January 2021

Creating And Designing Collaborative Learning Spaces In A Secondary School Setting

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CREATING AND DESIGNING COLLABORATIVE LEARNING SPACES IN A SECONDARY SCHOOL SETTING

by

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A Dissertation in Practice

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Doctor of Education

Grand Forks, North Dakota

August 2021

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Degree: Doctor of Education

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Darin John Walters
June 10, 2021

TABLE OF CONTENTS

LIST OF FIGURES

Figure Page

LIST OF TABLES

ACKNOWLEDGMENTS

I would like to thank my advisors, Dr. Sherry Houdek and Dr. Jared Schlenker, for their guidance, time, and leadership throughout my time in the Educational Leadership Program. I would also like to thank my committee members for their time and feedback regarding this project. To my wife, Beth, thank you for your continued support and understanding during this journey and the hours of editing. I couldn't have done it without you. Finally, my children—James, Reese, and Halle—I look forward to being at all your events and not missing them for class or doing homework.

ABSTRACT

The purpose of this study was to review current space (at the time of this study) in a high school that might be converted into a collaborative learning space to promote 21st century instructional practices and learning. The study focused on instructional practices for 21st century type learning and a learning environment needed to promote constructivist learning. Secondary data, from a high school staff and student surveys regarding their interest in using or having access to a collaborative learning space was analyzed to determine the need and desire for a collaborative learning space. This data analysis was then used to apply for possible funding through grants and community partnerships to design and renovate the space identified, a media center, to meet the needs of a 21st century learning environment.

Keywords: 21st Century Learning, Constructivist Learning, Collaborative Learning Environment

CHAPTER I

INTRODUCTION

Purpose of Study

The purpose of this study was to develop and create a collaborative learning space in a high school media center to promote 21st century learning and instructional practices focused on student-centered learning and problem solving. Secondary data from surveys completed by high school teachers and students, which included a description of a collaborative learning space and questions related to current media center usage, instructional strategies, and desired components of a collaborative learning environment were analyzed to determine if the school involved in this study had a need for an updated media center with a collaborative learning space.

Research Questions

The following research questions were used to guide the researcher in completing this study:

1. If there is access to a collaborative learning space, will educators be likely to use that space?
2. If students are provided with a collaborative learning space, will they be likely to use that space?
3. What features do high school teachers and students view as important characteristics of a collaborative learning space?

Hypothesis

Students and staff are intrigued and interested in having access to a collaborative learning space to allow for greater opportunities to promote 21st century learning. Teachers will be able to use the space and develop lessons that promote collaboration, creativity, and critical thinking skills. Students like the idea of an updated media center that meets modern needs and ideas of the 21st century. A new space will create excitement for taking risks, and trying new activities and lessons, for both teachers and students. So, the hypothesis of this study is a collaborative learning space will be an asset to the school involved in this study.

Significance of Study

The purpose of this study was to develop and create a collaborative learning space in a high school media center to promote 21st century learning and instructional practices focused on student-centered learning and problem solving. At the time of this study, the school district involved in this study was facing many financial challenges, so funding for this project was not readily available. This study was used as a catalyst to apply for grants and identify additional sources of funding to update the school's media center. The addition of a collaborative learning space, media production room, and breakout spaces (places students can escape from the commotion of a large school) may also help promote the updated mission of the school involved, Red River High School, which at the time of this study stated, "Red River High School's mission is to inspire and empower all learners to enrich the world through collaboration, innovation, and integrity" (K. Arason, personal communication, June 2, 2021).

Summary of Chapters

Chapter II describes the purpose of this study along with the research questions that drove the focus of the study. Core concepts of 21st century skills, collaborative learning environments, and a constructivist learning theory were used to drive the study. Chapter II includes a review of literature regarding these concepts, along with a description of possible solutions to developing and creating a collaborative learning space.

Chapter III provides a description of the project and purpose of the study. The research approach, questions, and setting are also described in Chapter III. Limitations to the study along with a description of data collection methods and data analyses performed are outlined to assist in presentation of data and findings of the study. Results of analyses of data and descriptive statistics from secondary data was used to complete a grant application.

Chapter IV presents a summary of the study and solutions drawn from data analyses. Chapter IV also includes connections to the core concepts of 21st century learning, collaborative learning spaces, and a constructivist learning theory. The final component of Chapter IV describes concerns related to the core concepts and moving forward with this project.

Chapter V presents a summary of the study, conclusions, discussions of findings, and recommendations for future studies.

CHAPTER II

PROBLEM OF PRACTICE

Overview of Problem

The focus of schools is being reformed to meet needs of the 21st century. Schools are developing ways and instructional strategies to provide students with skills necessary to be prepared and successful in today's world. The business world and post-secondary educational settings are looking for employees and students who are able to use critical thinking skills, collaboration skills, and creativity to solve problems. Teachers and school leaders are examining instructional strategies and practices and adapting instructional programs to provide lessons and learning opportunities that will develop and improve these skills. As schools transition from old to new instructional approaches, one issue they are facing is their ability to provide an educational setting that allows for the promotion of 21st century learning.

This project was developed and created to determine levels of wants and desires for a collaborative learning space in one high school media center to promote 21st century learning and instructional practices focused on student-centered learning and problem solving. Secondary data from surveys completed by teachers and students, which included a description of a collaborative learning space and questions related to media center usage, instructional strategies, and desired components of a collaborative learning environment at the time of this study were analyzed to determine if a need existed for an

updated media center with a collaborative learning space. Data from this study was used to drive applications for grant funding and build community partnerships.

Purpose of Study

The purpose of this study was to develop and create a collaborative learning space in a high school media center to promote 21st century learning and instructional practices focused on student-centered learning and problem solving. At the time of this study, the school and district involved were dealing with budget issues and concerns along with deferred maintenance projects because of lack of funds. Lack of funds also had resulted in the halt of new construction projects. Due to budget shortfalls, the plan for this project was to apply for grants and develop community partnerships to secure funding for creating a collaborative learning space in the media center of the researcher's school. The funding from grants and community partnerships would provide an opportunity to create designs and features of a collaborative space to provide students and teachers an opportunity to learn using 21st century skills and address real world problems.

