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Sarah Vycital  
*St. Catherine University*

Nicholas Zwick  
*St. Catherine University*

Ross Nelson  
*St. Catherine University*

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The Impact of Teacher Collaboration on the Implementation of Best Practices with a Learning Management System in a Public School Setting

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Sarah Vycital, Nicholas Zwick, and Ross Nelson
Saint Catherine University
Saint Paul, MN

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Abstract

The purpose of this research project was to study the impact of teacher collaboration on implementation of best practices with a learning management system (LMS) in a public school setting. Three researchers, 21 kindergarteners, 29 second graders, 113 eighth graders, and parents participated in this study for four weeks. During this study, quantitative and qualitative data were collected and analyzed. This data included: three parent assessments and researcher-completed observations. As a result, the researchers found that collaboration improved their personal attitudes, parent involvement, student engagement, and student learning outcomes.

Keywords: LMS, collaboration, best practices
Introduction

Improving student performance drives the adoption of various educational technologies in schools today. There are multiple devices (i.e., iPads and Chromebooks) and different programs (software based and web-based) that teachers and educators can use to enhance their lessons. With all of these technologies available, it can be difficult for teachers to decide how to best use these tools in the classroom. Many teachers solve this dilemma by using a Learning Management System (LMS). An LMS is a web-based program that allows educators to organize, create, and deliver instructional content to students, collect data on assessment performance, and communicate information to students, parents, or anyone else involved with the student’s learning (Klobas & McGill, 2010; Lochner, Conrad, & Graham, 2015; Wichadee, 2015).

An LMS has the potential to impact student learning and achievement in a positive manner. Additionally, an LMS provides: easy access to information and content to students and other stakeholders (Rivero, 2015; Walker, Lindner, Murphey, & Dooley, 2016); an accessible space for tools that enhance student learning (Black, Beck, Dawson, Jinks & DiPietro, 2007; Meishar-Tal, Kurtz, & Pieterse, 2012; Walker, Lindner, Murphey, & Dooley, 2016); and a system that affords teachers a relatively easy way to create a personalized (or differentiated) learning environment (Hill, 2009; Radwan & Senousy, 2014; Wichadee, 2015).

When implemented well, an LMS can revolutionize instructional practices in modern classrooms. Teachers can digitize all of their materials so that students in a 1:1 setting, (a school where each child has a laptop, iPad, or Chromebook and Internet access provided), have easy access to class resources on virtually any device that can connect to the internet (Hill, 2009; Wichadee, 2015). Teachers can create authentic, interactive learning activities that challenge students regardless of their ability (Edmunds & Hartnett, 2014; Hill, 2009; Wichadee, 2015).
Assessment tools allow for educators to create quality formative quizzes and tests that students can take at appropriate times that fit individualized needs (Edmunds & Hartnett, 2014; Hill, 2009; Wichadee, 2015). An LMS has the potential to shift classrooms from a slow and cumbersome analog environment to a fast, convenient, and personalized digital environment. There are also limitations to LMS-use, including staff member attitudes (Edmunds & Hartnett, 2014; Watson & Watson, 2007; Wichadee, 2015). Depending on the district and the school, there may be staff who do not buy into the idea of using an LMS over more traditional methods. Without all staff members on board, an LMS implementation may not be successful. Another limitation deals with the quality of faculty training or lack thereof and teachers feeling under prepared to implement an LMS in a classroom (Wichadee, 2015; Hill, 2009).

Problem Statement

The use of technology in schools has become commonplace in most districts across the country, whether it be iPads, Chromebooks, or others. As a result, there is an increasing need for an LMS to help educators, students, and parents alike utilize these technologies to their fullest potential. Many times, teachers are pushed to use a particular LMS per district decision. That push creates a problem, the problem that this action research project will look to answer: how to get teachers to not only use the LMS but also to use the LMS to its fullest potential, making a positive learning experience for all stakeholders.

Review of the Literature

This literature review will examine the strengths and limitations of incorporating learning management systems into the elementary and middle-level classroom. New educational trends bring with them the promise of positively impacting student learning and achievement. However, with the strengths of a popular trend like an LMS, there are also limitations that come with it.
Next, the review will focus on the instructional uses of an LMS and how it pertains to teachers, students, parents and other stakeholders. With the influx of technology in the classroom and subsequent programs like an LMS to help manage and provide coherence to the technology use, instructional strategies need and should be adjusted to fit the changing needs of students and in turn, will also affect teachers and parents. Lastly, the review will look at how an LMS can help teachers, students, and parents communicate with each other. An LMS has the potential to provide a simple mode of communication between all parties involved in the instructional process.

**Strengths and Limitations of LMS Use**

Most new educational trends come out of necessity (Courts & Tucker, 2012). There is a need in education today to incorporate technology into the day to day aspects of school to reach today’s learner. LMSs bridge the gap between traditional classrooms and today’s learner (Hill, 2009). As schools begin to implement an LMS into everyday instructional practice, it is important to remember that, with the promise of benefits for student improvement, there are also misunderstandings on the concept, some of which lead to limitations (Watson & Watson, 2007).

**Strengths of LMS use.** One asset of an LMS is that it provides unlimited access to learning materials. Once an educator uploads their material, whether it is an article or a virtual lab, to an LMS, the student or parent can log in and access the material anywhere there is internet access through their iPad, Smartphone, laptop, or tablet (Rivero, 2015; Walker, Lindner, Murphey, & Dooley, 2016). Due to unlimited access, student learning time can expand because they can access the content anytime: at school, at home, or on the go (Rivero, 2012; Wichadee, 2015). An LMS allows students and parents to have access to content such as presentations, articles, audiovisual materials anytime, anywhere. Before the advent of an LMS, this was not
possible (Meishar-Tal, Kurtz, & Pieterse, 2012). By using an LMS, schools have the potential to provide opportunities for 21st-century instruction and learning, as well as to begin to close achievement gaps and support student learning (Hill, 2009). The educational community can accomplish these changes by providing content and training not only students but also parents, community members, and other staff members (Hill, 2009).

Another strength of an LMS is that it provides several tools within the system that can be useful for teaching and learning. Educators can use these tools for managing and assessing learners (Meishar-Tal, Kurtz, & Pieterse, 2012.) Gradebook is a feature in an LMS. In a study noted by Walker, Lindner, Murphey, & Dooley (2016), respondents revealed that “Gradebook” was a useful feature for managing assignments. For example, the administrator of an LMS can give the same assessment to different sections of the same class during different times of the day. Educators also noted that quizzes and tests were easy to create (Black, Beck, Dawson, Jinks & DiPietro, 2007; Walker, Lindner, Murphey, & Dooley, 2016) and give feedback (Meishar-Tal, Kurtz, & Pieterse, 2012). Giving feedback is a way that educators communicate with students (Meishar-Tal, Kurtz, & Pieterse, 2012). In an LMS, tools can manage these interactions between teachers, students, and parents. Some of these tools include e-mails and discussion boards. Discussion boards may allow students who are shy or reluctant to participate in classroom discussions, feel confident to participate (Walker, Lindner, Murphrey, & Dooley; 2016).

