed to give their full attention to the course. Continue to engage and promote benefits.
- TIMING: Course should be tolerant of students falling behind. Minimize deadlines. Where there are deadline, clarify that these are not hard, but those who are late to do something will have less of an audience, and consequently less feedback.

Q. Use a consistent ELEARNING STORYBOARD based on http://uptownzen.org/storyline/

A. **Intro** (non-technical) - how this solves your problem, motivation.
   a. Current Problem / Need
   b. Current Practice / Solution and Match with Need
   c. Problem Analysis of Current Practice
   d. GAfE Solution (no screencast)
      i. How it helps you, your school solve problem
      ii. How it works (very basic)
   e. Think About It - Help answer these questions
      i. LIKELY CONSTRAINTS (What you'll struggle with)
      ii. GAfE AFFORDANCES (Why it's worth it to you)
      iii. SKILLS REQUIRED (What you need to learn)
      iv. CHANGES REQUIRED (What else needs to change)
B. **Demo** (Captivate):
   a. How GAfE Solution Works (Detail)
   b. GAfE Solution Screencast
C. **Training** (Captivate)
D. **Application** (Practicum)
E. **Prompts:** Reflection on Process / Evaluation of Product. Post onto Forum if taking course.

R. Discuss Misbehavior Strategies (where SCL meets 1:1). Key Topics:

<u>Allowing Free Time:</u> What do you do when individual students complete assigned work? Give enhancement work or let them be independent on their Chromebooks? What if they use the time to chat students in other classes? Does this build "good will" or support "bad behavior"? Google Chat is a way students demonstrate that they are not engaged - perhaps directions are unclear? Perhaps content is not a good match? See it as a problem to solve, not a challenge, if you can.

<u>Monitoring Student Behavior</u>: Which of these do you do?

- Students face away (so you see screens if you stay put)?
- Wander around and watch?
- Tolerate misbehavior as long as it doesn't distract others?
- Yearn for screen monitoring software?
- Yearn for chat to be turned off?

<u>How do you respond to "quick switch" behavior?</u>
- Impound computer / Warning / PBIS / ….

<u>How important is teacher agreement and enforcement on management?</u> Students adjust to each teacher, even when school norms vary. However, PBIS (Positive Behavioral Interventions & Support) model could be considered.

<u>How do you deal with "first period=first pancake" syndrome?</u>

S. Learn from Research
To help teacher educators, school leaders, technology facilitators, and staff developers expedite a teacher's transition from a management-oriented to a student-centered laptop classroom:

- **Technology Operations and Concepts: Plan for adequate technical support** and formalize a **plan to leverage student technical expertise** in response to teacher and peer technical support questions. **Promote a collaborative environment** where teachers are encouraged to **ask their peers and students questions**.
- **Planning and Designing Learning Environments, Teaching**: While initial professional development may focus on new tools and processes that make classroom management more efficient, **teacher training must also include strategies for curriculum integration.**
- **Assessment:** Train teachers to **alternatively assess non-traditional artifacts of understanding (e.g., projects, collaborations) through such mechanisms as rubrics and portfolios.**
- **Enhancing Professional Practice Through Technology**: Ask teachers what professional development they need, but realize **early concerns will be on managing classrooms**. Ideally, teachers will have **access to a technology facilitator and network of peers**.
- **Understanding Social, Legal, and Ethical Issues Related to Technology Use**: Establish student expectations through **student-parent orientations and acceptable use policies,** with **contingencies in place for rule breakers**.

Phase III: Develop [under construction]

Introduction

Describe what materials were created for your project and how they were created.

Instructional Materials[1]

Develop the curriculum content, activities, and assessments. If appropriate, develop instructor notes, including all pertinent information concerning instructional techniques, materials, timing and technologies. Develop any supporting materials, such as case studies, role-plays, group exercises and activities as applicable. If any elements of the instruction require the skills of other professionals to develop and are not included, describe the plan for development.

