**Abstract:** This study was completed at a small, rural Middle School (SRMS) is a small rural school on Hawaii Island, serving grades six through eight in the South Kona district. SRMS recently adopted Google Apps for Education (GAFE) as a tool to facilitate teaching and collaboration between teachers and teachers and students. To allow teachers who need guidance or support using GAFE tools, the researcher designed a web-based, self-paced learning module geared towards SRMS’ faculty needs, on how to use the basic GAFE tools. Faculty were invited to participate in the evaluation of the website and provide data and feedback on how the website was able to meet the needs of faculty members in teaching them how to use GAFE tools and in making them more comfortable using GAFE tools as a collaboration and teaching tool. The study revealed the modules that presented basic knowledge on how to use GAFE tools as a collaboration and a teaching tool were most in need for members of the SRMS faculty with a low comfort levels of GAFE tools. However, the research results also revealed that besides written instructions, a more basic step by step approach, coupled with short instructional videos were preferred for each of the GAFE basic tools and were preferred over detailed written instructions.

**Introduction**

This small rural Middle School (SRMS) is a small, rural middle school serving 6th, 7th and 8th grade students from the middle of the North Kona district to the northern edge of Ka’u District on the west side of Hawaii’i Island. SRMS is at its infancy stages of adopting and integrating GAFE. A few teachers, myself -the researcher- included, spearheaded the movement and received permission from administration to start setting up GAFE at SRMS in the second half of 2014. Since then, faculty’s common concerns about adopting GAFE tools have included a lack of technical knowledge, security concerns for both our students and faculty, and communications limitations with regards to special needs students. Because GAFE servers do not have the security required from Hawaii DOE, communications that include identifiable data and other confidential
information should only be conducted through the Hawaii DOE Lotus Notes system, not only to protect student information, but also to comply with Hawaii DOE guidelines regarding identifiable data (Sultan 2010).

While many schools successfully adopted GAFE as either a collaboration and teaching tool or, in addition to the Drive application, Gmail as their sole communication tool, SRMS faculty reiterated their concerns about identifiable data and their unfamiliarity with GAFE tools. In order to respond to these concerns, facilitate collaboration among faculty, and incorporate GAFE tools as a teaching tool, the researcher created a series of self-paced, online learning modules covering the most basic applications within this learning environment. It was my intention to create a module that would allow the SRMS faculty to have convenient and user specific resources accessible anytime, anywhere and housed on the school’s GAFE cloud (Railean, 2012). The purpose of this Instructional Design Project and research was to first, design and evaluate a Google Site e-Learning module created for the purpose of teaching the use of GAFE tools to SRMS faculty, and secondly, to evaluate the effectiveness of this learning module in teaching the use of GAFE tools to faculty at SRMS as a means to facilitate teaching and collaboration between teachers and students, and collaboration among teachers. My goal was to assess teacher receptivity to learning GAFE tools, comfort using these applications, and actual increase in the use of GAFE tools as a teaching and collaboration tool in the classroom.

**Literature Review**

Google Apps for Education was originally launched in 2006. Many colleges and universities started using GAFE right after its launch. Arizona State University (ASU) was one of the first schools to adopt GAFE tools that year (Google, n.d., Barlow & Lane, 2007). The process of moving over 65,000 students, faculty and other staff took merely two weeks, and proved to be a successful tool to increase communication, collaboration and productivity at ASU. Colorado State University (CSU) also adopted GAFE tools just a few years later and also reported an increase of collaboration between faculty and students, and reported that their Information Technology (IT) and technology needs were simplified and streamlined by adopting GAFE, along with using these cloud-based tools in a meaningful way (Herrick, 2009). Since its launch, GAFE has been widely adopted by universities, colleges and public and private schools, including the University of Hawaii campuses and this small, rural Middle School, as a means to store, share and collaborate on documents and files in the Cloud, without having to use valuable financial and other resources. Since the GAFE launch, Google has also added many other apps and tools to the initial Docs and Sheets application. These added apps and services have also made a significant improvement of collaboration between teachers and students (Oishi, 2007).

While GAFE tools are relatively simple tools on their own, combining them in a closed, school-based server allows these tools now to become a powerful collaboration tool. Integrating GAFE into a regular classroom, such as at SRMS, allows for technology integration, flipped classroom approach, differentiation to address different learning
styles without losing the face-to-face aspect of a regular classroom setting (Johnson, Aragon, & Shaik, 2000).

Project Development

After SRMS adopted GAFE and issued user accounts for all faculty, staff and students, some of the younger generation and more technology-savvy teachers jumped right in and started using GAFE as a teaching and collaborating tool. However, the majority of our teachers were skeptical and apprehensive about using GAFE. This hesitation resulted in administration straddling the fence about keeping GAFE at SRMS. As one of the GAFE spearheads and proponents at our school, I decided to create a basic learning module so that our faculty and staff can learn how to use the GAFE tools at their own pace, or use the modules as a resource (see Appendix G). These modules are intended as a self-help learning tool for SRMS faculty and staff, rather than mandatory professional development requirement.