Educators often start an LMS journey by modernizing their traditional materials and converting them into the digital realm. This step does little to enhance their curriculum, but simply meets students in their digital world (Lochner, Conrad, and Graham, 2015). The potential for personalized learning increases with the implementation of an LMS. Teachers can allow students to work at their own pace and meet their diverse needs while accomplishing course
learning objectives in a personalized manner. The use of an LMS allows for students to have the content customized to their needs and opens collaborative opportunities (Hill, 2009; Radwan & Senousy, 2014; Wichadee, 2015). Watson and Watson (2007) noted that requiring all learning to take place in a classroom at the same time is an outdated method and that there is a need for “education to shift to an entirely new paradigm, from one with a focus on standardization and sorting with a high rate of failure to one that supports customization to meet all learners’ needs” (p. 31). An LMS simplifies this process by allowing another option to personalize student learning and makes it a possibility in virtually all classrooms with the appropriate technology.

**Limitations of LMS use.** As with any new initiative in schools, and anywhere else for that matter, it can be difficult to get everyone on board with the changes. The case of an LMS is no different. For an LMS to be successful, teachers not only need to see the value in the new tool but also need to make the necessary changes in their classrooms. An LMS enables instruction in grades 3 and up to be more student-centered, which is a shift from the traditional teacher-centered education model (Watson & Watson, 2007). Teacher attitudes play a large part in the success or failure of an LMS. If the teachers are on board with the LMS implementation, they will be willing to make the necessary augmentations to the lessons to fully utilize the functionality of the LMS (Lochner, Conrad, & Graham, 2015). However, if teachers do not see the value of an LMS and are against its use, the implementation of the LMS will be less successful. This negative attitude about an LMS may stem from: the amount of time to implement the new system; not wanting to shift away from traditional methods; or, a desire to use other technologies with similar functions (Edmunds & Hartnett, 2014; Watson & Watson, 2007; Wichadee, 2015). Lochner, Conrad, & Graham (2015) argue that one of the best way to combat these negative attitudes “is by providing opportunities for teachers to witness how an
LMS benefits their students” (p. 68). Witnessing the benefits motivates reluctant teachers to try different features of an LMS within their classroom (Lochner, Conrad, & Graham, 2015).

The most successful school initiatives are well thought out, allow time for staff buy-in, and provide appropriate staff development and training (Lochner, Conrad, & Graham, 2015; Wichadee, 2015). Staff members often resist LMSs and new technologies because of lack of knowledge, comfort, training, and support. Lochner, Conrad, and Graham (2015) noted successful implementation revolves around, “professional development targeted at addressing individual concerns, and incentives for incorporating the innovation into the curriculum to improve teaching and student outcomes” (p. 62). When teachers feel educated and supported in LMS initiatives, they are more likely to take chances and incorporate the technology into their classrooms. Teachers are the driving force of technology integration, both in instruction and student learning in classrooms. When LMS and technology initiatives fail, it is often due to lack of training. Effective and purposeful training can prevent failed technological initiatives from happening (Wichadee, 2015; Hill, 2009).

**Instructional Uses**

**Materials/Content.** The use of an LMS has become standard in the education world. One goal within the LMS is to provide learning materials to students. Learning materials include lecture notes, powerpoint presentations, and video links (Wichadee, 2015). An LMS is a one-stop shop where teachers can share lesson plans, see their curriculum at a glance, and store resources for future use (Hill, 2009). When creating content on an LMS, the educator has the sole permission to create content (Wichadee, 2015). The educator can create, publish, and delete content (Meishar-Tal, Kurtz, & Pieterse, 2012). In a study conducted by Walker, Lindner, Murphey, & Dooley (2016), respondents indicated that an LMS was a great way to share content
and provide materials to students. The same study also found that for students to succeed, the content needs to meet the learning objectives and engage the student in participating.

**Interactive Learning Activities.** The use of an LMS opens students and teachers up to a variety of interactive activity options. These activities can focus on individual skills or collaborative skills. Lack of creativity and resource limit activity options. By using an LMS, the teacher may become a facilitator of student learning and provides access to different avenues for students to achieve learning goals (Edmunds & Hartnett, 2014; Hill, 2009; Hooker, 2016). An LMS can store different uploaded activities and links to connected resources to address individual skills. Teachers can host an online discussion within an LMS that all students can participate in and have their voice heard. An LMS can also provide the outline for students to gather and organize their work to be used or showcased (Edmunds & Hartnett, 2014; Hill, 2009; Wichadee, 2015). Teachers can address a wide variety of skills and activities by using an LMS and in turn can cater to student needs more efficiently (Hill, 2009; Wichadee, 2015).

**Assessments.** The tools that an LMS provides also affect the assessment process in schools. Teachers can use an LMS to house quizzes, assignments, dropboxes and can also be used as a database to collect all assessment information (Hill, 2009; Wichadee, 2015). Formative assessment (assessment for learning) is another assessment process affected by the use of an LMS. By using assessment features like quizzes, dropboxes, and discussion boards, teachers can provide timely feedback and scores in addition to being able to track student progress. Students then can see what they did well on, what they need to improve on, and access specific feedback from the teacher (Edmunds & Hartnett, 2014; Hill, 2009; Wichadee, 2015). Formative assessment is obviously possible without the use of technology, but it is streamlined
by certain LMS functions, allowing teachers to focus more on teaching than data collection (Watson & Watson, 2007).

**LMS use in a primary setting.** There is a lack of research done on the use of an LMS in primary grades, kindergarten through second grade. This lack of research causes an obvious lack of significant evidence of best practices of an LMS use. Rather than focus on limited research, the focus of this section will be how an LMS can address certain proven best practices in a primary setting by separating the subjects of reading and literacy, mathematics, and science. When looking at reading and literacy best practices in the primary setting, one of the important skill areas is phonemic awareness (Henning, 2016). Phonemic awareness contributes to reading ability in future grades as well as plays a large role in successful reading instruction in the primary grades (Duke & Block, 2012; Henning, 2016; Reutzel, 2015). In primary mathematics instruction, one best practice is to provide students with challenging activities where students can show their learning in different ways. This practice means that the students will work on activities and be able to show their learning in different ways, the students demonstrate their learning as it fits with how they learn (Thronsden & Turmo, 2013). In primary science, Buldu, Buldu, & Buldu (2014) state that one best practice is to provide students with engaging activities and opportunities within the activities to interact with others. The use of an LMS can address these best practices of reading/literacy, mathematics, and science in two main ways, the organization of resources and activities and provide opportunities for different ways to show student learning. Teachers can use an LMS program like Schoology to organize resources and activities to allow for a more personalized approach for students in addition to making learning available outside of school. Teachers can provide students with different ways to show their
learning in a program like Seesaw by giving students tools like pictures, videos, drawings, and annotation of documents among others, to demonstrate their learning.