Phase IV-V: Implementation and Evaluation

Evaluation Plan

Describe how you will evaluate the success of the project. Describe the type of evaluation that will take place, who the participants will be, and how data will be collected. Use Kirkpatrick, or other research-based model(s). Include both formative and summative evaluation strategies and materials.

Improvement Plan

If you are able to conduct a formative assessment of some of your materials, present the data and planned improvements.

Bibliography

Bingimlas, K. A. (2009). Barriers to the successful integration of ICT in teaching and learning environments: A review of the literature. *Eurasia Journal of Mathematics, Science & Technology Education*, *5*(3), 235-245

Brinkerhoff, J. (2006). Effects of a long-duration, professional development academy on technology skills, computer self-efficacy, and technology integration beliefs and practices. *Journal of Research on Technology in Education*, *39*(1), 22-43.

Johnston, M. P. (2011, February 8). *The school librarian as a technology integration leader: enablers and barriers to leadership enactment. Proceedings of the 2011 iConference* (pp. 691-693). ACM.

Kopcha, T. J. (2012). Teachers' perceptions of the barriers to technology integration and practices with technology under situated professional development. *Computers & Education*, *59*(4), 1109-1121.

Lehman, J., Park, S., Cramer, J., Grove, K., & Ertmer, P. (2003). Barriers to teachers' adoption and use of technology-supported learner-centered pedagogies. *Society for Information Technology & Teacher Education International Conference*.

Lowther, D. L., Inan, F. A., Daniel Strahl, J., & Ross, S. M. (2008). Does technology integration "work" when key barriers are removed?. *Educational Media International*, *45*(3), 195-213.

Oliver, Kevin, Jeni Corn, and Jason Osborne. "Using Educational Technology Standards to Gauge Teacher Knowledge and Application of One-to-One Computing at Implementatio n." *Society for Information Technology & Teacher Education International Conference* 2 Mar. 2009: 2032-2039.

Nanjappa, A. & and Grant, M. (2004). "Constructing on Constructivism: The Role of Technology." *Electronic Journal for the Integration of Technology in Education.*

Park, S. H., & Ertmer, P. A. (2008). Examining barriers in technology-enhanced problem-based learning: a performance support systems approach. *British Journal of Educational Technology*, *39*(4), 631-643.

Todorova, A., & Osburg, T. (2010). Professional development program for technology integration: facilitators and barriers to sustainable implementation. *Literacy Information and Computer Education Journal (LICEJ)*, *1*(1), 59-66.

Walker, L. R., & Shepard, M. (2011). Phenomenological investigation of elementary school teachers who successfully integrated instructional technology into the curriculum. *Journal of Educational Research and Practice*, *1*(1), 23-35.

Watson, Glenice. "Barriers to the integration of the Internet into teaching and learning: Professional development." *Asia Pacific Regional Internet Conference on Operational Technologies* Feb. 1999.

Wenglinsky, H. (1998). Does it compute? The relationship between educational technology and student achievement in mathematics. *Educational Testing Service Policy Information Center.*

Wisniewski, S. (2010). Principals' Perceptions of Strategies for Offsetting the Barriers to Technology Integration in Elementary Schools in New Jersey. Seton Hall University.

(2011). Focus Groups - University of Wisconsin-Madison. Retrieved March 21, 2015, from http://oqi.wisc.edu/resourcelibrary/uploads/resources/Focus_Group_Guide.pdf.

(2014). Barrier Analysis: A Tool for Improving Behavior Change ... Retrieved March 21, 2015, from http://barrieranalysis.fh.org/.

(2014). Policies and Procedures: Issues for Procedures: Issues for ... Retrieved March 21, 2015, from http://challengingbehavior.fmhi.usf.edu/explore/policy_docs/11.2006_policies_procedures_smith.pdf.

