

Digital Notebooks and Collaboration

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Introduction

An exploratory project on the use of digital notebooks and collaboration is currently underway in four courses over the span of five semesters at two North Carolina universities. The team currently teaches at two different universities. Professor A is at a private institution and Professor B is instructs at a state university. The team has partnered together to increase collaboration in online and face-to-face classes. The professors instruct teacher candidates enrolled in licensure programs at the elementary and secondary levels. The team focuses on active engagement and collaboration for today's digital learners. A key component of the partnership's instruction is in the *Active Learner approach* practices of researchers Michael, Prince, and Weimer.

In the "Five Key Principles of Active Learning," Michael explains that individuals are likely to learn more when they learn with others than when they learn alone (Michael, 2006). The research supports this model because many faculty members lean towards being independent learners and they struggle to an extent with accepting this principle. These findings are based on "impressive results" in different disciplines "that support the power of getting students to work together to learn" (p. 162). Throughout instruction, the goal of the project is to provide guidance in the creation of digital notebooks and to offer engaging tools that can be implemented with ease to increase collaboration. Students are consistently engaged in assignments, research, and service projects that require active engagement and collaboration (Prince, 2004).

What are Digital Notebooks?

Digital notebooks are interactive notebooks gone digital, which merely means that they are a digital form of paper-pencil notebooks. Digital notebooks can also come in the form of interactive notebooks, e-portfolios, or LiveBinders which all allow students to showcase their work while sharing with teachers, peers, and parents. High school students seeking to go to college can share their work with

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potential colleges and universities. One of the significant positives about digital notebooks is that student work is stored online which provides students with unlimited access even after courses are completed. Students can reflect on what they have learned during each school year and how they have grown from year to year (“LiveBinders”, 2018).

Reasons to Use Digital Notebooks

- Paperless
- Students work directly in the file
- Preservation of ideas and references
- Improvement in student writing skills
- Allows for creativity
- Infuse technology
- Access anywhere
- Functionality is similar to paper and pencil notebook (Knight, 2015).

Additionally, digital notebooks are used to help students organize and synthesize their thoughts. The notebooks act as an online textbook owned and created by the student that contains notes, practice tasks, journals, resources, and reflections. Students can quickly go back and refer to notes that may assist with future assessments and projects. As students go back and review notes from prior assignments, they are repeatedly exposed to the materials which increase student achievement.

Digital notebooks are not just for students; teachers can integrate a variety of online resources with the content that students need for study guides, assignments, and research projects. Digital notebooks promote differentiation as teachers can accommodate multiple learning styles in (and out of) the classroom and teachers can track a student’s growth over time. Teachers can also declutter their desk and classrooms because the process is paperless. Other advantages to using digital notebooks are that the notebooks are interactive. Therefore, teachers can place hyperlinks, videos, graphic organizers, resources, and other materials at student’s fingertips for immediate use (Grissom, 2017). School districts create staff handbooks that can be easily kept up-to-date and companies create online employee handbooks. Digital notebooks make it easy for companies, school districts, and employers to present online resources from one location.

The most popular platforms used by educators today to create digital notebooks are Google Slides available through Google Drive and OneNote accessible in Microsoft Office 365 (Robinson, 2018; Miller & Martin, 2016). Each professor will explain the process used to implement digital notebooks in higher education courses through the use of Google Slides in the “Implementation of the Project” section of this paper.

Literature Review

To keep up with today’s digital learners, educators must be tech savvy on some level. Research shows that going digital enhances student engagement and performance. Digital resources help students to personalize and individualize learning along with increased collaboration for teachers and peers. Students can become better authentic creative communicators and more appropriately express their thinking through videos, apps, text, voice recordings, and pictures. These flexible digital resources increase collaboration by integrating multimedia literacy technologies (Miller & Martin, 2016). The

incorporation of digital notebooks enables teachers to create learning templates to drive instruction and students can layer information for themselves and for their peers helping them become innovative designers. Also, students can link to third-party applications.

Weimer, an American professor and author of *Learner-Centered Teaching*, developed a list of questions that support the characteristics of learner-centered teaching. Some of the items suggest the importance of collaboration among students which professors Hampton and Holder use to incorporate in the use of digital notebooks in their courses: 1) “Is collaboration emphasized more than the competition in the course? 2) Does the course contain activities that put students in positions to learn from and with each other? 3) Do students talk more than the teacher during class discussions? Do students respond to each other or only to the teacher? 4) Are students voluntarily participating or do they sit silently until called on to answer questions and make comments? 5) Does their nonverbal behavior indicate they would rather not speak? 6) Is the teacher modeling how expert learners handle problems, find answers, deal with failure, and celebrate success?” The team uses the characteristics of these questions to drive the instruction in their online and face-to-face courses. Weimer’s research on the question set is a work in process and has not yet been validated systematically; however, updates can be reviewed on the Faculty Focus at (Weimer, 2018).