**Communication**

**Communication between stakeholders.** Communication is one of the most effective ways for learning to happen. It allows students to collaborate, talk about their ideas, ask questions, and help each other. In a study reported by Nasser, Cherif, and Romanowski (2011), students in grades kindergarten through twelfth grade used an LMS to communicate and collaborate with others on assignments. According to Edmunds & Hartnett (2014), an LMS provides students with opportunities to peer edit and comment on each other's work. Students and instructors find that communicating through an LMS is beneficial for their learning. Not only do students and instructors find using an LMS for communication beneficial, but so do parents. Through the parent portal, parents have access to grades, and the ability to connect with teachers and administrators through the email feature in an LMS (Hill, 2009). An LMS makes it very easy for parents to stay involved in their child’s education--provided the teachers are all using the same LMS in similar ways. Parents can receive email notifications about their child. Parents no longer have to wonder what their child does in school anymore, teachers can share student work through an LMS by electronic portfolios, pictures, videos, and other modes.

**Communication tools.** One advantage of LMS is the multiple communicative tools available within the platform. For students in grades four and up, interactive message boards can supplement face-to-face interactions with virtual conversations that can extend beyond classroom hours. Teachers can monitor and add to discussions that may go places they otherwise wouldn’t in class due to time constraints or student comfort (Garrote & Pettersson, 2011; Walker, Lindner, Murphey & Dooley, 2016). Another useful communicative tool is the ability for direct
messaging correspondence between teachers, students, faculty, and parents. This simple feature allows for the exchanging of quick, private messages about anything from course content to personal matters and is more convenient than email or phone calls (Wichadee, 2015). Additional useful communication tools include class announcements, blogs, and video conferencing. As technology improves, so will the ways all stakeholders can communicate via LMS (Lai & Savage, 2013; Walker, Lindner, Murphrey & Dooley, 2016)

**Communication in the primary setting.** As with the instructional abilities of an LMS, the research completed on communication with an LMS in the primary setting is lacking. Providing communication in the primary setting is equally if not more important than in other grade settings. To properly build a positive relationship with families, educators need to provide opportunities for two-way communication (Baum & Swick, 2008). In addition to open two-way communication, parents must also be “partners in the total learning and growth process” of the students (Baum & Swick, 2008). The use of an LMS can address both of these important forms of communication. Parents and teachers can participate in two-way communication by using messaging features on LMS programs such as Schoology and Seesaw. Parents are also able to view student work via electronic portfolios that many LMS programs feature. By using an LMS in the primary setting, teachers can provide two-way communication in addition to allowing parents to be partners in the students learning by giving them insight on student work.

**Conclusion**

An LMS has the potential to impact student learning and achievement positively. Like with anything else, there are strengths and limitations to the use of an LMS. There are also many instructional strategies and applications that an LMS implementation make possible. An LMS
also provides a mode of communication between all stakeholders involved in the learning process.

When looking at a new tool, one can find strengths as well as limitation of the tool. In the case of an LMS, the strengths include providing easy access to information and content to students and other stakeholders (Rivero, 2015; Walker, Lindner, Murphey, & Dooley, 2016), houses tools that are used to enhance student learning (Black, Beck, Dawson, Jinks & DiPietro, 2007; Meishar-Tal, Kurtz, & Pieterse, 2012; Walker, Lindner, Murphey, & Dooley, 2016), and allows teachers to set up a personalized learning environment (Hill, 2009; Radwan & Senousy, 2014; Wichadee, 2015). There are also limitations to LMS use that include staff member attitude (Edmunds & Hartnett, 2014; Watson & Watson, 2007; Wichadee, 2015) and providing proper training (Wichadee, 2015; Hill, 2009). When it comes to student learning the strengths outweigh the limitations.

LMSs are revolutionizing instructional practices in modern classrooms. Teachers can digitize all of their materials and students have easy access to them on virtually any device that can connect to the internet (Hill, 2009; Wichadee, 2015). Teachers can use the digitized content to create authentic, interactive learning activities that challenge students regardless of their ability (Edmunds & Hartnett, 2014; Hill, 2009; Wichadee, 2015). Assessment tools allow for educators to create quality quizzes and tests that students can take at appropriate times that fit individualized needs (Edmunds & Hartnett, 2014; Hill, 2009; Wichadee, 2015). Learning Management systems have helped shift classrooms from a slow and cumbersome analog world to a fast, convenient, and personalized digital world.

When teachers, students, and parents communicate through an LMS, everyone is involved in learning. These interactions benefit everyone. Students learn from one another.
Parents and teachers build a stronger relationship because of simplified communication. It builds a strong community in the classroom. An LMS offers multiple features when communicating. Some of these features include discussion boards, mobile applications, chat forums, and email notifications. Students learn from one another. Teachers and parents have a better relationship.

There are gaps in the literature in regards to certain aspects of an LMS because they are relatively new in the K-12 setting. Learning Management Systems started in the post-secondary realm, and the available literature reflected that trend. There is a need for more studies specific best practices within a K-12 setting and how to apply those best practices.

This literature review focused on the strengths and limitations of an LMS, the learning functions within an LMS, and the ways stakeholders can communicate when using different features in an LMS. All in all, the use of LMSs in classrooms are beneficial for learners. The main criteria for an LMS implementation to be successful is to train the educators to use the tools effectively.

**Methodology**

**The Design**

Researchers employed an experimental design for this study focusing on the impact that collaboration has on implementing best practices of an LMS and whether collaboration increases personal attitude of the researchers, student engagement, learning outcomes, and parent involvement. The researchers conducted the study in one kindergarten class, one second-grade class, and four sections of eighth-grade social studies. The kindergarten class utilized the program Seesaw. The second-grade classroom utilized the program Schoology in addition to Seesaw. The eighth-grade geography sections utilized Schoology. Lessons, activities, and tests were created and delivered using these two LMS programs. At each grade level, teacher
assessments containing both qualitative and quantitative information, parent assessments, program analytics, and data from grade books were used to gather data to either reinforce the idea that collaboration has a positive effect on the implementation of LMS best practices or to provide information that refutes that claim.

The Setting and Subjects

The population of this action research study was kindergarten, second-grade, and eighth-grade students in a rural, Midwestern school district. Within the district, the population of the two buildings included in this study was comprised of 19.53% and 18.79% free or reduced lunch in the elementary school and the junior high school respectively. The ethnicity of the student body district-wide was as follows: 89% White, 5% Hispanic/Latino, 3% two or more races, 2% Asian, 1% African American. The sample of students within this study was representative of the district population. The population of this study includes a total of 163 students as shown in Table 1. Of those students, 21 were in Kindergartens, 29 were in second grade, and 113 were in eighth grade.