Appendix 1: Clarity Research

http://www.iowaaea.org/what-is-clarity/
A. **Production:** [At Least Weekly %, Monthly %, Every Few Months %, Never %]
    1 Students Write Online: 10,23,3,63
    2 Students Use Online Space for Docs: 73, 3, 7,17
    3 Students Collaborate Online with Students 33,23,13,30
    4 Students Collaborate Online with Teachers 33,23,10,37
    5 Students Use 1:1 In Class: 73 (almost daily),16,3,3,7
B. **Assessment:** [At Least Weekly %, Monthly %, Every Few Months %, Never %]
    1 Students use Online Testing: 27, 30, 23,20
    2 Students use Online Formative Assessment (Polls): 23,23, 17,37
    3 Students give Peer Feedback in Class: 27,23,10,40
    4 Students give Peer Feedback Online: 10,10, 0, 80
C. **Personalization:** [At Least Weekly %, Monthly %, Every Few Months %, Never %]
    1 What Students learn:
        a Conduct Research: 43,33,13,10
        b Collect and Analyze Data: 17,40,13,30
        c Identify and Solve Authentic Problems: 27,30,13,30:
        d Get Online Info: 40,10,7, 43
        e Cite Online Sources: 32, 34, 21,13
    2 How Students learn it:
        a Online Course Material, 60,17,3, 20
        b Homework Online: 63,10,3,23
        c Online Audio & Video: 37, 20, 13, 30
        d Digital Textbooks: 40,10,7,43
    3 How Students showcase their learning:
        a Present Slideshows: 23,33,17,27
        b Create ePortfolios: 3,23,10,63

Only 10% of teachers reported their students write online at least weekly, 23% monthly.   62% never do. This is significant for the course because writing online is a crucial part of 1:1. How can 50% be doing 1:1 well without this?   It is possible that teachers did not interpret "write online" as students creating Google documents. This needs to be clarified.

Almost three quarters of AHS teachers report using 1:1 in classes almost daily. This validates Dr. Dillon's estimate that 50% use 1:1 well, 25-30% use it but not well, and 20% do not use it.

Although Google Forms, used with the Flubaroo add-on, automate testing and formative assessment, only 27% of teachers have students use online testing weekly. This is a powerful opportunity to streamline their work and increase feedback, and should be included in the online course.

Very few (10%) teachers use Google Apps regularly to facilitate peer feedback. Because this is a powerful use of 1:1 and also requires a student-centered learning approach, it is a fit target for the online class. 1:1 is a powerful opportunity for students to get data from online documents (either teacher-created or on the web) and analyze them in a way that integrates all subject areas.

Appendix 2: Target Population Interviews.

1	PBL Course	If we offered an online class on 1:1 Project Based Learning, would you take it? Why/Why Not?	Closed=>Open. ID Interest
2	1:1 Course	If we offered a class on managing 1:1 classes, would you take it? Why/Why Not?	Closed=>Open. ID Interest
3	Online PD	Have you taken online courses before? What worked well? What did not?	Closed=>Open. ID design.
4	Vision of Good 1:1	Describe a 1:1 lesson you ran that went particularly well. Why does that stand out in your mind?	Open. ID values.
5	Goals for Good 1:1	Describe a 1:1 lesson you heard about another teacher using that interested or inspired you. What did you like?	Open. Get sense of peer shares.
6	Student-Centered Learning	What does "student-centered-learning" mean to you? Are you trying to do more of it in your classes? How is that going?	Open. ID understanding of underlying approach.
7	Behavior Management	In your 1:1 lessons, how do you deal with student misbehavior (going off task, not following directions, breaking the acceptable use policy)? How do other teachers do it? What would make this less of a problem?	Open: Determine barriers and remedies.
8	Important Skills	What do you think the most important skills are for teaching effectively in a 1:1 environment?	Open: Reflection (if there is time)
9	General Tech Dept. Feedback	Is there any advice you would give our Tech Department about how to help more teachers succeed with 1:1 classrooms?	Open: Catch-All inspired by previous questions.