The learning modules were designed to explain the minimum knowledge needed for learning, teaching and collaborating with the use of basic Google tools, such as Gmail, Google Drive, Google Docs, Sheets, Forms, Slides and Google Classroom. Google Drive was first used at SRMS as a collaboration tool about six years ago for a Western Association of Schools and Colleges (WASC) accreditation paper and self-study. At that time, the majority of faculty complained and initially refused to collaborate, mainly because of the very basic and clunky version of Docs. While GAFE tools since then have become significantly more user-friendly, I tried to facilitate the transition to a free, cloud-based tool, and cater to faculty members apprehensive about change or asking for help in new situations, I created a web-based module to help faculty learn to use GAFE tools at their own discretion.

Shortly after setting up GAFE at SRMS, and creating accounts for all faculty, staff and students at SRMS and issuing them their login information, I was reminded by faculty about the lack of user knowledge of Gmail, Docs, Sheets, etc. I decided to then ask faculty what they needed to feel more comfortable using GAFE, and how they felt about technology. This informal front-end analysis of my intended learner allowed me to find out what the module needed to explain and how detailed this explanation had to be (Dick & Carey, 2009, Reigeluth, 2013). Using backward design, and keeping in mind on how to meaningfully incorporate a Google site as a teaching tool I created a post-test to assess what our faculty needed to know to be adept in using, and be more comfortable with GAFE as a tool for both teaching and collaboration (Reiser & Dempsey, 2012). I then drafted module information addressing the test questions to ensure basic user knowledge of GAFE tools on a Google Doc and copied that content to Google Sites. The information provided in the module would have to be detailed so that teachers can then use GAFE in a meaningful way as a teaching and collaboration tool while also incorporating some of the technology that was in their classrooms already, such as large digital television, Promethean Boards (interactive whiteboard) and other imaging projecting equipment (Vissa, 2014). I also created two surveys, one given before the pre-test to gauge how
participants feel about the use of technology in general, the use and comfort-levels of GAFE, and their preferences on how to access and complete a self-paced instructional module.

The second survey, also using Google Forms, was given after completion of the module and post-test to measure any changes in user knowledge and comfort levels with using GAFE tools. This survey was designed to gain information on how the participants experienced the module, to gauge if participants felt the module increased their knowledge and use of, and comfort-levels with GAFE. The survey also allowed participants to give any other feedback about the learning module, such as preferences, ease of navigation, content, and any other type of feedback they wanted to give. The assessments and surveys were designed so that I would also be able to gauge the participants’ experiences while using the web module and how learning took place. This information then allowed me to plan for any reiterations of the site to improve the learning experience as part of this instructional design (Clark, 2002).

I used school mailboxes and email to send study recruitment letters to SRMS faculty and staff (see Appendix B). From the forty-five invitations sent, eleven members consented to participate in the study. Once I received confirmation of interest to participate, I sent links to the digital consent form and intake survey to establish the initial measure for participant comfort in using technology in general, and GAFE tools specifically. Once these documents were completed, I sent a link to the pre-test, then learning modules, and after completion of module, the link to the post-test. I sent these links as I received signed consent forms and completed intake survey confirmation within a two week time frame. Finally, after recording post-test responses, I sent participants a link to the exit survey to measure how using the module had affected participant comfort levels in using general technology and GAFE tools. At the end of the data collection period of this study, only six members of SRMS faculty and staff completed the whole cycle of the assessments, module review and surveys.

Methodology

Subjects
I obtained permission and IRB approval from the University of Hawaii at Manoa (see Appendix A), and a data sharing clearance from the Department of Education (DOE), along with the support of my principal at SRMS. Participants were members of the SRMS faculty and staff. I sent digital consent forms to all volunteers who had voiced interest in the study (see Appendix C). This ensured a varied group of participants, representing the various ages, technology abilities, genders, and ethnicities within the existing faculty. While participation in the study was encouraged, faculty members could opt out at any time.

Instrumentation
I conducted an informal needs analysis, using in-person interviews with eighty-five percent of SRMS faculty about what they believed they needed to become more adept
using GAFE tools. This was completed the fall semester prior to this study so that I could ensure the learning modules were sufficient in meeting the faculty’s GAFE informational needs. I also asked faculty members on what they would have liked to have available to use as resource on the basic use of GAFE tools and how they would ideally use GAFE as a teaching and collaboration tool in their own classroom. This was a very organic process based upon my own observations during the previous WASC accreditation processes, and faculty’s reactions when GAFE became available to our faculty. Further anonymous surveys using Google Forms and informal interviews gathered information on the demographics, including computer and technology ease of use, prior Google knowledge, and preference on how GAFE training would be delivered and completed. Besides questions on the instructional design aspect and content of the web module, I also included questions in the assessments and surveys that revealed information on the ease of use and navigation of the web module.

I started by designing the post test to insure usable knowledge of GAFE tools were acquired after completing the module (see Appendix E). The pretest was the identical test to the post assessment to ensure that I was able to identify any increase of user knowledge between pre and post test results. The surveys and assessments prior and after completing the module also contained a few questions to gauge the ease of use of the web module (see Appendix D). The main questions that gauged the instructional design were asked ensure that the online learning modules delivered the learning material as intended. These questions also gauges if the learning material met the needs of SRMS faculty in becoming more comfortable in using GAFE tools as a means of collaboration. I used surveys via Google Forms to gauge module effectiveness, gather suggestions, and report difficulties encountered while completing the modules, tests, and surveys.