Research Questions

Research questions for this study were developed from secondary data from a survey provided to the high school students and staff at the researcher's school regarding a collaborative learning space and updated media center. The survey was originally discussed and developed with school leaders and the Civil Engineering and Architecture teacher to explore building projects as part of a class curriculum. In previous years, students in the Civil Engineering and Architecture class designed media centers from blank warehouse spaces, which sparked the conversation about gathering more

information and working to gauge student and staff interest in having a collaborative learning space in their school.

The following research questions were used to guide the researcher in completing this study:

1. If there is access to a collaborative learning space, will educators be likely to use that space?
2. If students are provided with a collaborative learning space, will they be likely to use that space?
3. What features do high school teachers and students view as important characteristics of a collaborative learning space?

Literature Review

Twenty-First Century Learning

The 21st century requires students, employees, and citizens to think critically and solve problems using a variety of methods. Twenty-first century skills may include (but are not limited to) competencies such as flexibility, creativity, being literate in terms of technology usage, understanding of media, and the use of these technology and media in what has now become everyday life. Other 21st century skills include effective communication and an ability to collaborate with others.

The need for students to recall information and facts has decreased because of the digital society we live in and the information available to them through electronic devices, thus leading to a need for different approaches to education. Silva (2009) stated, "An emphasis on what students can do with knowledge, rather than what units of knowledge they have, is the essence of 21st-century skills" (p. 630). The world of work

has evolved from people working in isolation, focused on one task, working in one location to nearly all and any employment position today requiring use of effective communication, collaboration, and the navigation of at least some, if not multiple, means of technology. Education is, therefore, beginning to focus more on teaching students how to use information available to them successfully to develop their own ideas.

Pairing down a long list of 21st century skills to four main components is helpful. According to the National Education Association (n.d.), the Four Cs of 21st century learning and innovation skills are: "critical thinking and problem solving, communication, collaboration, and creativity and innovation" (p. 7).

Critical thinking and problem solving is the process of students analyzing and solving a problem based on information they are provided. The Partnership for 21st Century Learning (2015) described critical thinking and problem solving as being able to "reason effectively . . . use systems thinking . . . make judgments and decisions . . . [and] solve problems" (p. 4).

Communication is the second "C" of 21st century learning. Communication is important as it allows students to share their thoughts and ideas through a variety of methods. The Partnership for 21st Century Learning (2015) also included students being able to "listen effectively to decipher meaning, . . . [and] utilize multiple media and technologies" (p. 4) as components of communicating clearly. In today's society, students have immediate access to information so they need to be able to decipher (and discern) what information is credible and what is not and be able to communicate credible information to other people.

Collaboration is closely related to effective communication, occurring when students work together in groups or on teams with the intent to create something or solve a problem. The Partnership for 21st Century Learning (2015) defined collaboration as to "demonstrate ability to work effectively and respectfully with diverse teams, . . . exercise flexibility and willingness to be helpful, . . . [and] assume shared responsibility for collaborative work" (pp. 4-5).

Creativity and innovation refers to an individual's ability to brainstorm and come up with new ideas, or present ideas in a different way. The Partnership for 21st Century Learning (2015) described the following components as part of creativity and innovation: "Use a wide range of idea creation techniques (such as brainstorming) . . . elaborate, refine, analyze and evaluate . . . ideas in order to improve and maximize creative efforts; develop, implement and communicate new ideas to others effectively . . . .; act on creative ideas" (pp. 3-4).

Creativity, communication, collaboration and critical thinking are skills today's learners depend on as they navigate our world today. These skills intertwine with one another and grow stronger as they become more deeply developed. It is, therefore, critical for educators to develop and incorporate innovative programs that focus on all these skills, not just one skill, and not in isolation. Critical thinking and creativity are closely related and often are stressed through innovative lessons, which then need to be communicated effectively (National Education Association, n.d.). Educators should include collaboration in daily lessons to foster development of student communication and inspire creativity and critical thinking.

Collaborative Learning Environments

Changes in instructional practices with the intent to promote 21st century learning has created a need to explore alternative settings for learning that allow students to collaborate, communicate, and think critically through creative educational activities. Clinton and Wilson (2019) concluded in their study that "students perceive active learning classrooms as better suited for collaborative learning than traditional lecture classrooms" (p. 342). They also stated "students in active-learning classrooms indicated that collaborative learning was more enjoyable and useful than did their peers in traditional lecture classrooms" (Clinton & Wilson, 2019, p. 342).

Active-learning classrooms and collaborative learning spaces should be considered as alternative sites for learning as schools transition to instructional strategies focused on 21st century skills. Historically, classrooms were designed and created to promote learning that hinged upon teacher direction or the standard lecture style and structure with straight, forward-facing rows of desks. Today, restructuring (or constructing new) learning environments to better meet changing needs of students may take many physical forms. According to Merse (2018), the importance of a learning environment is not found in the specifics of how the environment is constructed as much as it is found in the fulfillment of a set of needs. These needs include the accommodation of all types of learning, the availability of flexible space, the insurance that users (students and teachers) feel comfortable navigating among uses, and finally, the overall goal that critical thinking, creativity, and communication is enhanced by the environment.

First, collaborative learning environments must allow all types of learning, from one-on-one learning, to working in small groups, to large group instruction (Merse, 2018)

with the ability to be flexible and useful for various learning scenarios. Demir-Yildiz and Tatik (2019) stated that the "proper arrangement of the classroom environment plays a significant role in making the education process more effective and creates an atmosphere that encourages learning" (p. 1159). Most physical constructions of learning spaces geared toward the development of 21st century skills include a classroom space and a breakout space, which through the utilization of planning ingenuity, can lend themselves to a myriad of configurations and possibilities with multiple seating and standing options. Also, with the added capacity potential that two spaces provide, students can work together in one large group, can break off into smaller groups, and even work on solo tasks with fewer distractions. Details such as the availability of technology, charging ports for electronic devices, and flexible seating add to the functionality of innovative learning spaces. De Borba, Alves, and Campagnolo (2020) suggested "natural elements and environmental aesthetics" were important and described "six categories of benefits of well-designed learning spaces: adaptability, comfort, ease-of-use, instructor-student interactions, variety, and concentration" (p. 52) as being integral to effective learning settings.