Appendix 3: Teacher Survey

Online Survey: ([goo.gl/ZPJ1fy](goo.gl/ZPJ1fy))

Course Design Survey: 20 Questions

We are designing a summer (and future) course that teachers will be compensated to take. The course purpose is to help everyone reach fluency teaching in a student-centered 1:1 classroom using Google Apps. This survey is anonymous. There are 20 questions, grouped in 4 pages of 5. Thank you so much for your focus on this!

Section 1 of 4: What you do now.

One model for an ideal 1:1 classroom builds on Google Apps, student centered learning, and technology integration specific to the subject you teach.

1. The Google skills below can help facilitate a 1:1 classroom. Please rank your experience with each. Exploring = trying out. If not exploring or using, leave blank.

	Exploring	Fluent
Google Classroom		
Docs (e.g. Commenting)		
Drive (e.g. Managing Folders)		
Forms (e.g Creating, Analyzing)		
Gmail (e.g. Filtering Mail)		
Google+ (e.g Teacher Networking)		
Groups (e.g. Student Discussions)		
Hangouts (e.g.Guest Teachers)		
Sheets (e.g. Formulas, Charts)		
Sites (e.g. Class Websites)		
Slides (e.g. Presentations)		

2. Which of these would you like to explore next?   See the list above. If unsure, put a question mark after it.

3. 1:1 supports student-centered learning models. Please rank your prior experience with these. This is not a complete list. Exploring = Trying Out. If term is unfamiliar or not using, leave blank.

Exploring   Fluent

Case Studies

Cooperative Learning

Discovery Learning

Formative Assessment

Game-Based Learning

Group Projects

Peer Teaching, Peer Review

Problem-Based Learning

Role Playing

Students as Teachers

4. Which of the above student-centered-learning activities have you ALREADY tried WITH 1:1? Refer to the list above. If unsure, add ?.

5. Which of the above student-centered-learning activities would you MOST LIKE TO TRY with 1:1? Refer to the list above. If unsure, add ?.

2 of 4: 1:1 Google Apps Experiences and Goals

This section focuses only on the teaching in a 1:1 configuration, when students use their Chromebooks.

6. Rate: "I use software to manage 1:1 classes (share assignments, give feedback, create tests.)" 1=Never, 2=Rarely, 3=Sometimes, 4=Frequently, 5=Always

  1 2 3 4 5

Never   Always

7. Which of the following activities would you like to try or improve using 1:1? You may recongize these from the Clarity survey you took earlier this year.

Teachers edit and share videos
Teachers post tasks online
Teachers create online tests
Teachers design online projects
Students present slideshows

Students share writing online
Students critique web sources
Students analyze online data
Students solve authentic problems
Students create eportfolios
Students collaborate online
Students give online peer feedback
Other:

8. Complete this sentence: "A 1:1 model, application or skill I would like improve soon is:" Something other than the list above... Your own words.

9. What change in your practice would help you meet 1:1 standards held for Affton teachers? If you are not aware of any standards or expectations, write "n/a". If you have met all you know of, write "none".

10.Which external support would help you grow faster? Pick the one that would help you most. Use "Other" if necessary.
Principal sets clearer expectations.
Teachers agreed about 1:1 rules.
Increase internet filtering level.
Turn chat off for students.
Give me software to see student screens.
Train students to provide peer support.
None of these.

3 of 4: Improving 1:1 Teaching, Removing Barriers

This section will help determine interest in the class we are developing. We will also explore other changes that could help more teachers move forward with 1:1 teaching.

12. Rate your interest in taking an online course for 4 weeks this summer (6hrs/wk), if compensated.

                  1   2   3   4   5

Not Interested   Very Interested

11. If you are not yet using 1:1 regularly or comfortably, pick UP TO THREE barriers below that are slowing you down.
No barriers - all good!
I don't have home Internet.
Other school pressures take precedence.
I just don't like computers.
I think computers are harmful.
I get stuck when things go wrong.
I have other priorities.
I am isolated by my schedule.