**Implementation**

Planning, including a very informal needs analysis, required four weeks during the Fall of 2016. The implementation of the usability study, including revisions and multiple rounds of testing used about three weeks during December 2016 and January 2017. Surveys on perceived ease of use and test runs through the pre-test modules, and post-test, along with data analysis and follow-up interviews, required three-week period in the first few months of 2017. To conclude the study, re-evaluating module improvements and producing the final report required another three weeks in the latter half of March of 2017.

**Data Analysis**

Prior to completing the webmodule, my participants completed an intake survey (Appendix D) and pretest. Upon completion of the webmodule, I sent the participants links to to post-test and exit survey. I designed the questions asked in surveys and assessments so that the answers from study participants would reveal information on the effectiveness of the content and of the GAFE learning modules (see appendix D and E). The types of questions I used were multiple-choice, short answer, open-ended and Likert-scale questions. I utilized Google Forms to execute the surveys and pre- and
post-tests because of the easy and convenient data export into Google Sheets, and the analysis tools that are embedded into this application. I collected data to find answers to the research questions regarding the GAFE learning modules. Surveys, pretests and posttests, used Likert-scale, short answer, multiple-choice, and open-ended questions. In addition, a pre-test and a post-test were completed before and after completion of the web module, respectively.

Data results from intake surveys showed that participants varied in their comfort in technology use. Based on informal interviews and survey responses obtained prior to completing the eLearning module, I was able to deduce that participants had varied comfort-levels and knowledge of computers and GAFE tools. This discovery allowed me to receive feedback and data from learners of different levels and abilities. The average level of comfort using a computer was 3.66 out a five-point Likert scale, while comfort levels using the Internet was 3.83 out of a five-point Likert scale. The reported comfort and knowledge of GAFE tools was lower, with only 2.5 on the same scale. While the basic GAFE tools had a three out of five comfort level, more specific GAFE tools, such as Google Forms and Sheets, the comfort levels dropped significantly to a one out of five scale for more than half of the participants. The participant did share that they use the Chrome browser on a regular basis, mostly because on the use of Chromebooks in their classrooms. While some of the participants revealed limitations in knowledge and use of the Internet and GAFE tools, they also wanted self-paced asynchronous training modules that are available at any time and from any place. However, I also found that only fifty percent of the volunteers preferred online modules. Participants had their own learning styles and preferences on how learning takes place and how activities are completed (Johnson et.al., 2000). Participants also revealed that they valued short, instructional videos on how to complete tasks in the GAFE environment, and that they found that the interactive components helped them learn on how to use GAFe and helped them to understand the how-to and rationale of GAFE.

The pretest revealed that participants had some functional basic knowledge of the common GAFE tools, such as Docs and Slides, mostly because these application function very much like the more commonly used commercial word processing and presentation programs. Participant did not have collaboration and sharing knowledge of GAFE embedded tools such as looking at revision history in a shared project, or the types of data on can display and link in Sheets. Five out of six participants were also not able to identify how the Google Classroom application could be used to create a flipped classroom or used to provide feedback or embed differentiated instruction. Similarly, none of the participants were able to identify the collaboration functionality in Docs and Drive in general. The participants were only able to identify 37% of the correct answers on the pretest. Figure 1 illustrates the varied answers participants gave. From the four correct possible options, none were identified as all valid options to create a flipped classroom. None of the participants were able to identify that all the answer options were all correct. Figure 2 displays how participants were able to recognize some of the options as collaboration tools, without being able that all the options were correct options.
Figure 1: Pre vs. Post answers on ways to create a Flipped Classroom in Google Classroom

Using Google Docs and Google Drive for collaborative learning, gives teachers the tools to: (Select all that apply.)

(6 responses)

- Facilitate collaboration: 4 (66.7%)
- Monitor progress: 1 (16.7%)
- Check for understanding: 1 (16.7%)
- Provide feedback: 3 (50%)
Once participants completed the intake survey and the pretest, they were emailed a link to the eLearning module. I did not provide them a time limit to complete the module, and I did not require the content to be completed in a certain order. This would mirror on how one would navigate the site to look for instructional resources in a real-life setting. When a participant completed the module, they were to contact me, in order to receive the link to the post test, and upon completion of the post-test, the link to the exit survey.

The post test revealed that participants did acquire the knowledge on how to use GAFE tools as a whole, and showed significant increased user knowledge and understanding of teacher-student collaboration and feedback abilities (see Appendix F). Participants were able to identify 82% of the correct answers. Figure 3 shows how all participants now were able to identify that suggesting edits was the correct way to give students feedback by indicating suggestion needed to improve the quality of their work.