To engage learners who have mastered the digital world, teaching with relevant and innovative tools is a necessity in education (Sulisworo, Sulisty, & Akhsan, 2017). Additionally, today’s learners are moving beyond the basics and embracing the 4C’s - Super Skills for the 21st century which are communication, collaboration, critical thinking, and creativity (Kivunja, (2015). Students become global collaborators through sharing thoughts, ideas, questions, and solutions. They work together to reach a common goal by collectively sharing their skills and talents. Students learn to link learning across curricula and disciplines to solve problems (National Education Association, 2012).

Research reveals that "digitized textbooks" (digitalization of paper bound textbooks) are enriched with animated pictures, videos, and interactive exercises. When students assume an active role in their learning, their motivation and engagement gain a substantial boost. Students ability to move and explore the digital world leads them to the “in charge” position over their learning capacities leading them to become empowered learners. The possibility of changing and acting upon the virtual environment in search of a fit for each individuals need, strengthens one's feeling of "Yes I can." The use of digital notebooks increases collaborative problem-solving, curiosity, and exploration attributes (Groff, 2013).

Advantages of Digital Notebooks in Higher Education

Educators are allowing students to use digital notebooks as a note taking tool, digital locker, and project-based learning platform. Teachers have the option of creating a template for all students to use or they can foster student creativity and personalized learning by allowing students to create their notebooks with their unique themes. While taking notes, students can embed videos, images, and links to help them better understand the class content. Another plus is that students no longer have to carry large binder notebooks or worry about losing their notes since digital notebooks are available on multiple devices including personal computers, iPads, or Smartphones (Robinson, 2018).

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Teachers are also able to capture student interaction within their digital notebooks which allows educators to monitor course involvement and engagement in real time. While traditional notebooks may minimize the interactive options for writers, using this technology tool enhances writing skills and prepares students for the 21st-century as they are becoming producers of new information (Miller & Martin, 2016). Lastly, access to digital notebooks is unlimited for future reference. This becomes extremely valuable when students are preparing for future teacher licensure assessments (i.e., CORE, Pearson, Praxis I, Praxis II and edTPA). In Gunuc and Kuzu's (2014) study, the researchers found that using technology in higher education contributes to an increase in student engagement. Digital notebooking is a great technology tool that enables students to record what they are doing and reinforce their learning (Miller & Martin, 2016).

Disadvantages of Digital Notebooks in Higher Education

The disadvantages that are being noted are based on actual experiences of Professor A and Professor B. There are a few disadvantages that may occur while using digital notebooks in higher education courses. From the team's experience, students who attended class without charged devices were not readily prepared to participate in collaborative exercises and activities. To prevent this from recurring, the team set expectations and norms concerning the use of digital devices. Norms included the following: 1) Students should have at least 70% battery life on personal devices, 2) students should be prepared to download applications related to instruction, 3) Students should be prepared to collaborate with one or more class members, 4) Students should turn ringers off during class, and 5) Students should bring devices with them to each class meeting. Even college students forget to remember or save passwords, and this can cause a few hiccups or delays during classroom lectures and collaboration efforts (Robinson, 2018). For students who are working on their personal device, the team urges them to save their passwords on their computer to prevent this distraction. If there are students who do not have their own personal device to work on, it is recommended to use a classroom with computers available or write grants to support your digital notebook project. There are many technology grants that will assist you with purchasing technology for your classroom projects.

Implementation of Project - Professor A

Digital notebooks for this project were created through Google Slides (the presentation editor in Google Drive) and Google Classroom (a free web service that allows the teacher to manage classes, assignments, and grades). Google Slides and Google Classroom work hand-in-hand and will enable the teacher to provide direct, real-time feedback, and grades. To implement the use of digital notebooks through Google Slides the teacher will need to have access to G Suite for Education account or to a personal Gmail account. The G Suite for Education is preferred so that all of the tools Google offers for educators can be accessed. The teacher also will need the Gmail address for each student (personal or school-based). Learning institutions that provide G Suite for Education will give teachers access to a bank of student emails so that the teacher can create separate Google Classrooms for each course or class. It should be noted that teachers can create a Google Classroom without G Suite for Education through their personal Gmail account. To learn more about the many unique tools Google offers for learning institutions go to Google for Education on the web. A step-by-step guide for how to setup Google Classroom can also be accessed (Google for Education, 2018).