Table 1

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>9</td>
<td>12</td>
<td>21</td>
</tr>
<tr>
<td>Second Grade</td>
<td>14</td>
<td>15</td>
<td>29</td>
</tr>
<tr>
<td>Eighth Grade</td>
<td>61</td>
<td>52</td>
<td>113</td>
</tr>
<tr>
<td>Total</td>
<td>84</td>
<td>79</td>
<td>163</td>
</tr>
</tbody>
</table>

Parents of the students were also included in the study and were asked to take three separate assessments. Table 2 shows the number of parents who participated in each assessment.

Table 2
**Parent Participation in the Study**

<table>
<thead>
<tr>
<th></th>
<th>Pre-Assessment</th>
<th>Mid-Assessment</th>
<th>Post-Assessment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>21</td>
<td>6</td>
<td>7</td>
<td>34</td>
</tr>
<tr>
<td>Second Grade</td>
<td>15</td>
<td>19</td>
<td>14</td>
<td>48</td>
</tr>
<tr>
<td>Eighth Grade</td>
<td>35</td>
<td>19</td>
<td>25</td>
<td>79</td>
</tr>
<tr>
<td>Teacher not Identified</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>77</td>
<td>46</td>
<td>48</td>
<td>171</td>
</tr>
</tbody>
</table>

**Tools and Data Collection**

When collecting data, the researchers used a learning log created on Google Forms that recorded their thoughts and attitudes about the use of an LMS in their classroom setting. In this learning log, the researchers recorded information about best practices used during the week. Because the primary focus of this study was differentiation, collaboration, and student engagement, researchers recorded observations including what worked, what didn’t work, and specific “aha” moments that the researchers wanted to share with each other in the learning log.

The researchers utilized Google Forms to create pre-, mid-, and post-assessments for parent feedback. Parents were asked if they had used Schoology and Seesaw before, if they thought their child benefited from the use of the tools, questions related to their confidence in navigating and helping their child navigate the learning management systems, and what information and content they were hoping to access. In these assessments, researchers provided parents with an open-ended question about what questions or suggestions they might have about the Schoology/Seesaw implementation.

When looking at grades, the researchers compared grades from the 2016-2017 school year to grades from the 2017-2018 school year. In the elementary school, researchers took grades from the semester one grade book for the standards addressed in the learning management
system for both years. In kindergarten the standards address were uppercase letter naming, lowercase letter naming, letter sound identification and production, shape identification, and representing numbers 0-31. In second grade, the addressed standards were author’s purpose and long and short vowel words. In the eighth-grade classrooms, researchers analyzed the mean scores for two separate summative assessments for both years.

The Procedure

The study for this action research project was conducted over five weeks starting at the beginning of the 2017-2018 school year. The researchers used the 2016-2017 school year as a control year with little to no Schoology usage and no Seesaw usage. During the beginning of the project, parents were sent a pre-assessment to be completed anonymously through email. During week three of the study, parents, again, were sent another mid-assessment asking different questions. At the end of the study, researchers sent parents a post-assessment. The researchers will analyze these assessments to determine if parents were active with the LMS used in their respective classes, if they were satisfied with the LMSs, and if they had any questions or comments about the LMSs.

Throughout the research project, the researchers filled out a Learning Log on Google Forms to record their attitudes/observations about the use of Seesaw and or Schoology every Friday for four weeks. The researchers analyzed these logs to see how the LMS was used each week, if collaboration took place, and review thoughts and observations about the LMS use each week.

The final data source for this study was student grades (as described above) (as described above). Each researcher used their grade book to compare grades from the 2016-2017 school
year to the 2017-2018 school year. The researchers were looking to see if grades improved when using an LMS or if the grades showed no improvement.

While looking at the grades, student ID numbers, not names, were used to identify the students. This data for grades was accessed through the Infinite Campus program or using paper-pencil grade books. Student privacy was protected by using student ID numbers and by not using student information in the findings of this project. The data for the parent assessment and teacher learning logs was anonymously gathered using Google Forms tool.

Data Analysis

This study was created to look at whether working collaboratively to implement best practices with an LMS increased personal attitude, parent involvement, student engagement, and student learning outcomes. The data that was collected and analyzed came in the form of learning logs from the researchers, pre-assessments, mid-assessments, and post-assessments from the parents, and grade book data from similar assessments from the 2016-2017 and 2017-2018 school years.

The researchers first analyzed their learning logs to look at the best practices implemented in each of their respective classrooms. For this, the researchers created a checklist for best practices. The researchers checked off each practice that applied for them during the week. The researchers then looked at their learning logs, where they recorded their attitudes towards LMS implementation and evidence to support their attitudes. The attitudes were analyzed quantitatively using percentages, and the evidence was qualitatively coded based on the content of the comment to provide evidence of the reasoning for the attitude. The researchers also collected data on student engagement. Each week, for four weeks, the researchers recorded observations of their students while using the LMS and evidence to support their claim. The
same type of quantitative and qualitative analysis was used for student engagement as was used for researcher attitudes. Parents/guardians were emailed pre-assessments to complete at the beginning of the LMS implementation process. Parents/guardians were also emailed a post-assessment at the conclusion of the study. The researchers quantitatively compared how many parents were familiar with Schoology/Seesaw at the beginning of the process and how many were at the end of the study to determine if parent involvement grew. The researchers qualitatively coded the short answer questions from the parent assessment based on the content of the comments. The researchers categorized the comments into three groups (positive comments, neutral comments, and negative comments). The last piece of data that was analyzed was the grade books from each of the researchers. Researchers calculated the raw scores from the 2016-2017 and 2017-2018 school years for common assessments and compared these scores to determine if student learning outcomes increased as a result of the LMS implementation process.

Findings

The purpose of this research project was to study the impact of teacher collaboration on implementation of best practices with a learning management system in a public school setting. Part of this study was to collect data from teacher observations, parent assessments, and grade book analysis.

LMS Best Practices

The teachers made an effort to implement and use as many LMS best practices each week that fit into their curriculum and standards at the time. They recorded them each week. The following graph shows how often each of the best practices researchers used on a weekly basis for the four-week duration of the study. If researchers selected a best practice 12 times, that means each teacher used it every week.
Figure 1 shows the amount of utilization of a best practice during the study. The LMS best practice most frequently used was daily work and content. All three teachers used it almost daily each of the four weeks for daily work. The next most frequently used best practice was incorporating formative assessments. The LMS programs were used for this practice 83.3% of the time. Parent communication was also a substantial aspect of the LMS use; teachers used the LMS for parent communication 75% of the time. The remaining best practices looked at were utilized 50% of the time or less. Researchers used the LMS for differentiated learning 50% of the time, classroom updates and pictures each 41.7% of the time, summative assessment 16.7% of the time, and personalized learning 8.3% of the time. Researchers did not use discussion boards for the duration of the study. Although each best practice was not used to the same extent, researchers utilized all of them in the classrooms with exception of the discussion board practice.