If you want to advise simple changes to student work (such as adding a comma) but do not want to directly edit the document, you could take advantage of this feature in Docs:

Pretest
Once all the participants completed the exit assessment and survey, I calculated the average gains of knowledge based upon comparing the percentage of correct answers for each question in the pretest with the percentage of correct answer for each question in the post test. All the questions in the assessment showed an improvement after completing the module. Some of the results indicated that participants were now completely able to identify correct collaboration and feedback tools, which they were not able to identify prior to completing the module. One of these questions was “If you want to advise simple changes to student work (such as adding a comma) but do not want to directly edit the document, you could take advantage of this feature in Docs:”. The possible options given, with the instructions of checking the one correct answer, were: “suggest edits”, “revision history”, “Add-ons”, and “public sharing”. In the pretest only two out of six participants were able to identify that suggesting edits was the correct choice. After completion of the module 100% of the participants were able to correctly identify that option, which is a significant improvement of over 200% in using the feedback tool that is embedded in the GAFE environment. Compared to the pretest, all participants showed an improvement of 121.62% between the initial and the final assessment. I calculated the average of correct answers in pretest and in the posttest. The average of correct answers in pretest was 37% while the average of correct answers in the posttest was 82%. Then I calculated the percentage increase by dividing the increase by the average of the pretest, then multiplying that result by 100%. The exit survey also revealed that participants reported an increase use of GAFE tools, Gmail, Docs, and Slides specifically, in daily classroom activities. The participants also reported an increase in the use of the Chrome browser and the use of GAFE tools planning and collaboration within their teams and departments.
All of the participants indicated that the module was easy to navigate and that the content was meeting their needs in helping them increase their user knowledge and comfort with using GAFE tools, especially for Google Docs, Sheets and Slides. All of the participants indicated they now use GAFE tools more in the classroom than before, three out of six participants also indicated they now also have started to use Google Classroom with their students, and therefore also have increased the use of GAFE tools in both teaching and facilitating collaboration among their students. Four out of six participants voiced that they would have like more videos and less written content to teach the concepts, while one participant indicated that the interactive component and the ability to do the task as they went through the instruction, allowed them to better understand the concept because they were able to do the task while they were reading the content or watch the video.
Conclusion

The cognitive approach of my instructional design project was indeed to allow the reader to go through the steps and the learning process from a hands-on approach, doing while learning. This allows for the processes to be retained better and to become now part of the user knowledge (Tam, 2000). While only six members completed the study, I understand that this study only revealed a limited amount of valid information. One of the hurdles I experienced, was that the execution of my study fell immediately after our school went through the WASC accreditation process, and all of us, faculty, staff and students had spent over a month in finalizing our self-study and preparing for the WASC accreditation visits. Once the WASC visit was completed, some of our faculty also started their mid-term teacher effectiveness evaluation. These two events led to a significant lack of participation in the study, in comparison with the initial interest in participation in the study.

Although faculty were initially hesitant and sometimes resistant to implement GAFE in their classrooms, the learning modules have proven successful in instructing faculty on the use of GAFE as a collaboration, teaching and learning tool. Based upon some feedback that some participants preferred more videos or other visual tools versus all text, that I will improve the effectiveness of my eLearning site, and make it more accessible to different learning styles. In addition, I believe that by keeping the learning modules web site current and improving modules as Google releases new GAFE features, this instructional design project will have a significant positive impact on collaboration and teaching for veteran and new teachers. By increasing the visual instruction, such as pictures and how-to videos, and by making sure the topics covered in the module are up to date and in line with what Google keeps, adds or subtracts from the GAFE tool repertoire, that more of our faculty will refer to the module as their discrete go-to resource, and therefore also have a positive impact on the increased use of GAFE tools in the classroom as a teaching, learning and collaboration tool. I believe by expanding the module beyond the basics, such as adding topics on embedding various chrome, docs, sheets and other extensions or add-ons, such as rubric tools (i.e. Doctopus, Goobric,
Orange Slice, etc,) and other feedback tools, that our faculty will be able to teach themselves how to improve their own 21st century skills at their own discretion.

GAFE tools not only have the ability to increase the use of technology in the classroom in a meaningful way, but it also allows our students to become exposed to, and learn how to use 21st Century Cloud tools from early on. As a result, this would then have a significant positive impact on the overall student learning experience, but also an improved collaboration among faculty. The latter two events would therefore also reciprocal positive influence: over a relatively short amount of time, teachers would increasingly become more comfortable using GAFE as a meaningful teaching and learning tool, while also improving collaboration and communication among students and teachers.

Reflections and Recommendations

As an educator, and being part of an organic group of collaborators, I believe it is imperative to make sure to inform colleagues of the intent of the rationale and research, prior to inviting anyone to a research project. Keeping in mind that the participants were all contributors to a major task within the scope of their profession, in this case, participating in a major accreditation task and teacher effectiveness evaluations, it is important to make sure you allow enough time for volunteer participant to complete all the components you intend to test and research. In my case, I would have been able to collect significantly more data if I had started the data collection several weeks, if not months, earlier to our school’s WASC accreditation procedures and end-of-year teacher evaluations. Time management and making sure that one keeps ahead of self-implied deadlines are also important to complete a research project using professionals as participants or subjects. In retrospect, knowing now that only six individuals completed the whole cycle of the research process, I would have started recruiting participants several months earlier, even with the post test, intake survey and eLearning module not being finalized at the time of recruitment. From my experience now, I believe it is important to be organic and flexible and not let premade instructions or believes limit yourself in creating a web-based teaching module, or any kind of project. Sometimes, in the process of completing an experiment, it might be more important to be able to adjust the scope, hypothesis or time frame of the research versus completing the data collection on the research questions. Creating a Plan B, Plan C, and even maybe, a Plan D, to recruit participants and collect valid data, might be even more valuable than creating a best-case scenario procedure of recruiting participants and collecting data. Assume that what ever can go wrong, will go wrong, and allowing Murphy’s Law to be your ally instead of foe, and allowing yourself extra time to collect data, might be the better way to go as a researcher.
References