Creating the Digital Notebook Template in Google Slides

The types of lessons that work best for implementing digital notebook assignments include journals, how to guides, lecture notes, and projects that require interactive and collaborative discussions. Digital notebooks are also a great resource for housing graphic organizers and daily essential questions. In Professor A's teacher education courses, prospective teacher candidates are required to create a Classroom Management Binder using a digital notebook. The average notebook is approximately seventy-five pages in Google Slides. The length of the notebook will vary depending upon the requirements for the assignment. Once Google Classroom has been set up, a template can be created in Google Slides. The features in Google Classroom allow the teacher to make a copy of the model for each student so that students are not able to edit the teacher's original copy of the template. To access the template students go to Google Classroom at <https://classroom.google.com> or by using a Google Classroom code unique for the instructor's Google Classroom. A different code is provided for each Google Classroom created.

Professor A created the Classroom Management Binder template and the students completed each assignment in their personal copy of the file. The professor started by accessing Google Slides through Google Classroom (if you do not have Google Classroom go directly to Google Slides to begin this process). The first page of the digital notebook template is the cover page which includes the student's name and education major (see Figure 1). The copy the candidates work in is their personal revision of the template. Candidates can make edits and change the color, background, or add graphics to their cover page. The second and third pages should be the table of contents which list each assignment to be completed for the Classroom Management Binder. To make it easier to access each assignment to prevent scrolling down a long list of slides for review or grade a task, Professor A creates two columns in the table of contents, one for the title of the assignment and the other for the hyperlink marked "Home." This allows the user to click on the task and go directly to the Google Slide housing the assignment (see Figure 2). The notebook contains approximately twenty-five assignments. This makes the Table of Contents at least a two slide document. It is not necessary to know every assignment in advance because instructors will be able to add or delete assignments. In this project, teacher candidates are required to have their Classroom Management Binders completed at the end of the semester as a final project for the class. The pages that follow the cover page and the table of contents contain assignments that pertain to managing a classroom from parent letters to discipline contracts.



Figure 1 Sample Cover Pages

Table of Contents

Classroom Management Plan	Slide 3
Letter to Parents	Slide 4
First Day of School Presentation	Slide 5
Academic Expectations	Slide 6
Syllabus	Slide 7
Bell Schedule	Slide 8
Class Rules	Slide 9
Bell Work Assignments	Slide 10
What to do About Tardies	Slide 11
Discipline Contract	Slide 12
Class Rewards	Slide 13

Classroom Management Plan

Most children want to know that they're doing a good job in class and need to hear that they are indeed being good in class. Each student needs to know that he or she is accepted, even if, at times, his or her behavior is not. In my observations, I would make notes about certain students in certain classes that would be in trouble or called out for their behavior, and I would "befriend" this child or use them as a helper in my lessons whenever I would teach. The discipline problems that would occur with Mrs. Satter seemed to minimize with these students once I did that and I was there for the period with their class. They seemed to listen to Mrs. Satter, almost as a way to show-off that they were doing a good job behaving and I would acknowledge that to them.

Consistency, routine, and organization will prevent or eliminate many discipline problems. Discipline is a positive matter and should be viewed as motivation rather than controlled behavior. Instead of deciding that I was going to "make my students behave," I began to look for ways to "turn the student on" to music.

Well-managed classrooms have few problems. The first step in managing your classroom is to learn the students' names thoroughly and quickly. I did my best to do this and whenever I would mess up the name, I would simply apologize and the students seemed to understand. For the most part, I did learn the names in the classes that I did see on a normal basis. Making sure that students see the value and importance of what they are learning can prevent classroom discipline problems. They should be actively involved in the learning process so that unnecessary incidents or the other people around them do not distract them. It takes high energy to motivate a group of students. I had short-term goals, set a pace that is as quick as appropriate for the students' level of maturity, and I worked with a sense of urgency. I used class time efficiently

[Home](#)

Figure 2 Table of Contents and Sample Assignment with Hyperlink to the Home Page

The Classroom Management Binders are intended to be a reference for beginning teacher candidates. The concept of creating the digital notebook is introduced as a binder for housing classroom management strategies and techniques. Some of the tasks include good pedagogy practices and strategies for increasing engagement. These pages are added because candidates are potential beginning teachers and will need resources that they can access with ease. Today's students are familiar with Google Drive, so it makes sense to use tools that our students are already using on a daily basis.