Second, the flexibility and less formal setup of a learning environment (both physically and in terms of teaching practices) should relate to student need. For example, educators often study and discuss Maslow's hierarchy of needs theory which exemplifies the scaffolding of need fulfillment from very basic physiological needs to the eventual actualization of self (DeMarco, 1998). Applying this in simple terms to the classroom environment will state that a student who is uncomfortable in their learning environment

is not going to learn. Only after trust has been established and physical needs have been met will there be learning. A flexible classroom environment may help achieve this goal.

Finally, a learning environment (both physically and psychologically) should lend itself to the enhancement of the "Four Cs": creativity, communication, collaboration, and critical thinking. As de Borba et al. (2020) stated, the goal is to "create teaching and learning spaces where students build their knowledge through interaction" (p. 52). This interaction can be with peers, with teachers, and also through interaction with their environment; technology allows connections with others to have no real limit.

Schools looking to develop and incorporate innovative education programs need to consider the structure and method of instruction. De Borba et al. (2020) stated, "McArthur (2015) asserted that the physical classroom space impacts students' learning in substantial and meaningful ways and showed that the ability of the teacher to influence student learning becomes more significant as classrooms become more flexible" (p. 53). Students will not be able to learn and develop 21st century skills effectively until instructional methods are implemented to address and emphasize 21st century skills.

Saavedra and Opfer (2012) pointed out "through the transmission model, students can learn information, but typically don't have much practice applying the knowledge to new contexts, communicating it in complex ways, using it to solve problems, or using it as a platform to develop creativity" (p. 9). Teachers need to transition their lessons from being teacher-centered to student-centered, where students are in control of their learning and problem solving. Teachers need to serve as a resource for students as they process information, instead of lecturing for an entire period and having students recall information. Teachers should provide the information needed in order for students to

create a knowledge base but then balance this with allowing students to create their own understanding and response to a given problem.

Collaborative learning spaces lend themselves to opportunities for students to research and break into groups to solve real world problems, but teachers must change their instructional approaches to allow this. Krahenbuhl (2016) stated "diverse approaches to instruction are crucial in any classroom" (p. 102). Teachers need to understand there can be more than one way to solve a problem, and students need to be in control of their learning (Sahin, 2009). In essence, teachers need to be able use a variety of instructional strategies to provide students an opportunity to use 21st century skills. Collaborative learning spaces create the opportunity for students to learn using a variety of methods and activities compared to traditional classroom settings.

Saavedra and Opfer (2012) listed nine lessons relative to teaching 21st century skills. The nine lessons of 21st century learning are to:

#1. Make it relevant.

#2. Teach through the disciplines.

#3. Develop thinking skills.

#4. Encourage learning transfer.

#5. Teach students how to learn.

#6. Address misunderstandings directly.

#7. Treat teamwork like an outcome.

#8. Exploit technology to support learning.

#9. Foster creativity.

(Saavedra & Opfer, 2012, p. 11)

Teachers should try to design and implement lesson plans using one or more of these objectives to help students develop 21st century skills. The challenge for school districts is to provide meaningful guidance and professional development opportunities for teachers to learn instructional strategies that develop deeper learning for students (DuFour & DuFour, 2015).

Savery (2006) defined problem-based learning as "an instructional (and curricular) learner-centered approach that empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem" (p. 12). The concept of problem-based learning is student driven and teachers serve as facilitators for learning (Licht, 2014). When students drive learning, they develop critical and creative thinking skills to solve problems and develop deeper learning of concepts. A collaborative learning environment provides a setting for teachers to structure lessons where they assist students instead of leading them through the learning process.

Constructivist Learning Theory

As Fernando and Marikar (2017) stated, "Teaching involves transmission of knowledge, but it is also much more than that" (p. 110). How do students actually consume or gain the knowledge imparted to them? Constructivist learning theory helps explain this very thing, and moreover, encourages practices that will lead to greater learning. One successful approach includes participation on the part of the student. "Constructivist teaching and learning theory advocates a participatory approach in which students actively participate in the learning process" (Fernando & Marikar, 2017, p. 110). Fernando and Marikar explained Constructivist Learning Theory further by pointing to

three main claims: first, learning is active; second, background knowledge or feelings students already have about a topic being taught will shape their learning with regard to this topic; and third, how students learn is ingrained in their social and cultural makeup.

Constructivist learning environments, as described by Uslu and Körükcü (2020) are based upon not only the students' metacognition but also on their understanding of the relevance of the subject matter. In constructivist learning environments, students "are aware of why and how to learn the information, realize their mistakes by testing the knowledge they have learned before and reach new information by correcting these mistakes" (p. 16).

Loyens, Rikers, and Schmidt (2006), stated that problem-based learning was developed in the mid-1960s as an offshoot of constructivist learning theory and was found to be an alternative to traditional teaching methods. A goal of problem-based learning environments has been to "help students construct an extensive and flexible knowledge base, become effective collaborators, develop self-directed learning skills, develop effective problem-solving skills, and become intrinsically motivated to learn" (Loyens et al., 2006, p. 365).

Linking Solutions

A committee which included the district grant writer, buildings and grounds director, school administration, media specialist, classroom teachers, and students was created to apply for grant funding and explore community partnerships with local businesses to raise funds to develop a collaborative learning space in the researcher's school. The district grant writer looked at a variety of grants to combine funding opportunities. Grant options have been limited based on qualifications needed for each

funding source, which has resulted in continued efforts to find grants or funding sources. Each grant has different requirements related to design and purpose of the grant, which may or may not align with plans for creating a collaborative learning environment, so partnerships and additional sources of funding also needed to be explored at the time of this study.

This committee also worked with the district's foundation for education department to explore possibilities for partnerships with businesses. These partnerships could include options for businesses to donate money, time, and additional resources in return for possible naming rights or other forms of acknowledgement. One example of this type of partnership involves JLG Architects working with students on the designing and remodeling of the media center into a collaborative learning space through a class project with the school's Civil Engineering and Architecture class. Students in the Civil Engineering and Architecture class researched collaborative learning spaces and partnered with local architects to develop plans, designs, and cost analyses for the project.