Appendix A: UH IRB Approval Notice

TO: Ho, Curtis, PhD, University of Hawaii at Manoa, Department of Learning Design and Technology
Cummins-Van Herreweghe, Mia-Pia, Master's Candidate, College of Education, University of Hawaii at Manoa
FROM: Lin-desheeter, Denise, Dir, Hum Stds Prog, Social&Behav Exempt
PROTOCOL TITLE: ALL ABOUT GAFE A Study on a Learning Module on the use of Google Apps For Education at Konawaena Middle School's Faculty
FUNDING SOURCE: NONE
PROTOCOL NUMBER: 2016-31008

NOTICE OF APPROVAL FOR HUMAN RESEARCH

This letter is your record of the Human Studies Program approval of this study as exempt.

On November 16, 2016, the University of Hawaii (UH) Human Studies Program approved this study as exempt from federal regulations pertaining to the protection of human research participants. The authority for the exemption applicable to your study is documented in the Code of Federal Regulations at 45 CFR 46.101(b)(2).

Exempt studies are subject to the ethical principles articulated in The Belmont Report, found at the OHRP Website www.hhs.gov/ohrp/humansubjects/guidance/belmont.html.

Exempt studies do not require regular continuing review by the Human Studies Program. However, if you propose to modify your study, you must receive approval from the Human Studies Program prior to implementing any changes. You can submit your proposed changes via email at uhirdo@hawaii.edu. (The subject line should read: Exempt Study Modification.) The Human Studies Program may review the exempt status at that time and request an application for approval as non-exempt research.

In order to protect the confidentiality of research participants, we encourage you to destroy private information which can be linked to the identities of individuals as soon as it is reasonable to do so. Signed consent forms, as applicable to your study, should be maintained for at least the duration of your project.

This approval does not expire. However, please notify the Human Studies Program when your study is complete. Upon notification, we will close our files pertaining to your study.

If you have any questions relating to the protection of human research participants, please contact the Human Studies Program by phone at 956-5507 or email uhirdo@hawaii.edu. We wish you success in carrying out your research project.
Appendix B: Recruitment Letter

Dear Colleague,

As part of my Master’s in Learning Design and Technology at the University of Hawaii at Mānoa, I am doing a research study on an Instructional Design Project. The purpose of this Instructional Design Project is to create and evaluate the effectiveness of a self-paced Google Sites learning module on the use of Google Apps for Education tools for faculty at our Middle School. I am hoping that the learning module will facilitate collaboration among SRMS Faculty and therefore also facilitate the use of GAFE in the classroom as a meaningful teaching tool.

I would like to invite you to be part of my study. As a participant you will review and give feedback if learning is taking place along all the sections in the learning module. This feedback and other input will be in the form of surveys, screen recordings, or in-person interviews and will be in the form of pre- and post-tests embedded in the learning modules. Surveys using Google forms will allow you to give me feedback on your learning experiences working through the learning module.

As a participant, you will have to have access and be willing to use your SRMS Google account, internet and telephone. In the next several months you might be asked to participate on about four occasions about 2-3 weeks apart, for either short surveys, or more elaborate participation, but no more than 15-20 minutes at a time. In-person interviews will be conducted either via telephone or in-person at a mutually agreeable time and place. Surveys will be online.
If you are interested to help me with my research, and you are willing to participate in various surveys, please contact me at:
mcummins@konawaenamid.k12.hi.us
Or
808-937-9970

Mahalo for your time, and I look forward hearing from you,
Pia Cummins
Digital Consent to participate in a Research Project

Aloha Colleague,

I am conducting an Instructional Design Research Project as one of the final components to fulfill the requirements to obtain my Master's degree in Learning Design and Technology at the University of Hawai'i at Mānoa.

The purpose of this research project is to create and evaluate the effectiveness of a self-paced Google Sites learning module on the use of Google Apps for Education tools for faculty at Konawaena Middle School as a collaboration and teaching tool.

You are being asked to participate in this research study because you are a member of Konawaena Middle School's faculty, for whom the Google Site is being developed. Your participation in this study will help determine if learning is taking place when completing the module on the use of GAFE tools. Your feedback will help me determine how effective the Site is in teaching, and will help me determine how I need to change, add, subtract information and activities to improve the effectiveness of the Site.

Participation will be online, using either your own technology and internet access, or in-person using a provided device and internet access. You will participate in an initial survey to identify your comfort levels using technology and Google products as background information for myself and to be able to identify target audience's needs of the Site. You will then work through the Module at your own pace. You will complete pre- and post-tests for each of the sections of the module, and complete surveys to provide feedback on your experience on understanding the learning materials and activities to identify your experience on how learning is taking place. You will be asked to repeat this cycle one more time, after any changes to improve the Site have been made. The surveys will take no more than 20 minutes each time.

Confidentiality and Privacy:
The data obtained through your participation in this study will be used solely for the purpose of this instructional design research project. The data will be securely stored on a password-protected computer. During the project, as well as after the project has been completed and the results have been reported, I will not release your name or any other personal information that could identify you. Any evidence and data obtained in this study will be destroyed once the research is complete to protect your identity.