I don't have time to experiment.
If lessons go poorly I feel I have failed.
Students have too much power with computers.

13. Rate your interest in taking an online course with other teachers to share tips and tricks and discuss approaches.

                1   2   3   4   5

Not Interested   Very Interested

14. Rate your interest in taking an online course to learn how to design Project-Based Learning units for 1:1 classes.

                1   2   3   4   5

Not Interested   Very Interested

15. Rate your interest in taking an online course to learn how to manage 1:1 classes, including with Google Classroom.

                1   2   3   4   5

Not Interested   Very Interested

4 of 4: Designing Our Online Course

This section will focus on specific design elements for the online course, and provide a clear sense of which overall topic to focus on first.

16. Complete this sentence: When online courses don't work for me, it is usually because....

17. Which of these design elements would you want to see in the next online course you take?   NOTE: These are in mutually exclusive pairs! Read carefully.
Start with the basics
Assume we know the basics
Flexible Schedule (go at own pace)
Regular weekly schedule (all together)
Everyone learns the same thing together
Separate sections based on learner needs
Optional after-school Hangouts
Optional evening Hangouts
Use Google Classroom as Home Base
Use Schoology as Home Base

18. Which of these ideas would you like your next online course to use? NOTE: These are NOT in pairs. Chose whichever ones you like! Use "Other" if needed.
Searchable web manual of all info used
Attend with other members of my team
Give examples of completed assignments
Give expanded directions via screencasts
Provide follow-up coaching in school

Priority tech support for course learners
Choose tasks with immediate application
Promote peer collaboration and support
None of these
Other:

19. Pick the course you would take, if you had to pick one.
Google Classroom for 1:1 Management.
1:1 Management: Assigning, Commenting, Testing, Grading.
Student-Centered 1:1 Learning with Google.
Project Based 1:1 Learning with Google.
Making Google Sites for Classes and Projects.

20. aIf you are interested in the online course: What subject(s) do you teach? This will help us ensure that there are activities specific to your subject.
Math
English
Social Studies
Science
Other:

20.b If you checked a box above: pecifically, what subject? For example, if Science: Biology? Chemistry?

Appendix 4: Focus Groups

FACILITATORS: Robert Walker, Brian Esselman

OBJECTIVE: Develop a shared narrative about the process of moving from teacher-centered to student-centered classroom management.

COMPOSITION: A teacher-facilitator and group of 6-10 teachers from **each of these groups**:

- **"Naturals"**: Teachers who teach SCL **naturally**
- **"Converts":** Teachers who made the SCL transition **PRE-1:1** (no computers involved)
- **"1:1 Converts"** Teachers who made/are making the SCL transition **as part of 1:1**

FACILITATOR: A neutral third party with experience in group facilitation, skilled at probing participants' answers. Reacts in real time to the dynamics and nurture it into productive focus.

SETTING: A round table (or circle of chairs) **with food and coffee** (for a 1:30 meeting).]

PROCESS:

1. **PREP:** Setup room with recorder, coffee & food, flipchart / whiteboard. Test audio.

2. **FOCUS GROUP**: Follow the outline on the next page, in your own conversational tone.

3. **CLOSING**: At close of meeting, take a photo(s) of flipchart / whiteboard notes and email it to Bram, along with MP3 recording of the meeting. Include email addresses of all teachers attending so that notes can be emailed to them.