Figure 1

*Best Practices Used on Schoology and/or Seesaw for the Week*

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**Teacher Attitudes**

Another question in the weekly learning log that was filled out by the three teachers recorded the teachers’ attitude on a continuum from very positive to very negative toward the LMS implementation process each week throughout the four-week study. Figure 2 shows the
results in percentages. The teachers reported their experience was very positive 16.7% of the time, fairly positive 58.3% of the time, and somewhat positive 25% of the time. There was not a report of a negative experience by any of the teachers during this study. One researcher commented that by collaborating with others and discussing LMS usage in other rooms, this “sparked new ideas in their classroom.” Another comment made by a researcher was that collaboration “opened them up to new ideas.” A final comment made by the researchers was that “it was nice to bounce ideas off each other.” Ratings for researcher attitude ranged from somewhat positive to very positive. Researchers did not rate their attitude as negative in any way.

Figure 2  

*Researcher Attitudes toward LMS use over the Week*

![Researcher Attitudes chart]

**Student Engagement**

For this study, the three researchers were curious about how an LMS would affect student engagement. Each week, for four weeks, the three researchers rated how engaged their students were for the week. The six options for student engagement shown in figure 3 were very high, high, medium, low, very low, and none. The results indicated that 25% of the students had very
high engagement, 41.7% of the students had high engagement, and 33.3% of the students had medium engagement. Researchers also added comments to the learning log to support their engagement rating. One researcher noted that their students loved the hands-on mapping unit. Another researcher stated their students were engaged in the Seesaw activities. The researchers noted that students were engaged frequently during the use of the LMS. Researchers rated student engagement as either very high, high, or medium without any ratings of low, very low, or none.

Figure 3

*Student Engagement for the Week*

Parent Involvement

During this research project, the parents of the students were asked to participate in three assessments. Figure 4 represents the results from the parent pre-assessment. The pre-assessment was a Google Form researchers sent to the parents through email. Parents then had the opportunity to fill out the assessment anonymously. With a total of 77 responses, parents answered the question “Have you used Schoology or Seesaw before?” Twenty-seven parents stated they used Schoology frequently. Thirty-five parents reported they use Schoology infrequently. Zero parents used Seesaw frequently. One parent used Seesaw infrequently, and 15
parents did not use Schoology or Seesaw at all. Based on the pre-assessment, parents showed that they have more experience with Schoology rather than Seesaw, with a larger percentage (19.2%) not having any experience with LMS at all.

Figure 4

*Parent Pre-Assessment - Usage of Schoology and Seesaw*

Parents completed a post-assessment after the completion of the study. The parents answered questions on how often they utilized the Schoology LMS. Forty-eight parents responded to the assessment with the following results: 8.3% stated that they used the given LMS daily; 43.8% indicated that they used the LMS weekly; 31.3% declared that they used the LMS every once in a while; and 16.7% reported that they never used the LMS. No parent selected not applicable. A large majority of parents that responded that they used Schoology did so daily, weekly, or every once in a while.
The last week of this study, researchers sent parents the Parent Post-Assessment. Researchers asked parents how often they utilized Seesaw. Their responses were that: 2.1% used Seesaw daily; 4.2% used it weekly; 10.5% used Seesaw every once in a while; 56.3% never used Seesaw; and 27.1% indicated “not applicable.” A large percentage of the graph shows that either parents do not use Seesaw or that it is not applicable (no Seesaw usage at the eighth-grade level). Parents that did use Seesaw either selected daily, weekly, or every once in a while.
Learning Outcomes

Table 3 shows the percentage of students who were proficient in each of the kindergarten benchmarks for the 2016-2017 and 2017-2018 school year. To be proficient, students needed to identify all 26 upper and lowercase letters, the 26 letter sounds associated with each letter (short vowel sounds for a, e, i, o, and u), all eight shapes (square, triangle, circle, rectangle, rhombus, trapezoid, hexagon, and oval), and be able to represent numbers 0-31 (sample numbers used - 3, 6, 9, 12, 15, 18, 22, 25, and 29). There was growth across the board between the previous year and this year from a 1.4% growth in letter sound identification and production to a 20.5% growth in representing numbers 0-31.

Table 3

Percentages of Proficient Scores on Kindergarten Benchmarks

<table>
<thead>
<tr>
<th></th>
<th>2016-2017</th>
<th>2017-2018</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uppercase Letter Naming</td>
<td>90%</td>
<td>100%</td>
<td>+10%</td>
</tr>
<tr>
<td>Lowercase Letter Naming</td>
<td>85%</td>
<td>90.50%</td>
<td>+5.50%</td>
</tr>
<tr>
<td>Letter Sound Identification and Production</td>
<td>70%</td>
<td>71.40%</td>
<td>+1.40%</td>
</tr>
<tr>
<td>Shape Identification</td>
<td>80%</td>
<td>85.70%</td>
<td>+5.70%</td>
</tr>
<tr>
<td>Representing Numbers 0-31</td>
<td>70%</td>
<td>90.50%</td>
<td>+20.50%</td>
</tr>
</tbody>
</table>

Table 4 shows the percentage of students who were proficient in each second grade standard for the 2016-2017 school year and the 2017-2018 school year. To be proficient, students need to score 80% or higher on their reading standards tests. Each student had five questions to answer for author’s purpose and long/short vowel words. If students answered at least four out of
the five questions right, they were proficient. For this study, 73.90% of the students were proficient at identifying author’s purpose for the 2016-2018 school year and only 72.40% proficient in the 2017-2018 school year. This evidence shows that there was no growth for identifying author’s purpose. For the long/short vowel words, 60.90% of the students were proficient in the 2016-2017 school year, and 65.50% were proficient in the 2017-2018 school. The grades show a 4.60% growth.

Table 4

Percentages of Proficient Scores on Second Grade Standards

<table>
<thead>
<tr>
<th>2nd Grade Reading Standard</th>
<th>2016-2017</th>
<th>2017-2018</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author’s Purpose</td>
<td>73.90%</td>
<td>72.40%</td>
<td>-1.50%</td>
</tr>
<tr>
<td>Long/Short Vowels</td>
<td>60.90%</td>
<td>65.50%</td>
<td>+4.60%</td>
</tr>
</tbody>
</table>

Table 5 shows the mean scores of the 8th grade summative tests that were given during the LMS implementation process during the 2017-2018 school year and compared them to the summative exams given during the 2016-2017 school year. Use of an LMS was not implemented during the 2016-2017 school year. The first summative test given to students was on the five Themes of Geography and the overall mean score for all students went up by 4.69%. The second summative test given to students tested students on their basic map skills. When added together, there was a drop of 1.49% in mean score from 2016-2017 to 2017-2018.
Table 5

8th Grade Geography Summative Test Mean Scores

<table>
<thead>
<tr>
<th>Summative Assessment:</th>
<th>2016 Mean Score by Percent (125 Students)</th>
<th>2017 Mean Score by Percent (110 Students)</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Themes of Geography Summative Test</td>
<td>85.61%</td>
<td>90.3%</td>
<td>+4.69%</td>
</tr>
<tr>
<td>Lesson 1 Summative Test: Map Skills</td>
<td>85.49%</td>
<td>84%</td>
<td>-1.49%</td>
</tr>
</tbody>
</table>

Conclusions

The researchers investigated best practices that applied to their respective settings such as daily work/content, formative assessments, summative assessments, parent contact, classroom updates, etc. The researchers found that it was beneficial and effective to work together while learning about and applying these best practices to their respective settings. The researchers maintained a positive attitude throughout the study, which they attributed to working collaboratively to implement best practices with an LMS. The researchers felt like they were working on a team and had the support they needed to help drive the implementation process to be successful.