Summary

Chapter II described the purpose of this study along with the research questions that drove the focus of the study. Core concepts of 21st century skills, collaborative learning environments, and the constructivist learning theory were used to drive the study. Chapter II included a review of literature regarding these concepts, along with a description of possible solutions to developing and creating a collaborative learning space. Chapter III will describe the research methodology and data collection process of the study. Chapter IV presents a summary of the study and solutions drawn from data analyses. Chapter IV also includes connections to core concepts of 21st century learning,

collaborative learning spaces, and a constructivist learning theory. The final component of Chapter IV describes concerns related to core concepts and moving forward with the project. Finally, Chapter V presents a summary of the project, conclusions, discussions of findings, and recommendations for future studies.

CHAPTER III

RESEARCH APPROACH

Introduction

At the time of this study, the focus of schooling was being reformed to meet needs of the 21st century. Schools were developing ways and instructional strategies to provide students with skills necessary to be prepared and successful in the world (at the time of this study and in the future). The *business* world and post-secondary educational settings were looking for employees and students who were able to use critical thinking skills, collaboration skills, and creativity to solve problems. Teachers and school leaders were examining instructional strategies and practices and adapting instruction to provide lessons and learning opportunities that would develop and improve these 21st century skills. As schools transitioned from old to new instructional approaches, one issue they were facing was the ability to provide an educational setting that allowed for promotion of 21st century learning.

Purpose of Study

The purpose of this study was to look at space in the researcher's high school that might be converted into a collaborative learning space to promote 21st century instructional practices and learning. The study focused on 21st century learning and instructional practices and the type of learning environment needed to promote constructivist learning. Data from high school staff and student surveys regarding their

interest in using a collaborative learning space was analyzed to determine the need and desire for a collaborative learning space. This information was used to apply for funding through grants and community partnerships to design and renovate the media center at the researcher's school to meet needs of a 21st century learning environment.

Research Questions

Research questions for this study were developed from secondary data from a survey provided to students and staff regarding their interest in a collaborative learning space and updated media center. The survey was originally discussed and developed with school leaders and the Civil Engineering and Architecture teacher to explore building projects as part of the Civil Engineering and Architecture class curriculum. In previous years, students in the class designed media centers from blank warehouse spaces, which sparked a conversation about gathering more information and working to gauge student and staff interest in having a collaborative learning space in their school.

The following research questions were used to guide the researcher in completing this study:

1. If there is access to a collaborative learning space, will educators be likely to use that space?
2. If students are provided with a collaborative learning space, will they be likely to use that space?
3. What features do high school teachers and students view as important characteristics of a collaborative learning space?

Research Setting

The study was conducted at Red River High School in Grand Forks, North Dakota, and consisted of approximately 1000 students in Grades 9-12 and 100 certified instructional staff. Sixty-eight (68) staff members and 902 students submitted a survey. At the time of this study, the school district was facing a budget deficit along with millions of dollars in deferred maintenance costs, which led to a lack of funding for renovation projects. Red River High School's staff had been in the process of updating their mission and vision statements to promote 21st century learning for students through changes in instructional practices. The administration's approach to changing instruction practices created a need for learning spaces for students to collaborate in groups and present projects.

Research Approach

Original data from student and staff surveys was compiled and summarized by school leaders to determine if there was a need and desire for a collaborative learning space. The researcher further analyzed selected data and presented results of his analyses using descriptive statistics to develop a better understanding of basic information and results from the surveys. The researcher also used survey data to complete a Pearson correlation to compare student and staff responses. Survey results were also used to adjust and revamp an instructional framework document (Appendix A) for the school. The instructional framework is a document created by teachers with agreed upon teaching strategies and practices implemented school-wide.

Limitations

One limitation of the study could be that participants may not have truly understood the concept of a collaborative learning environment and the changes that would need to occur in the environment with changes taking place in instructional practices. Another limitation of the study was that secondary data was generic and did not get into specifics related to demographics of students and staff in regards to their grade level, years of experience, and content areas. Along with the generic nature of the survey, some surveys were not completely finished with all questions being answered. Finally, the fourth limitation of this study was the fact it was conducted during a worldwide pandemic during which teachers and students had received an inordinately large number of surveys, thus resulting in possible survey fatigue.

Data Collection

The original survey for teachers (Appendix B) was sent through a link to teachers' school email accounts with a description of the project and a brief introduction to the survey. Survey responses were collected and exported to an excel spreadsheet for further analysis by school leaders. The student survey (Appendix C) was also sent through a link to students on a remote learning day (students were attending school from home during the Covid-19 pandemic) as part of their attendance check-in for the day. Email addresses were not collected from teacher or student responses to allow for anonymity and the ability for respondents to answer honestly when the survey was originally sent by school administration. To ensure data was reliable and valid, surveys were designed to allow honest feedback and participants were only allowed to respond to the survey one time. Data became secondary when the researcher retrieved data from a school administrator's

electronic files and converted the data into codes for quantitative analysis purposes for this study. Before obtaining data from surveys for analysis, the researcher obtained permission (Appendix D) from the Grand Forks school district to conduct this study.

Data Analysis

Data were analyzed to determine desire and need for an updated media center based on generalization of survey questions. Descriptive statistics were used to answer Research Questions #1 and #2 using frequency and percentages. Research Question #1 asked, "If there is access to a collaborative learning space, will educators be likely to use that space?" and Research Question #2 asked, "If students are provided with a collaborative learning space, will they be likely to use that space?" The researcher coded data for general descriptions before further analyzing data within similar groups.

Presentation of Data

Sixty-eight (68) of approximately 100 certified teachers submitted an original survey for a response rate of 68%. Demographic information regarding the background information of teachers was not collected during the survey. Research Question #1 asked, "If there is access to a collaborative learning space, will educators be likely to use that space?" Data in Table 1 shows a descriptive breakdown of teacher responses regarding usage of the media center for their classes each semester.

Seventy-six and one tenth percent (76.1%) of teachers who completed the survey indicated they did not use the media center at all with their classes. In contrast, 73.1% of teachers stated they would be more likely to use the media center if it were updated and contained a collaborative learning space. Table 2 shows teacher responses to interest in using the media center if a collaborative learning space were available.