INTRODUCTION (conveyed by facilitator)

1. **Facilitator Role:** My role is only to guide discussion, probe for deeper answers, and record important data for research, in addition to the audio recording.
2. **Group Member Role:** Your group role is to uncover experiences, feelings and issues and to discover deeper answers by listening and responding to each other.
3. **Boundaries:** It is okay to get negative. What I record will be anonymous when transcribed. You will all receive a copy of the notes I will send to our course designer as a Google Doc, and can comment on anything you feel was not accurately reflected.
4. **Why SCL with 1:1? Go round or review.**
5. Student Centered Learning (SCL) is an ideal match for 1:1 because…..
6. With good SCL, there are fewer discipline problems with 1:1 because….
7. There is still a role for teacher-centered learning, but it is reduced.
8. **What is SCL?** Go round **with someone taking notes on flip pad or whiteboard**.
9. **Reports By Teacher SCL Situation**

INTRO: We are planning an online course to support teachers in making the shift from teacher-centered to student-centered learning. We will consider three perspectives:

1. **SCL Naturals:** Teachers who have always used SCL, or done so for many years.
2. **Pre-1:1 SCL Converts:** Teachers who moved to SCL before 1:1.
3. **1:1 SCL Converts:** Teachers who are moving to SCL as part of 1:1.

NATURALS: Who teaches like this naturally? Anyone may jump in.
- What values and assumptions lead you to SCL?
- What would a random visitor experience in your classroom?
- Describe an example or two of what works particularly well.
- What are your growing edges as a SCL teacher?

CONVERTS: Who made the transition PRE-1:1 (no computers involved)?
- Why did you do it?
- What was easy and how did it feel?
- What was hard and how did it feel?
- How did you solve the hard parts?
- What trade-offs have you accepted?
- What are your growing edges?
- Advice to new people making this transition?

1:1 CONVERTS: Who made the transition as part of 1:1?
- Why are you doing it?
- What has been easy and how did it feel?
- What has been hard and how did it feel?
- How are you solving the hard parts?
- What trade-offs have you accepted?
- What are your growing edges?
- Advice to new people making this transition?

Appendix 5: Technology Leadership Meeting

Meeting Goal: Orient administrators to support student-centered 1:1 classrooms, consider options.

ORIENTATION: Student-Centered Learning in a 1:1 Environment - Bob

1. **Why Adopt Student Centered Learning for 1:1 Classrooms?**
    a. SCL and 1:1 are mutually supportive.
    b. With good SCL, fewer 1:1 discipline problems.
2. **What does SCL with 1:1 Look Like?**
    a. Pedagogy: Examples
    b. Technology: Examples

REPORT: Analysis and Survey Results - Bram

A. **ANALYSIS: Where is Affton at?**
    1   Framework: Competency + Level (1.Not Exploring=>2. Exploring=>3.Fluent)
        a   SCL Paradigm Shift
        b   1:1 Classroom Management
        c   Project-Based Learning (PBL)
    2   Findings
        a   Clarity Survey: Highlights | Full
        b   Course Design Survey: Highlights | Full
        c   Research on Principal Involvement: Highlights

B. **BRIEFING: Online Course Plan**
    1   Goals: Target "Late Majority" (Rogers)
        a   Move from Exploring to Fluent (1.1=>1.2) in SCL
        b   Move from Exploring to Fluent (2.1=>2.2) in 1:1 Management
        c   Move into Exploring (3.0=>3.1) in 1:1 SCL PBL
    2   Teacher Preferences
        a   Asynchronous (not possible in Summer)
        b   Mentor Supports ("Early Adopters")
        c   Match to Subject Area and Skill Levels
    3   Full Plan
        a   Intensive Pilot: Humanities: 6 hrs/wk
        b   Fall Course: STEM +: 2 hrs/week
        c   Orientation (June), Course (August), ADDIE (2015-16), Summer Symposium

C. **DISCUSSION: Leadership Roles and Next Steps**
    1   Instructional Leadership Roles
    2   Building-Level Technology Planning