Voluntary Participation:
Participation in this research project is strictly voluntary. You are free to choose to participate or not to participate in this project. You may withdraw your permission or discontinue participation at any time. You agree to inform me immediately if you experience any discomfort or if you have any concerns.

Questions:
If you have any questions, please contact me at mcummins@konawaenamid.k12.hi.us

You may also contact my faculty advisor, Dr. Curtis Ho at curtis@hawaii.edu

If you have any questions about your rights in this project, you can contact the University of Hawai'i, Human Studies Program, by phone at (808) 956-5007 or by e-mail at uhirb@hawaii.edu.
You may also contact my faculty advisor, Dr. Curtis Ho at curtis@hawaii.edu

If you have any questions about your rights in this project, you can contact the University of Hawaii, Human Studies Program, by phone at (808) 966-5007 or by e-mail at uhirb@hawaii.edu.

* Required

1. For the Participant: I have read and understand the above information. I also agree to participate in this instructional design project. I understand that I can withdraw from the project at any time by notifying the researcher. *
Mark only one oval.

   ☐ Yes
   ☐ No

s.google.com/forms/d/1s8trRU6Nc67NXtth0rIUt1flaHe-kiK-vegyTPqkg/edit

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2. For the Participant: I understand that any and all evidence will be destroyed at the completion of this project. *
Mark only one oval.

   ☐ Yes
   ☐ No

3. Digital Signature: Please type your FULL name and date in the space below. This will serve as your digital (electronic) signature, confirming your participation in this study. *

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Powered by

Google Forms
Appendix D: Surveys- Intake and Exit/Intake Screenshots

5. Do you use Chrome Internet browser *
   Mark only one oval.
   □ Yes
   □ No

6. Do you have a personal Google (Gmail) account *
   Mark only one oval.
   □ Yes
   □ No

7. Do you personally use Google Services other than Gmail? If so, please check which ones you use. *
   Check all that apply.
   □ Drive
   □ Docs
   □ Sheets
   □ Slides
   □ Sites
   □ Hangouts
   □ Forms
   □ Other: ____________________________________________________________

8. How comfortable are you using Gmail? *
   Mark only one oval.
   
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   | not at all       |   |   |   |   | very comfortable |

9. How comfortable are you using Google Docs? *
   Mark only one oval.
   
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9. How comfortable are you using Google Docs? *
   
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10. How comfortable are you using Google Sheets? *

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11. How comfortable are you using Google Slides? *

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<th>5</th>
</tr>
</thead>
</table>
   not at all | | | | | very comfortable |

12. How comfortable are you using Google Forms?

   Mark only one oval.

<table>
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<tr>
<th>1</th>
<th>2</th>
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<th>5</th>
</tr>
</thead>
</table>
   not at all | | | | | very comfortable |
11. How comfortable are you using Google Slides? *
   Mark only one oval.

   1 2 3 4 5
   not at all  ☐  ☐  ☐  ☐  ☐ very comfortable

12. How comfortable are you using Google Forms?
   Mark only one oval.

   1 2 3 4 5
   not at all  ☐  ☐  ☐  ☐  ☐ very comfortable

13. If there would be training available on how to use GAFE tools, would you use it to help yourself? *
   Mark only one oval.

   ☐ Yes
   ☐ No
   ☐ Maybe

14. If there would be training available on how to use GAFE tools, is it important to you that it is a self-paced training? *
   Mark only one oval.

   1 2 3 4 5
   not important at all  ☐  ☐  ☐  ☐  ☐ very important

15. Is it important to you that the training is always available online? *
   Mark only one oval.

   ☐ Yes
   ☐ No
   ☐ Maybe
Exit Survey - Screenshots

GAFE at KMS - In Retrospect

Please answer the following to the best of your abilities while looking back on what you have learned in the GAFE modules.

* Required

1. After taking the GAFE modules, how much better do you now know the GAFE tools? *
   Mark only one oval.

<p>| | | | | |</p>
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<td>1</td>
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</tr>
</tbody>
</table>

Not much better ○ ○ ○ ○ ○ A lot better

2. After taking the GAFE modules, have you installed the Google Chrome web browser on your Internet capable devices? *
   Mark only one oval.

○ Yes
○ No

3. After taking the GAFE modules, have you been using the Google Chrome web browser more than before? *
   Mark only one oval.

○ Yes
○ No
○ Not Applicable

4. You have your KMS GAFE google account. After taking the GAFE modules, have you created your own personal Google account? *
   Mark only one oval.

○ Yes
○ No
○ I already had a Google account, but I am using it more now
○ I already had a Google account, but I am not really using it more now
5. Thinking about the Google Services, now that you have completed the learning modules, please indicate which Google Services you now use more often. *
Check all that apply.

☐ Drive
☐ Docs
☐ Sheets
☐ Sites
☐ Hangouts
☐ Forms
☐ Other:

6. At this time, do you feel more comfortable using Gmail than before taking the GAFE modules? *

Mark only one oval.

☐ Yes
☐ No
☐ Maybe

7. At this time, do you feel more comfortable using Google Docs than before taking the GAFE modules? *

Mark only one oval.

☐ Yes
☐ No
☐ Maybe

8. At this time, do you feel more comfortable using Google Sheets than before taking the GAFE modules? *

Mark only one oval.