Table 1

Teacher Usage of Media Center (Number of Visits Per Semester)

Visits Per Semester	Frequency	Percent	Valid Percent	Cumulative Percent
0	51	75.0	76.1	76.1
1-2	11	16.2	16.4	92.5
3-4	3	4.4	4.5	97.0
5 or more	2	2.9	3.0	100.0
Total Responses	67	98.5	100.0	
No Response	1	1.5		
Total Participants	68	100.0		

Table 2

Teacher Interest in Using Media Center With a Collaborative Learning Space

Likely to Use Space	Frequency	Percent	Valid Percent	Cumulative Percent
No	18	26.5	26.9	26.9
Yes	49	72.1	73.1	100.0
Total Responses	67	98.5	100.0	
No Response	1	1.5		
Total Participants	68	100.0		

Eighteen teachers responded they had no interest in using the media center even if it was a collaborative learning space. Table 3 represents a break down in frequencies and percentages of reasons why 18 teachers did not think they would use a collaborative learning space. Six staff members did not feel their curricula lent itself to a collaborative learning environment, while eight staff members were not sure or confident in how they would use a collaborative learning space within the content area they were teaching.

Table 3

Reason Teachers Might Not Use a Collaborative Learning Space

Reason For Not Using	Frequency	Percent	Valid Percent	Cumulative Percent
Would Use	50	73.5	74.6	74.6
Curriculum Doesn't Lend Itself	6	8.8	9.0	83.6
No Value	3	4.4	4.5	88.1
Not Sure or Confident in Using	8	11.8	11.9	100.0
Total Responses	67	98.5	100.0	
No Response	1	1.5		
Total Participants	68	100.0		

Research Question #2 asked, "If students are provided with a collaborative learning space, will they be likely to use that space?" Nine hundred two (902) of approximately 1000 students submitted an original survey for a response rate of 90.2%. Demographic information regarding the background information of students was not collected during the survey, and some surveys had questions that were not answered. Data in Table 4 identifies a descriptive breakdown of student responses regarding usage of their media center at the time of this study for their classes each semester. Sixty-one and three-tenths percent (61.3%) of students who submitted a survey stated they did not use the media center at all for their classes. In contrast, 76.9% of students indicated they would be more likely to use the media center if it were updated and contained a collaborative learning space.

Table 4

Student Usage of Media Center (Number of Visits Per Semester)

Visits Per Semester	Frequency	Percent	Valid Percent	Cumulative Percent
0	545	60.4	61.3	61.3
1-2	226	25.1	25.4	86.7
3-4	75	8.3	8.4	95.1
5 or more	43	4.8	4.8	99.9
Total Responses	889	98.6	99.9	
No Response	13	1.4		
Total Participants	902	100.0		

The question related to likeliness of using a collaborative learning space if one was available was left unanswered by 14 of the 902 student survey responses. Table 5 presents student responses to interest in using the media center if a collaborative learning space were available.

Table 5

Student Interest in Using Media Center With a Collaborative Learning Space

Likely to Use Space	Frequency	Percent	Valid Percent	Cumulative Percent
No	205	22.7	23.1	23.1
Yes	683	75.7	76.9	100.0
Total Responses	888	98.4	100.0	
No Response	14	1.6		
Total Participants	902	100.0		

Research Question #3 asked, "What features do high school teachers and students view as important characteristics of a collaborative learning space?" Figure 1 shows a breakdown of teacher responses regarding desired features in a collaborative learning space, while Figure 2 shows student responses to desired features of a collaborative learning space.

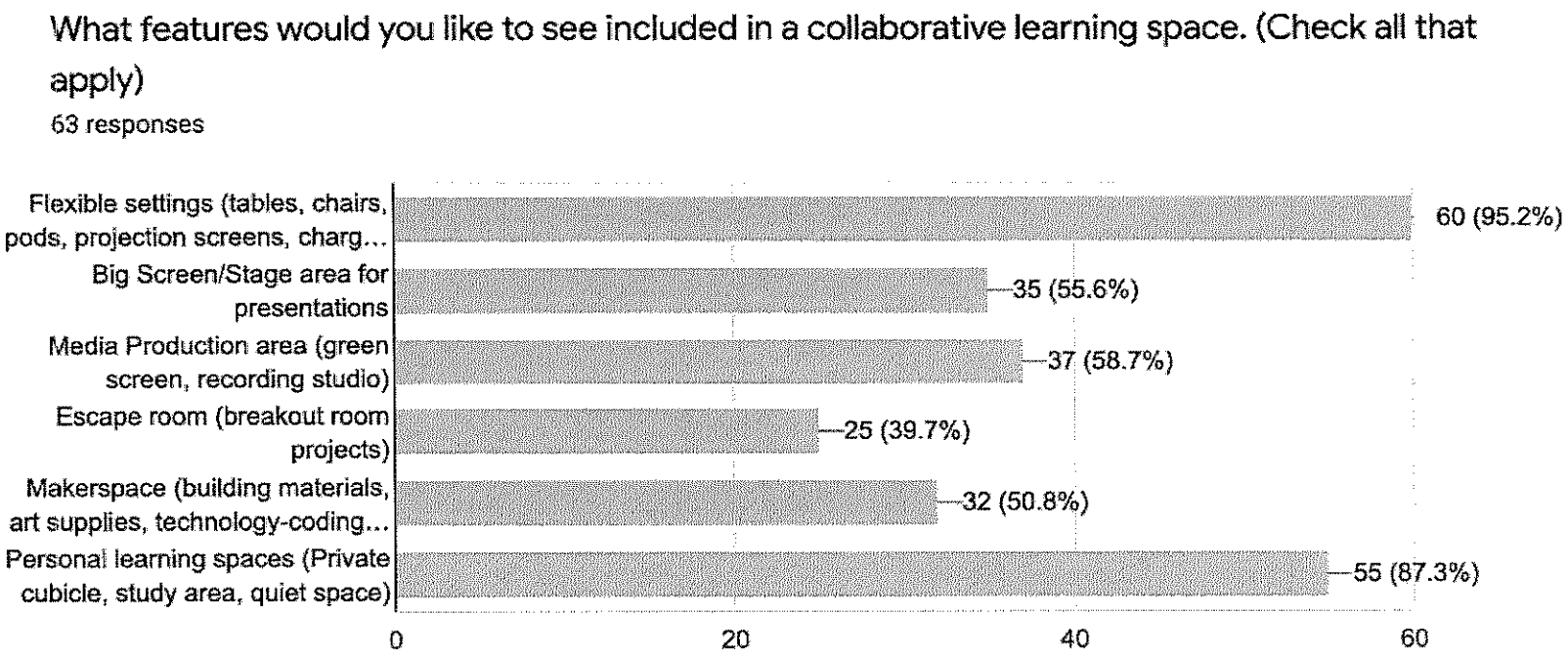


Figure 1. Teacher responses to what features they would like to see in a collaborative learning space.