The researchers found that, for successful LMS implementation, it was important that parents were familiar with and supportive of LMS usage in classrooms. Many parents were new to using LMSs, and throughout the study, they became more comfortable with them and logged on as the study went on. Many parents vocalized their support for an LMS system in the classroom, but also expressed frustration within the district because there was little consistency from teacher to teacher or grade to grade. Infinite Campus, Schoology, SeeSaw, Moodle, and
other LMSs were all used in various grade levels. The researchers did, however, conclude that there was an overall increase in parent involvement throughout the study.

Another vital component was the students. The researchers observed and recorded that the level of student engagement was high throughout the research project. The researchers believe this was due to students learning with 21st-Century Learning platforms and technology in their 21st-century worlds. Their iPads were being used to their capacity instead of sitting unused.

Right along with student engagement, student learning outcomes arguably are the most important part of education. Similar to an assertion made by Hill (2009), an LMS has the ability to support and enhance learning outcomes, the researchers had hoped to see positive gains in student outcomes across the board. While students showed many gains, there were also areas that saw stagnant growth or even decline. The researchers theorize this could have been due to comparing two groups of students entirely; the researchers had a new class of students at the start of the 2017-2018 school year. Materials not transferring to LMSs is another possible cause of the stagnant or decline in grades. The researchers believe that, over time, there will be consistent growth from year to year as they build up the materials on their LMS and become more familiar with how to teach with their classroom centered around an LMS. As a result, the researchers believe the study shows that working collaboratively indeed does improve personal attitudes, parent involvement, student engagement, and student learning outcomes.

**Recommendations**

The recommended course of action based on the findings, observations, and experiences of the researchers is for continued advocation from teachers to the administration for consistent
and plentiful time to plan, create, and collaborate during the implementation of an LMS initiative.

LMS consistency among grade levels and districts is also a key to successful implementation from a parent’s perspective. Selecting one LMS and focusing on the selection can help parents feel more connected to their child’s education and help lead a more successful education for their child. When adopting one LMS, educators need to remember that not all LMSs are created equal or are developmentally appropriate for all grade levels. For example, certain LMSs (i.e., Seesaw), seem to be more user-friendly when compared to Schoology for younger learners.

Another point to keep in mind as teachers are implementing an LMS into their classrooms is that not all content transfers well to digital or LMS formats. Using the LMS just for the sake of using an LMS will not result in improved test scores. This point is reinforced when using the LMS to teach a lesson on mapping skills. Sometimes the more traditional way of teaching and learning (i.e., paper/pencil) is still the more appropriate way.

Like with any paradigm shift in education, implementing an LMS initiative into a school district is most successful when educators realize that it is an evolving process. The incorporation of an LMS is best served by continuing to find improved ways to integrate the LMS into classroom learning goals as well as creating a deeply developed set of LMS resources to build on with each unit and each year. Taking on the task of an LMS implementation independently can seem daunting and working collaboratively with colleagues can make an LMS implementation easier, more worthwhile, and more enjoyable.
References


Appendix A

Best Practices of a Learning Management System
Parental Permission Form

September 5, 2017

Dear Parents,

In addition to being your child’s social studies teacher, I am a St. Catherine University student pursuing a Masters of Education. As a capstone to my program, I am collaborating with Sarah Vycital and Nick Zwick to complete an Action Research Project. We are going to study the best practices of using a Learning Management System (LMS) because we want to utilize 1:1 devices to their fullest potential to improve student learning.

In the coming weeks, we will be implementing the learning management system Schoology into our every day lessons to maximize and modernize student learning. All students will participate as members of the class. In order to understand the outcomes, we plan to analyze the data obtained from the results of this implementation to determine the ways in which a learning management system positively affects student learning and parent communication. All strategies implemented and assessments given are part of normal educational practice.

Parents are also welcomed to participate in this study. Parents will be emailed a feedback form three times during the semester. In each case we are just wanting to learn from you how useful the information we are sharing via the learning management system is for you and your student. If you choose to participate, you will be consenting to having your data included in our study. If you want to share your thoughts, but don’t want to be included in our study, you could call or email me with your thoughts.

The purpose of this letter is to notify you of this research and to allow you the opportunity to exclude your child’s data from our study.

If you decide you want your child’s data to be in our study, you don’t need to do anything at this point.

If you decide you do NOT want your child’s data included in our study, please note that on this form below and return it by Friday, September 8, 2017. Note that your child will still participate in the implementation, but his/her data will not be included in our analysis.

In order to help you make an informed decision, please note the following:

● We are working with a faculty member at St. Kate’s and an advisor to complete this particular project.
The benefits of this study include modernizing and increasing student learning in addition to creating an open line of communication for parents to be able to message the teacher and see student work. There are no foreseeable risks involved with this study.

We will be writing about the results that we get from this research. However, none of the writing that we do will include the name of this school, the names of any students, or any references that would make it possible to identify outcomes connected to a particular student. Other people will not know if your child is in our study.

The final report of our study will be electronically available online at the St. Catherine University library. The goal of sharing our research study is to help other teachers who are also trying to improve their teaching.

There is no penalty for not having your child’s data involved in the study, I will simply delete his or her responses from our data set.

If you have any questions, please feel free to contact me, Ross Nelson at rnelson@belleplaine.k12.mn.us. You may ask questions now, or if you have any questions later, you can ask me, or my advisor, Sean Beaverson (smbeaverson@stkate.edu), who will be happy to answer them. If you have questions or concerns regarding the study, and would like to talk to someone other than the researcher(s), you may also contact Dr. John Schmitt, Chair of the St. Catherine University Institutional Review Board, at (651) 690-7739.

You may keep a copy of this form for your records.

______________________________  ____________________
Ross Nelson                              Date

OPT OUT: Parents, in order to exclude your child’s data from the study, please sign and return by 9/8/2017

I do NOT want my child’s data to be included in this study.

______________________________  ____________________
Signature of Parent               Date
Appendix B

Best Practices of a Learning Management System

Parental Permission Form

September 6th, 2017

Dear Parents,

In addition to being your child’s second grade teacher, I am a St. Catherine University student pursuing a Masters of Education. As a capstone to my program, I am collaborating with Nick Zwick and Ross Nelson to complete an Action Research project. We are going to study the best practices of using a Learning Management System (LMS) because we want to utilize 1:1 devices to their fullest potential to improve student learning.