In addition, Google Drive is what college students use for multiple avenues of learning (Miller & Martin, 2016). At the conclusion of the project, teacher candidates have personal projects that include relevant, current, and ready to use information to become a successful classroom manager. Digital notebooks are easily uploaded to most Learning Management Systems, class websites, and blogs to provide additional collaborative opportunities. Students always have the option to decide who they want to share their work with. Also, students can determine if they would like their collaborator to edit or view their digital notebook (Miller & Martin, 2016).

Finally, students enjoyed creating their digital notebooks and customizing their classroom management binder to suit their needs. Teacher candidates often contact Professor A when they are hired as classroom teachers and share their appreciation for their digital notebooks. One of the beginning teachers that Professor A taught was named, Beginning Teacher of the Year in the spring of 2018. The students shared that the digital notebook attributed to his success in the classroom. Furthermore, Professor A continues to use digital notebooks in courses, and conduct staff development on the implementation of digital notebooks in and outside of the university to increase the use of the tool in the classroom. A plan to conduct a survey in the following semesters will reveal the outcomes of the digital notebook for students that participated in courses.

Implementation of the Project - Professor B

Professor B integrated digital notebooks in READ courses through Google Slides. Teacher candidates were to create a Gmail account to get started with their digital notebook. Candidates are not provided with a template, as Professor B would like to see their creativity and uniqueness shine through their digital notebook. There is a substantial focus on terminology for all READ courses to teach prospective teachers the five domains of reading and how to implement them in future classrooms. Also, these courses are used to prepare students for the Pearson Foundations of Reading assessment which is required for all teacher candidates who wish to become a certified teacher in the state of North Carolina. Teacher candidates used their digital notebook to define terminology and provide a picture or video to support their terms, which assisted them in retaining the word. Candidates also shared worked cooperatively within their notebooks to enrich their vocabulary knowledge. Students were able to share their digital notebook with partners easily, and both were able to interact in the notebook at the same time. Since Google enables users to save work automatically, candidates were able to see immediate feedback from their peers and instructor. Research has proven that the brain retains a word well when it can associate an image or video with the term. Also, having meaningful conversations with peers about the terms helped candidates to retain them and use them in more meaningful ways (Sprenger, 2017).

Using digital notebooks has enabled teacher candidates to better prepare for the Pearson Foundations of Reading assessment, and it has helped them to become better teachers of reading in the field. It is a notebook that students will always have access to for future reference. Therefore, Professor B plans to continue using digital notebooks in the following semesters.

Conclusion

Though the International Society for Technology in Education (ISTE) standards assists teachers and administrators in integrating technology through Digital Learning Competencies, instructors need access to tools that can be integrated with ease. A well-executed digital notebook is an incredible tool for higher education. This resource provides institutions with forms of authentic assessments. The digital notebook promotes the desired deeper learning that compels students to broaden knowledge, increase intellectual and practical skills, enhance personal and social responsibility, and fosters the ability to integrate years of learning into a connected functional whole. This rich resource provides opportunities for candidates and faculty to learn about the achievement of essential learning outcomes over time, make connections among disparate parts of the curriculum, gain insights leading to improvement, and develop identities as learners or as facilitators of learning. Digital notebooking enables students to engage in multiple opportunities to communicate their thinking and creativity, assisting them in becoming creative collaborators. In fact, digital notebooking takes collaboration to a new level for 21st-century learners. Digital notebook users can share their work across devices, which enables peers and instructors to provide timely feedback. Candidates have the option to share their work with resources such as Dropbox, Email, Blogs, Facebook, Twitter, and Learning Management Systems (Miller & Martin, 2016). In addition, students critically curate a variety of resources using digital tools to construct knowledge, produce original artifacts, and make meaningful learning experiences for themselves and others.

As a team, we continue to work together to gather data for a formal study on the use of digital notebooks to further collect measurable data in the areas of achievement, engagement, and collaboration. The team wishes to collect data over multiple semesters to have a larger sample size in the study. The following questions will be disseminated to students after the spring 2018 semester.

1. Rate your level of experience with using technology
2. Rate your comfort level with using technology in the classroom.
3. I prefer the use of technology vs. the use of pencil and paper.
4. I prefer to work in a classroom environment that promotes creativity through technology.
5. Before using Digital Notebooks, I used: (Pick all that apply)
 - a. 3-ring binders
 - b. Notebook paper
 - c. Other
6. I believe Digital Notebooks improve my academic motivation.
7. I believe Digital Notebooks improve my study habits/strategies.
8. The digital notebook helps to keep work organized.
9. I believe Digital Notebooks improve my metacognition.
10. I believe Digital Notebooks improve my academic performance.
11. I believe Digital Notebooks improve my academic performance.
12. I plan to integrate Digital Notebook into my future classroom.

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