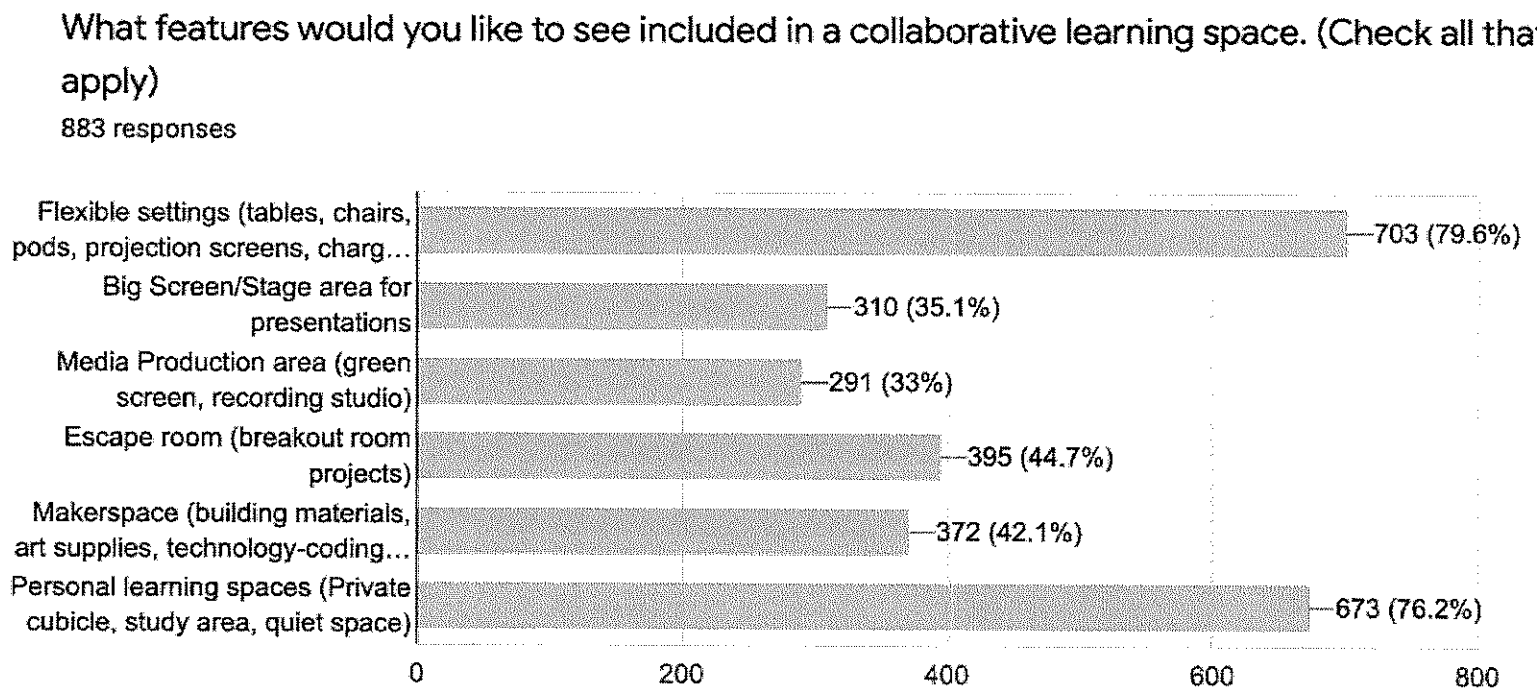


Figure 2. Student responses to what features they would like to see in a collaborative learning space.

Teachers (95.2%) overwhelmingly favored a flexible settings area where furniture could be moved around to accommodate needs of a class. Students (79.6%) also liked this idea, but didn't feel as strongly about it. Over half of teacher respondents

(55.6%) were interested in having a big screen/stage area, and only 35.1% of students were interested in this. The third ranking feature teachers (58.7%) were interested in was having a media production area; students showed the least interest (33.0%) in a media production area. The third ranking feature students were interested in was having an escape room (44.7%); teachers showed the least interest (39.7%) in an escape room.

Both teachers (87.3%) and students (76.2%) overwhelmingly supported the idea of personal learning spaces, and even though teacher and student opinions of having a flexible settings area were significantly different, both groups (teachers, 95.2%; students, 79.6%) chose a flexible settings area as their number one area of interest. The difference was in level of interest.

Summary

Chapter III provided a description of the project and the purpose of the study. The research approach, questions, and setting were also described in Chapter III. Limitations to the study along with data collection, analyses, and presentations of results were described throughout Chapter III. Quantitative and descriptive statistics were conducted to assess agreement of results (perceptions) between teacher participants and student participants regarding selected features of a new collaborative learning space in an updated media center.

Results of the study demonstrated there to be agreement in interests of teachers and students in using a collaborative learning space and updated media center, where 73.1% of teachers and 76.9% of students who completed the survey stated they would be more likely to use an updated space than the space they had at the time of this study. There were statistical differences in opinions of teachers compared to students regarding

some of the features proposed for a new collaborative learning space—flexible settings (teachers, 95.2% favored; students, 79.6% favored), big screen/stage area (teachers, 55.6% favored; students, 35.1% favored), media production area (teachers, 58.7% favored; students, 33.0% favored). There was not a significant statistical difference in teacher and student responses for a maker space (teachers, 50.8% favored; students, 42.1% favored), and personalized learning space (teachers, 87.3% favored; students, 76.2% favored). Students (44.7%) chose an escape room as their third ranked area of interest, while teachers (39.7%) chose escape room as their last area of interest.

Chapter IV presents a summary of the study and solutions drawn from the data analysis. Chapter IV also includes connections to the core concepts of 21st century learning, collaborative learning spaces, and a constructivist learning theory. The final component of Chapter IV describes concerns related to core concepts and moving forward with the project. Finally, Chapter V presents a summary of the study, conclusions, discussions of the findings, and recommendations for future studies.