In the coming weeks, we will be implementing the learning management system into our every day lessons to maximize and modernize student learning. All students will participate as members of the class. In order to understand the outcomes, we plan to analyze the data obtained from the results of this implementation to determine the ways in which a learning management system positively affects student learning and parent communication. All strategies implemented and assessments given are part of normal educational practice.

Parents are also welcomed to participate in this study. Parents will be emailed a feedback form three times during the semester. In each case, we are just wanting to learn from you how useful the information we are sharing via the learning management system is for you and your student. If you choose to participate, you will be consenting to having your data included in our study. If you want to share your thoughts, but don't want to be included in our study, you could call or email me with your thoughts.

The purpose of this letter is to notify you of this research and to allow you the opportunity to exclude your child’s data from our study.

If you decide you want your child's data to be in our study, you don’t need to do anything at this point.

If you decide you do NOT want your child’s data included in our study, please note that on this form below and return it by Friday, September 8, 2017. Note that your child will still participate in the implementation, but his/her data will not be included in our analysis.

In order to help you make an informed decision, please note the following:

- We are working with a faculty member at St. Kate’s and an advisor to complete this particular project.
• The benefits of this study include modernizing and increasing student learning in addition to creating an open line of communication for parents to be able to message the teacher and see student work. There are no foreseeable risks involved with this study.

• We will be writing about the results that we get from this research. However, none of the writing that we do will include the name of this school, the names of any students, or any references that would make it possible to identify outcomes connected to a particular student. Other people will not know if your child is in our study.

• The final report of our study will be electronically available online at the St. Catherine University library. The goal of sharing our research study is to help other teachers who are also trying to improve their teaching.

• There is no penalty for not having your child’s data involved in the study, we will simply delete his or her responses from our data set.

If you have any questions, please feel free to contact me, Sarah Vycital at [email protected]. You may ask questions now, or if you have any questions later, you can ask me, or my advisor, Sean Beaverson ([email protected]), who will be happy to answer them. If you have questions or concerns regarding the study, and would like to talk to someone other than the researcher(s), you may also contact Dr. John Schmitt, Chair of the St. Catherine University Institutional Review Board, at [email protected].

You may keep a copy of this form for your records.

_____________________________  __________________
Sarah Vycital                      Date

OPT OUT: Parents, in order to exclude your child’s data from the study, please sign and return by 9/8/2017

I do NOT want my child’s data to be included in this study.

_____________________________  __________________
Signature of Parent                Date
Appendix C

Best Practices of a Learning Management System

Parental Permission Form

The 5th & 6th of September

Dear Parents,

In addition to being your child’s kindergarten teacher, I am a St. Catherine University student pursuing a Masters of Education. As a capstone to my program, I am collaborating with Sarah Vycital and Ross Nelson to complete an Action Research project. We are going to study the best practices of using a Learning Management System (LMS) because we want to utilize 1:1 devices to their fullest potential to improve student learning.

In the coming weeks, we will be implementing the learning management system into our every day lessons to maximize and modernize student learning. All students will participate as members of the class. In order to understand the outcomes, we plan to analyze the data obtained from the results of this implementation to determine the ways in which a learning management system positively affects student learning and parent communication. All strategies implemented and assessments given are part of normal educational practice.

Parents are also welcomed to participate in this study. Parents will be emailed a feedback form three times during the semester. In each case we are just wanting to learn from you how useful the information we are sharing via the learning management system is for you and your student. If you choose to participate, you will be consenting to having your data included in our study. If you want to share your thoughts, but don't want to be included in our study, you could call or email me with your thoughts.

The purpose of this letter is to notify you of this research and to allow you the opportunity to exclude your child’s data from our study.

If you decide you want your child's data to be in our study, you don’t need to do anything at this point.

If you decide you do NOT want your child’s data included in our study, please note that on this form below and return it by Friday, September 8, 2017. Note that your child will still participate in the implementation, but his/her data will not be included in our analysis.

In order to help you make an informed decision, please note the following:

- We are working with a faculty member at St. Kate’s and an advisor to complete this particular project.
• The benefits of this study include modernizing and increasing student learning in addition to creating an open line of communication for parents to be able to message the teacher and see student work. There are no foreseeable risks involved with this study.
• We will be writing about the results that we get from this research. However, none of the writing that we do will include the name of this school, the names of any students, or any references that would make it possible to identify outcomes connected to a particular student. Other people will not know if your child is in our study.
• The final report of our study will be electronically available online at the St. Catherine University library. The goal of sharing our research study is to help other teachers who are also trying to improve their teaching.
• There is no penalty for not having your child’s data involved in the study, we will simply delete his or her responses from our data set.

If you have any questions, please feel free to contact me at nzwick@belleplaine.k12.mn.us. You may ask questions now, or if you have any questions later, you can ask me, or my advisor, Sean Beaverson (smbeaverson@stkate.edu), who will be happy to answer them. If you have questions or concerns regarding the study, and would like to talk to someone other than the researcher(s), you may also contact Dr. John Schmitt, Chair of the St. Catherine University Institutional Review Board, at [Contact Information].

You may keep a copy of this form for your records.

___________________________  __________________
Nicholas Zwick                     Date

OPT OUT: Parents, in order to exclude your child’s data from the study, please sign and return by 9/8/2017

I do NOT want my child’s data to be included in this study.

___________________________  __________________
Signature of Parent                     Date
Appendix D

LMS Learning Log

1. What best practices did you use Schoology and/or Seesaw for this week? *
   Check all that apply:
   - Discussion Board
   - Parent Communication
   - Daily Work/Content
   - Formative Assessment
   - Summative Assessment
   - Personalized Learning
   - Classroom Updates
   - Classroom Pictures
   - Differentiated Learning
   - Other:

2. If you used differentiated learning this week, what did you use it for? *
   Check all that apply:
   - Content
   - Process
   - Outcome

3. How much time did you spend building your LMS material this week? *
   Mark only one oval.
   - 0-30 minutes
   - 31 minutes-1 hour
   - 1 hour-2 hours
   - 2 hours-4 hours
   - 4 hours-6 hours
   - More than 6 hours

4. Did you collaborate with your learning team this week on ideas for LMS implementation? *
   Mark only one oval.
   - Yes
   - No
5. What was your attitude toward LMS use this week?*
   - Very Positive
   - Fairly Positive
   - Somewhat Positive
   - Somewhat Negative
   - Fairly Negative
   - Very Negative

6. For the question above, give one example of evidence to support your choice.*

7. Rate your student engagement for the week*
   - Very High
   - High
   - Medium
   - Low
   - Very Low
   - None

8. For the question above, give one example of evidence to support your choice.*

9. Feedback from parents*
   - Very Positive
   - Fairly Positive
   - Somewhat Negative
   - Fairly Negative
   - Very Negative
   - No Feedback

10. For the question above, give one example of evidence to support your choice.*

11. What worked well this week using the LMS?*
12. What didn’t work well this week using the LMS?

13. What data was collected this week?

14. Profound Observations
Parent Pre-Assessment

Please take a few minutes to fill out this voluntary form. Your answers will help inform the teachers, Ross Nelson, Sarah Vycital and Nick Zwick about the use of Schoology and/or Seesaw. If you don’t want to answer these questions in this way, but would like to have input, feel free to contact your child’s teacher via phone or email to share your ideas about the school’s learning management system, Schoology.