☐ Yes
☐ No
☐ Maybe
9. At this time, do you feel more comfortable using Google Slides than before taking the GAFE modules? *
   Mark only one oval.
   ☐ Yes
   ☐ No
   ☐ Maybe

https://docs.google.com/forms/d/1tIDAMaMs1Fytns6tOLqjPwa3p6bZ464nN6e_XyVhU/edit

4/2016

GAFE at KMS - In Retrospect

10. At this time, do you feel more comfortable using Google Forms than before taking the GAFE modules? *
   Mark only one oval.
   ☐ Yes
   ☐ No
   ☐ Maybe

11. Do you believe the GAFE learning modules helped you become more adept using GAFE tools? *
   Mark only one oval.
   ☐ Yes
   ☐ No
   ☐ Not Sure
11. Do you believe the GAFE learning modules helped you become more adept using GAFE tools? *

Mark only one oval.

☐ Yes
☐ No
☐ Not Sure

12. Do you believe the GAFE learning modules met your needs in becoming more adept using GAFE tools? *

Mark only one oval.

☐ Yes
☐ No
☐ Not Sure
☐ Other:

13. Were the GAFE learning modules easy to access and navigate? *

Mark only one oval.

☐ Yes
☐ No
☐ Not Sure

14. Please provide any other feedback you feel you need to share, so that the GAFE learning modules can be improved to serve KMS' faculty & staff better. *
Appendix E: Pre & Post Test.

Post-Test shown only as it is identical to pre-test

5. Which app will let you create a survey or quiz? *
   
   Mark only one oval.
   
   - Forms
   - Slides
   - Docs
   - Sheets

https://forms.gle/forms/d/12DBmfwXtLzufEkknwri7CGEFeX2Q7hlbvU/kMuxCkqVFjQ/edit

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GAFE at KMS Post-Test

6. Cropping images can be done right on a slide. *
   
   Mark only one oval.
   
   - True
   - False

7. If you have a file saved on your desktop, what are the steps you would take to be able to edit it using Google Docs? *
   
   Mark only one oval.
   
   - Copy the text from the document and paste it into a new Google Doc
   - Upload the document from your desktop to Google Drive and use the built-in feature to automatically convert it to a Google Doc
   - Create a new Google Doc and re-create the original document
   - It is not possible to edit documents that aren’t natively created in Google Drive

8. Microsoft Office documents are compatible with Google Drive? *
   
   Mark only one oval.
   
   - True
   - False
9. Google Docs, Slides, and Forms can be turned into an engaging and interactive learning experience by using: (Select all that apply.) *

Check all that apply.

☐ Links to other places in the file
☐ Links to outside Google tools/resources
☐ A tool to create a video within the file
☐ A differentiated learning path that meets the individual needs of students

10. Which feature limits the type of data that can be entered into a cell? *

Mark only one oval.

☐ Formatting
☐ Data Validation
☐ Transpose
☐ Sum

11. You can search GMail using the following criteria: (Select all that apply.) *

Check all that apply.

☐ Sender
☐ Subject
☐ Content
☐ Attachment

12. A benefit to using labels in GMail is: (Select all that apply.) *

Check all that apply.

☐ You can apply more than one to any message
☐ You can search messages by label
☐ You can label messages and add them to specific folders
☐ You can color code labels to find messages more efficiently
13. Which app will let you create a word documents? *
   Mark only one oval.
   - Forms
   - Slides
   - Docs
   - Sheets

14. How can technology help motivate collaboration in the classroom for all students? *
   Mark only one oval.
   - Technology allows differentiated instruction
   - Some students who are reluctant to speak up in class, have found a new voice when given digital tools
   - Students are more likely to complete their work if they use technology
   - Students are more engaged when they use technology in class

15. To access and review the revisions in a Google Doc: *
   Mark only one oval.
   - Click the History menu, then select See revision history
   - Click on Share, then email yourself a link to the doc
   - Click the File menu, then select See revision history
   - None of the above

16. How can a teacher view contributions made by several students in one collaborative Google Doc? *
   Mark only one oval.
   - The revision history will color code the revisions made by each student
   - The teacher can only view the first student's contributions
   - The revision history only reflects changes made that day
   - This feature is only available as an add-on
17. **One way to use Google Classroom to flip your classroom is by:** *
   
   *Mark only one oval.*
   
   - Creating copies of documents for each student
   - Sending individual messages to students
   - Creating rosters with Google Groups
   - Sharing videos and readings as announcements in the Classroom stream for students to view prior to coming to class

18. **You can only input data into a Google Sheet through a Google Form.** *
   
   *Mark only one oval.*
   
   - True
   - False

19. **In order to create engaging Google slides you can: (Select all that apply.)** *
   
   *Check all that apply.*
   
   - Include links on slides to relevant information
   - Create one large text box to explain your main point in detail
   - Use shapes and lines to direct the viewers attention to essential information
   - Include images with captions

20. **Why is revision history an important feature to utilize during group activities? (Select all that apply.)** *
   
   *Check all that apply.*
   
   - To keep students accountable
   - To plan next steps in the activity
   - To allow the teacher to assess the work of each student individually
   - To help students track their progress
21. What Google tool creates a digital questionnaire to collect entries from users? *
   Mark only one oval.
   ○ Search
   ○ Gmail
   ○ Forms
   ○ Sheets

22. Which of the following are types of data you can store in a Google Sheet? (Select all that apply.) *
   Check all that apply.
   ○ Numbers
   ○ Text
   ○ Videos
   ○ Dates

23. In what ways does Google Drive show your Drive items if you never created Folders or otherwise organized your Drive. *

24. Using Google Docs and Google Drive for collaborative learning, gives teachers the tools to: (Select all that apply.) *
   Check all that apply.
   ○ Facilitate collaboration
   ○ Monitor progress
   ○ Check for understanding
   ○ Provide feedback to students

25. What are the key benefits of using the Google Docs suite? (Select all that apply.) *
   Check all that apply.
25. What are the key benefits of using the Google Docs suite? (Select all that apply.) *

Check all that apply.