CHAPTER IV

IMPLEMENTATION OF SOLUTION

Review of Project

The purpose of this study was to look at space in the researcher's high school that might be converted into a collaborative learning space to promote 21st century instructional practices and learning. The study focused on 21st century learning and instructional practices and the type of learning environment needed to promote constructivist learning. Data from high school staff and student surveys regarding their interest in using or having access to a collaborative learning space was analyzed to determine the need and desire for a collaborative learning space. This information was used to apply for funding through grants and community partnerships to design and renovate the media center at the researcher's school to meet needs of a 21st century learning environment.

Research questions for this study focused on high school staff and students being more likely to use the media center if a collaborative learning space was incorporated into the design, along with which features they would like to include in an updated collaborative learning space. Seventy-three and one-tenths percent (73.1%) of teachers and 76.9% of students who completed the survey stated they would be more likely to use the media center space if it was updated to serve as a collaborative learning space.

Teachers and students were asked to choose features they would like to see in a collaborative learning space. Over 95% of teachers wanted a flexible settings area that could be rearranged according to need, and over 87% teachers wanted personal learning spaces for their students. Students also wanted those things, but didn't feel as strongly about it. After that, the third most wanted feature students showed an interest in were escape rooms; teachers showed the least amount of interest in escape rooms.

Survey results showed teachers and students in agreement in regards to their interests in personal learning spaces (87.3% teachers interested; 76.2% students interested) and maker spaces (50.8% teachers interested, 42.1% students interested). Teacher and student responses to the features of having flexible settings options, a big screen/stage or presentation area, and a media production area were different with teachers being more interested in these features than students.

Solutions

The statistical data supported the concept of designing and creating a collaborative learning space within the researcher's high school media center. The researcher and district committee helped coordinate a partnership between JLG Architects and the Civil Engineering and Architecture class to collaborate and develop plans for renovating the media center into a collaborative learning space. The statistical data was shared with students in the Civil Engineering and Architecture class as they worked with JLG Architects during the planning and development phase of updating the media center with collaborative learning space designs, which are included in Appendices E (student ideas) and F (JLG Architects finished design).

Students toured facilities at the University of North Dakota which have been renovated to meet needs of 21st century learners and developed ideas for redesigning their media center space. Students then worked in groups and partnered with architects for feedback to develop and create media center plans with a collaborative learning space. JLG Architects used the final design to provide a budget summary for the project, which was used to complete a grant application. The budget summary and grant application are presented in Appendices G (budget) and H (grant application).

Connections

Survey responses from high school staff showed 76.1% of teachers who responded believed the school's mission, vision statement, and instructional practices supported 21st century learning (Table 6).

Table 6

Does School Mission, Vision, and Instructional Practices Support 21st Century Learning?

	Frequency	Percent	Valid Percent	Cumulative Percent
No	16	23.5	23.9	23.9
Yes	51	75.0	76.1	100.0
Total Responses	67	98.5	100.0	
No Responses	1	1.5		
Total Participants	68	100.0		

After reviewing results of the data analysis, the researcher concluded adding a collaborative learning space to school structures would enhance practices being used by staff at the time of this study and provide an opportunity for additional staff members to learn and collaborate with peers. A collaborative learning space would provide a central

location where all teachers could witness and participate in constructivist lessons with students and their peers. It also would allow an opportunity for collaboration among teachers to provide feedback to each other and to develop lessons across all curricular areas focused on constructivist learning and the application of collaboration, creativity, critical thinking, and communication, which are key components of 21st century learning.

At the time of this study, teachers promoting 21st century learning had students working in groups in multiple areas (hallways, commons, open classrooms) of the high school at one time. This made it difficult for teachers to be readily available to all students during a class. The collaborative learning space design provided spaces for students to meet in large groups and then break out into smaller groups and/or partners to collaborate and communicate in one setting making it easier for teachers to provide guidance while students solve problems. The inclusion of flexible settings, a presentation area, and media production area also would allow for students to demonstrate learning in a variety of methods.

Project designs completed by students in partnership with JLG Architects was a working example of 21st century skills being applied and constructivist learning in action. Students identified a problem, developed solutions, collaborated with peers and industry professionals, and communicated their designs to stakeholders. The Civil Engineering and Architecture teacher stated:

> I cannot stress enough how much work the students put into this project. They were highly engaged and had only positive feedback and gratitude for being able to work with JLG and receive as they called it a "REAL" problem. Thank you

very much for giving them that experience. (R. Moldenhauer, personal communication, May 11, 2021)

The researcher visited with families of the Civil Engineering and Architecture students who also shared their thoughts and comments about how excited their students were to be working on this project. The development of a collaborative learning space would provide opportunities for more students and staff to engage in similar projects and establish partnerships with professionals in a variety of fields.

Concerns

At the time of this study, the school mission and vision statement promoted 21st century learning; however, not all teachers completed the survey, and some teachers stated they would not use the collaborative learning space if it were accessible. Eighteen teachers stated they would not use the updated media space with reasons being they were not confident in creating lessons, their content did not lend itself to using a collaborative space, or they did not see value in using a collaborative space. If teachers do not buy-into the need for a collaborative learning space, or feel supported during decision making and construction of the space, there is a possibility the space would not be used for its designed purposes of promoting 21st century skills and constructivist learning. If the researcher's school received a grant to proceed with this renovation project, teacher concerns would need to be addressed, possibly through professional development and/or collaboration during professional learning committee time, teacher coaching with administration, and additional work with an instructional design coach to help teachers feel more confident in developing lessons that incorporate 21st century skills and constructivist learning.

After the project has been completed, school administrators will need to provide additional resources to teachers and students to ensure continued use of the collaborative space. One reason the design of a collaborative learning space project had the success it did relates to the partnership created with JLG Architects. The students working side by side with industry professionals was a critical component to their engagement with the project. School and district personnel need to build community partnerships with a variety of agencies to present more content areas with opportunities similar to this project. Developing projects and finding community partners willing to donate time and resources to projects may be a challenge, depending on the professional organization and type of project.

An additional concern related to this study surrounds the cost of the project. The proposed budget of $665,091 is a large amount of money and may not be able to be covered by grant money alone. The district grant writer discussed looking for additional grants, the possibility of Elementary and Secondary School Emergency Relief (ESSER) funds being used, and community partnerships to secure additional funding to support the project.