If you have any questions about this survey or the study please reach out to your child’s teacher:
Ross Nelson
Sarah Vycital
Nick Zwick

* Required

1. Who is your child’s teacher? (Optional)
Mark only one oval.
☐ Ross Nelson
☐ Sarah Vycital
☐ Nick Zwick

2. Do you have internet access at home or on your cellular device? *
Mark only one oval.
☐ Yes
☐ No

Schoology and Seesaw
Schoology and Seesaw are educational programs that allow for communication between teacher, students, and parents. The two programs also allow for activity completion (students will complete activities on the programs) and a place to house learning resources.

3. Have you used Schoology or Seesaw before? *
Check all that apply.
☐ Yes, I have used Schoology frequently
☐ Yes, I have used Schoology infrequently
☐ Yes, I have used Seesaw frequently
☐ Yes, I have used Seesaw infrequently
☐ No
4. Will your child benefit from using Schoology and or Seesaw? *  
Mark only one oval.
- Yes
- No
- Undecided

5. How confident are you in using a learning management system like Schoology or Seesaw? *  
Mark only one oval.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. How confident are you in helping your child use a learning management system like Schoology or Seesaw? *  
Mark only one oval.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. What are you hoping to access on Schoology and Seesaw? *  
Check all that apply.
- messaging capabilities
- homework resources
- classroom pictures/videos
- classroom updates
- view student work
- Other: ________________________________

8. What questions or suggestions, if any, do you have about our use of Schoology and or Seesaw for facilitating communication? *
Parent Mid-point Assessment

Please take a few minutes to fill out this voluntary form. Your answers will help inform the teachers, Ross Nelson, Sarah Vycital and Nick Zwick about the use of Schoology and/or Seesaw. If you don’t want to answer these questions in this way, but would like to have input, feel free to contact your child’s teacher via phone or email to share your ideas about the school’s learning management system, Schoology.

If you have any questions about this survey or the study please reach out to your child’s teacher: Ross Nelson, Sarah Vycital, Nick Zwick - [redacted]

* Required

1. Who is your child’s teacher? (Optional)
   Mark only one oval.
   - [ ] Nick Zwick
   - [ ] Sarah Vycital
   - [x] Ross Nelson

2. Have you had the chance to log into the school’s learning management system, Schoology or Seesaw yet? *
   Mark only one oval.
   - [x] Yes  Skip to question 3.
   - [ ] No   Skip to question 6.

Have logged into Schoology or Seesaw

3. What did you find useful about Schoology or Seesaw? *

4. How often do you use Schoology or Seesaw? *
   Mark only one oval.
   - [ ] Daily
   - [ ] Weekly
   - [ ] Every once in a while
   - [ ] Never
5. What do you use Schoology or Seesaw for? *
   Check all that apply:
   □ messaging capabilities
   □ homework resources
   □ classroom pictures/videos
   □ classroom updates
   □ view student work
   □ Other: ____________________________________

Skip to question 7.

Have not logged onto Schoology or Seesaw

6. Why haven't you logged onto Schoology or Seesaw yet? *
   ____________________________________
   ____________________________________
   ____________________________________

Skip to question 7.

Everyone

7. How confident are you at navigating a learning management system like Schoology or Seesaw? *
   Mark only one oval.

   1 2 3 4 5
   Not Confident □ □ □ □ □ Confident

8. How confident are you in helping your child use a learning management system like Schoology or Seesaw? *
   Mark only one oval.

   1 2 3 4 5
   Not Confident □ □ □ □ □ Confident

9. Will your child benefit from using Schoology or Seesaw? *
   Mark only one oval.
   □ Yes
   □ No
   □ Undecided
10. What else would you like to see, learn, or be able to do with this parent-teacher communication and curriculum management tool, if anything?

11. What questions or suggestions, if any, do you have about our use of Schoology for facilitating communication?
Appendix G

Parent Post-Assessment

Please take a few minutes to fill out this voluntary form. Your answers will help inform the teachers, Ross Nelson, Sarah Vycital and Nick Zwick about the use of Schoology and/or Seesaw. If you don’t want to answer these questions in this way, but would like to have input, feel free to contact your child’s teacher via phone or email to share your ideas about the school’s learning management system, Schoology.

If you have any questions about this survey or the study please reach out to your child’s teacher.
Ross Nelson
Sarah Vycital
Nick Zwick - 

* Required

1. Who is your child’s teacher? (optional)
   Mark only one oval.
   - [ ] Ross Nelson
   - [ ] Sarah Vycital
   - [ ] Nick Zwick

2. Do you have internet access at home or on your cellular device?
   * Mark only one oval.
   - [ ] Yes
   - [ ] No

3. How often did you use the Learning Management System Schoology?
   * Mark only one oval.
   - [ ] Daily
   - [ ] Weekly
   - [ ] Every once in a while
   - [ ] Never
   - [ ] Not applicable
4. How often did you use the Learning Management System Seesaw? *
   Mark only one oval.
   ○ Daily
   ○ Weekly
   ○ Every once in a while
   ○ Never
   ○ Not Applicable

5. Did your child benefit from using Schoology and or Seesaw? *
   Mark only one oval.
   ○ Yes
   ○ No
   ○ Undecided

6. How confident are you in using a learning management system like Schoology or Seesaw? *
   Mark only one oval.

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<th>1</th>
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<th>5</th>
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<tbody>
<tr>
<td>Not Confident</td>
<td></td>
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<td>Confident</td>
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</tbody>
</table>

7. How confident are you in helping your child use a learning management system like Schoology or Seesaw? *
   Mark only one oval.

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<tr>
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<td></td>
<td></td>
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<td>Confident</td>
</tr>
</tbody>
</table>

8. What did you use Schoology for? *
   Check all that apply.
   ○ messaging capabilities
   ○ homework resources
   ○ classroom pictures/videos
   ○ classroom updates
   ○ view student work
   ○ I did not use Schoology
9. **What did you use Seesaw for?**
   
   *Check all that apply.*

   - [ ] messaging capabilities
   - [ ] homework resources
   - [ ] classroom pictures/videos
   - [ ] classroom updates
   - [ ] view student work
   - [ ] I did not use Seesaw

10. **How could we make Schoology and or Seesaw better for students?**

11. **How could we make Schoology and or Seesaw better for parents?**

12. **What questions or suggestions, if any, do you have about our use of Schoology and or Seesaw for facilitating communication?**