Appendix 6: Project-Based Learning Course Topics

I. *Student-Centered Project Based Learning Units with ADDIE: The Technology*

   a. *Webquest Project Re-Envisioned as Game-Based Learning*

   b. *Case Studies with Closed-Captioned Videos.*

   c. *Project Development with Google Site Templates*

   d. *Combining Teacher-Selected and Student-Searched Resources*

   e. *Applying ADDIE to Webquest Project Development*

IV. *Student-Centered Project Based Learning Units with ADDIE: The Pedagogy*

   f. *Cooperative Learning: Group Concept Maps with Draw*

   g. *Group Projects: Groups of 4 enable peer-activity switches.*

   h. *Jigsaw: Students develop slide presentations on Concept topics*

   i. *Peer Review: Students use checklist to review each other's slides.*

   j. *Students as Teachers: Slide Presentations with Response Forms*

Module 1: Tour: Student-Centered Project Based Learning with Google Apps *A guided tour of exemplary projects by discipline, highlighting structure (e.g. cooperative learning), technology (e.g. document commenting), readiness skills (student and teacher) and assessment methods (e.g. artifact examples and rubrics). Each resource will have a "tour page" on gappsforedu.com including a case study and resources and guides.*

Module 2: 1:1 Project Based Learning with Google Apps: Approach: *The biggest differences between the performances of typical and expert PBL teachers include:*
Collaborating with peers (Inter-grade / Interdisciplinary design partner & team discussions)
Class norms include self-evaluation, process reflection (Responsive. Classroom / Formative Evaluation)
Providing self-monitoring guidelines for students (Rubrics, Process Guides)

Module 3: 1:1 Project Based Learning with Google Apps: Independent and Peer Work with Reflection Posts, Status Forms, Artifact Rubrics and Process Guides: *Check-In forms are used at the start of independent work. Students declare where they are at in the process and what they will be doing. These can be used sequentially as each step is completed. Checklist forms enable peers to help each other meet performance criteria before moving to the next step. Student can also use Personal Project forms to keep track of a process long-term, if they have "edit my response" links. We will look at examples and how to use them.*

Appendix 7: Guide for Early Adopter Planning Hangout

GOAL: PLAN COURSE SUPPORT with early adopters (and technology director, 1:1 coordinator and assistant principal): Develop support plan for course.

1. Group Hangout Facilitation
2. Individual Hangout Support
3. Other Brainstorming

COMPOSITION: Early adopters, technology director, 1:1 coordinator (+ assistant principal?).

FACILITATOR: Neutral third party with experience in group facilitation and skilled at probing participants' answers. React in real time to the dynamics and nurture it into productive focus.

INTRODUCTION (conveyed by facilitator)

Objectives: Articulate shared understandings, discover needs and brainstorm ideas to develop a support plan for the upcoming online course pilot, focused on helping teachers learn to adopt student-centered blended learning as part of our 1:1.

Next Steps: You will all receive a copy of the notes I will send to our course designer as a Google Doc, and can comment on anything you feel was not accurately reflected.

MEETING OUTLINE

A. **INTRO (see Above)**
B. **COURSE PLAN (Presentation)**

   1. **Setup:** Everett Rogers described the diffusion of innovation along four stages, which we are applying to 1:1:
      a. Early Adopters (you)
      b. Early Majority (those who learn from peers and are doing well)
      c. Late Majority (those who are struggling and stuck)
      d. Laggards (those who will not make the effort unless forced to).

   2. **Course Goal** is to bring all "late majority" (teachers who are attempting 1:1 now but with difficulty) to effective practice, along three stages:
      a. 1:1 Classroom Management with Google Tools (incl. Classroom)
      b. Student-Centered Learning Management with Google Tools
      c. Student-Centered Learning Unit & Project Design

   3. **Design Goal** is to have no active instructional presence. Online course will provide resources, videos, assignments, and tools, but all interactions will be peer-to-peer. Examples: Peer review of assignments, peer support for troubleshooting.

   4. **Support Plan:** For this course design, "Early Adopters" are teachers who have taken student-centered blended learning with 1:1 further than anyone else here, and thus can provide guidance. You are not viewed as local leaders.

C. **SUPPORT PLANNING (Discussion)**

1. **Intro:** We are going to consider various ways you can make the online course easier for teachers who struggle with online learning, and provide guidance through stories of your own experiences and discoveries.