☐ There’s only ever one version of a document, meaning you never have to compile different revisions from group members
☐ It doesn’t work with Microsoft Office
☐ Others can only “View” or “Comment” on your documents to ensure that no one can edit your work
☐ You can easily share documents using a URL instead of attaching a document to an email

26. If you want to advise simple changes to student work (such as adding a comma) but do not want to directly edit the document, you could take advantage of this feature in Docs: *

Mark only one oval.

☐ Suggested edits
☐ Revision history
☐ Add-ons
☐ Public sharing

27. Which of the choices below are options when sharing a Google document? (Select all that apply.) *

Check all that apply.

☐ Edit
☐ View
☐ Create
☐ Comment

28. Which app allows you to analyze data? *

Mark only one oval.

☐ Search
☐ Forms
☐ Sheets
☐ Gmail
29. **You can insert your own YouTube videos into Google Slides.** *

*Mark only one oval.*

- [ ] True
- [ ] False

30. **Which of the following features does Google Calendar NOT have?** *

*Mark only one oval.*

- [ ] Check to see if other people are available or not
- [ ] Allow attendees to RSVP to the meeting request
- [ ] Send a meeting reminder a few minutes before the meeting starts
- [ ] Time travel, for those hard-to-get-to meetings

Powered by

Google Forms
Appendix F: Responses of Pre-Test & Post-Test
Appendix G: Screenshots of web module

Why Google Apps For Education?

Gmail

Gmail is the Google email application and handle for one's Google Account. You might be familiar with the -@gmail.com email format. Gmail is basically your portal to your GAFE account: Just type in "gmail.com" in your omnibox (address bar) of the Chrome browser.

GAFE, DOE Policies and Identifiable Data

At KMS, we are using a very distinct email address format, specifically for our KMS environment. For safety reasons, our KMS GAFE domain is closed for our students. This means, that students can only email to students and teachers within our KMS GAFE domain, and they cannot receive communications from people who are not part of our GAFE domain. Even parents can not email their child's KMS account. Siblings who attend other schools within our complex, also cannot email each other, as GAFE domains are strictly closed for student and they cannot share or send emails outside their school domains.

Faculty members, do have the ability to email and receive email from outside our GAFE domain.
Google Docs is the Google Online word processing application. Any document you create is automatically saved in your Drive and Docs can be edited offline and will save once you go back online. You can share it to other people while giving them the option to view, to comment or to edit the document.

To create a new documents, you can either access the Docs application through your Drive page, or you can navigate to Docs.google.com via your Omni-bar.

Via your Drive you will see this once you go to your Drive:

Via the Omni-bar you will see this:

Google Calendar

You will need your KMS GAFE account and about 10 minutes of your time.

Creating a new event

Go to [www.calendar.google.com](http://www.calendar.google.com) and locate the red **CREATE** button. Name your event and select the correct date and time. To send this to other people, change the invitees from **INVITING** to **SENDING**.
Classroom

Signing into Classroom

Navigate to classroom.google.com and sign in with your RMS GAFE account and click the blue Next button, you will then be prompted to enter your password. If you sign into Classroom for the first time, you will see a welcome message, click accept to close the message, then you will be prompted to indicate if you are a teacher or student; select Teacher. You will be offered to take a tour of what is available in Classroom. Please do take the time to take this tour as it explains the basics of using Classroom.

Setting your Profile

It is important your students can recognize you, so setting a profile picture is key. To set your Profile picture, go to www.classroom.google.com and log in with your RMS GAFE account. In the top-left corner, click Menu and select Settings, then click Change profile picture. Upload a picture from Google Photos, select a photo from your computer, or take a picture with your computer’s camera. If you might need to allow Google Drive to access your computer’s camera, if needed, crop or drag the box over your picture to fit it and click Set as profile picture. You can always change your profile picture at any time by clicking on it.

For Classroom, you will automatically receive emails when a student adds a comment to your post or when a private comment is posted on a student’s assignment or question submission. This is the default setting. If you want to change this, again click the Menu and uncheck the Notification box.

Creating a class

To create a new class, locate the + next to your account name on the top right corner of your page. This will create a pop-up in which you can click Join class or Create class, click Create class. You will now see a box in which you enter the name of the class, a section number, and a short description. Then click the blue Create button.

GAFE, DOE Policies and Identifiable Data

GAFE tools are very user-friendly in a classroom setting. However, to protect our students, please read the documents below so that you are aware of what we can and cannot share via Google. Please make sure to only use Lotus Notes to communicate about students’ IEPs, 504 plans or any other confidential information. Even common identifiable data should not be shared using GAFE tools.