2. **Group Hangout Facilitation**:
   a. In surveys, teachers said they need human contact, not just written instructions. They also said they want to learn from other teachers what works, share successes and issues.
   b. We would like to hold 2 hangouts per week during August, one in the afternoon, and one in the evening.
   c. For each week, there would be a very brief online: a tech topic, a topic related to the assignment, and then open Q&A.
   d. Week by week, who can take responsibility for facilitating (setting up Hangouts on Air for recording, providing guidance to attendees to share screens, etc)? Use referenced Planning Sheet to sign up.

3. **Individual Hangout Support:**
   a. In surveys, teachers expressed frustration when they get stuck on a tech issue and can't make course progress until an instructor gets back to them, often 3 days later.
   b. Teachers will be experiencing difficulty and need to share their screens as they show what they struggle with.
   c. Who can take responsibility for responding to support requests within 1-2 days, helping teachers use screen sharing? Which weeks could you sign up for?

4. **Other Brainstorming:**
   a. In surveys, teachers expressed a lack of time to experiment or get one-on-one support as they learn.
   b. How else can early adopters help during an online course? Let's brainstorm. Starter examples:
      a) Moderate forum discussions
      b) Respond to Q&A forum requests

Vitae: Martin Bram Moreinis

39 Linden Avenue / Greenfield, MA 01301 / 845-750-2412 bram@empowered-teacher.com

CURRENT WORK

Consultant, Empowered Teacher: 2009-Present
Software: Articulate, Captivate, Camtasia, Google Apps, Dreamweaver, Moodle, Blackboard, etc.
Recent Courses: Building Social-Emotional Health, Tech for Teachers, Google Apps for Schools

Consultant, Educational Collaborators: 2011-Present
Web development, course design and technology consulting with school-based educators.

EDUCATIONAL TECHNOLOGY WORK

- **Technology Integration Specialist,** Caledonia Schools, VT: 2011-2013
- **Principal,** Game Face Web Design, LLC**:** 2005-2009
- **Technology Coordinator,** Taconic Hills Central Schools, NY: 2003-2005
- **Computer Science Teacher**, Hudson City Schools, NY: 2001-2003
- **Director of Technology,** Poughkeepsie City Schools, NY: 1997-2001
- **K-12 Coordinator,** Institute for Learning Technologies, Teachers College, NY: 1994-97
- **Education Center Director,** Hudson Guild Settlement House, Manhattan, NY: 1992-94
- **Curriculum Developer & Trainer**, Kingston Adult Education, Kingston, NY: 1990-92

EDUCATION

- ❖ **M. Ed.**   **Instructional Design:** UMass/Boston, expected 5/2015
- ❖ **Cert.**   **Instructional Technology Design:** UMass/Boston**,** 12/2014, GPA 3.9
- ❖ **M. Ed.**   **Educational Administration**: Teachers College, Columbia University, 1996
- ❖ **M. A.**   **Elementary Education**: Teachers College, Columbia University, 1985
- ❖ **B. A.**   **English Literature:** Columbia College, Columbia University, 1984

INSTRUCTIONAL DESIGN REFERENCES

- ❖ **Steven Schatz**, Professor: Steven.Schatz@umb.edu 860-966-5295
- ❖ **Alex Inman,** Supervisor: alex@educollaborators.com 202-999-9824
- ❖ **Jean Welsh,** Supervisor: jwelsh@lexialearning.com 617-512-8500
- ❖ **Emily Leone,** SME**:** emily@docsfortots.org, 585-654-4732
- ❖ **Dina Lieser,** Client: dina@docsfortots.org, 917-656-9457
- ❖ **Caleb Clark**, Co-Instructor: cclark@gradschool.marlboro.edu 802-258-9207

EPORTFOLIO

http://myinstructionaldesigns.com

Reflection PAPER*

Write a 1-2 page reflection on the process. What did you learn? What worked? What didn't? What would you do differently in the future? (**Note:** This is the *only* section of your project that should be written in the first-person.)