Summary

Chapter IV presented a summary of the study and conclusive solutions drawn from data analyses. Chapter IV also included connections to the core concepts of 21st century learning, collaborative learning spaces, and a constructivist learning theory. The final component of Chapter IV described concerns related to core concepts and to moving forward with the project. Finally, Chapter V presents a summary of the study, conclusions, discussions of the findings, and recommendations for future studies.

CHAPTER V

CONCLUSIONS

Summary

The purpose of this study was to look at space in the researcher's high school that could be converted into a collaborative learning space to promote 21st century instructional practices and learning. The study focused on 21st century learning and instructional practices and the type of learning environment needed to promote constructivist learning. Data from high school staff and student surveys with regard to their interest in using or having access to a collaborative learning space was analyzed to determine the need and desire for a collaborative learning space. This information was used to apply for funding through grants and community partnerships to design and renovate the media center at the researcher's school to meet needs of a 21st century learning environment.

Research questions for this study focused on high school staff and students being more likely to use the media center if a collaborative learning space was incorporated into the design, along with which features they would like to include in an updated collaborative learning space. Seventy-three and one-tenths percent (73.1%) of teachers and 76.9% of students who completed the survey stated they would be more likely to use the media center space if it was updated to serve as a collaborative learning space.

Teachers and students were asked to choose features they would like to see in a collaborative learning space. Over 95% of teachers wanted a flexible settings area that could be rearranged according to need, and over 87% teachers wanted personal learning spaces for their students. Students also wanted those things, but didn't feel as strongly about it. After that, the third most wanted feature students showed an interest in were escape rooms; teachers showed the least amount of interest in escape rooms. Teacher and student responses to the features of having a flexible settings option, a big screen/stage or presentation area, and a media production area were significantly different with teachers being more interested in these features than students.

Discussion of Findings

For discussion purposes of this study, each research question will be addressed by combining and comparing results of this study to literature based on core concepts of 21st century learning, collaborative learning spaces, and constructivist learning.

Research Questions

Research questions are given for the reader's review.

1. If there is access to a collaborative learning space, will educators be likely to use that space?
2. If students are provided with a collaborative learning space, will they be likely to use that space?
3. What features do high school teachers and students view as important characteristics of a collaborative learning space?

Twenty-First Century Learning

Findings of this study showed significant support from high school staff to promote 21st century learning. Survey responses showed 76.1% of teachers who responded believed the school's mission, vision statements, and instructional practices supported 21st century learning. Mission and vision statements were updated and modified during the 2020-2021 school year and involved teachers from all content areas. Teachers also developed an instructional framework document (Appendix A), which guided instructional practices. The framework was created with instruction focused on student-centered and constructivist approaches to learning.

At the time of this study, creativity, communication, collaboration, and critical thinking were skills learners depended on as they navigated through our world. These skills intertwine with one another and grow stronger as they become more deeply developed. Educators should include collaboration in daily lessons to foster development of student communication and inspire creativity and critical thinking.

Saavedra and Opfer (2012) listed nine lessons relative to teaching 21st century skills. The nine lessons of 21st century learning are to:

#1. Make it relevant.

#2. Teach through the disciplines.

#3. Develop thinking skills.

#4. Encourage learning transfer.

#5. Teach students how to learn.

#6. Address misunderstandings directly.

#7. Treat teamwork like an outcome.

#8. Exploit technology to support learning.

#9. Foster creativity.

(Saavedra & Opfer, 2012, p. 11)

A collaborative learning space would provide an environment and opportunities for teachers to develop lessons focused on 21st century skills.

Collaborative Learning Space

Clinton and Wilson (2019) concluded in their study that "students perceive active learning classrooms as better suited for collaborative learning than traditional lecture classrooms" (p. 342). They also stated "students in active learning classrooms indicated that collaborative learning was more enjoyable and useful than did their peers in traditional lecture classrooms" (Clinton & Wilson, 2019, p. 342). An updated media center would provide a collaborative learning space that teachers can use to create and implement active-learning lessons, which has been difficult to do with the set up in the media center and classrooms at the time of this study. Seventy-three and one-tenths percent (73.1%) of teachers and 76.9% of students who completed the survey stated they would be more likely to use their media center if it were updated with a collaborative learning space.

Most physical constructions of learning spaces geared toward the development of 21st century skills include a classroom space and a breakout space, which through the utilization of planning ingenuity, can lend themselves to a myriad of configurations and possibilities with multiple seating and standing options. A collaborative learning space creates the potential for students to work together in one large group, break off into smaller groups, or even work on solo tasks with fewer distractions.

Merse (2018) explained the importance of meeting the needs of students. These needs may include accommodating all types of learning styles and personalities, the availability of flexible space, the insurance that users (students and teachers) feel comfortable navigating among different types and uses of space, and finally, the overall goal that critical thinking, creativity, and communication is enhanced by an environment.

Constructivist Learning Theory

Constructivist learning environments, as described by Uslu and Körükcü (2020) are based upon not only students' metacognition but also on their understanding of the relevance of subject matter. In constructivist learning environments, students "are aware of why and how to learn the information, realize their mistakes by testing the knowledge they have learned before and reach new information by correcting these mistakes" (Uslu & Körükcü, 2020, p. 16). The concept of constructive learning was used by the Civil Engineering and Architecture class at the researcher's school as students worked with JLG Architects to develop designs for the collaborative learning space, present plans, and modify plans based on professional feedback to create a final design.

Loyens et al. (2006) stated that problem-based learning was developed in the mid-1960s as an offshoot of constructivist learning theory and was found to be an alternative to traditional teaching methods. A goal of problem-based learning environments has been to "help students construct an extensive and flexible knowledge base, become effective collaborators, develop self-directed learning skills, develop effective problem-solving skills, and become intrinsically motivated to learn" (Loyens et al., 2006, p. 365). The collaborative learning space designed in this study provides opportunity for collaboration between teachers not only in their own classrooms but also with teachers

from different content areas to create real world problems for students to find solutions. A collaborative learning space with a flexible settings area, presentation areas, and media production rooms allows students to devise and communicate solutions to real world problems using a variety of methods.

Recommendations

One goal of this study was to design and develop a collaborative learning space to provide opportunities for staff and students to engage in constructive lessons that promote the use of 21st century learning. Results from the study supported a desire for staff and students to have access to a collaborative learning space. It is essential that school leaders work with staff to provide support and resources to encourage teachers to develop lessons that focus on constructive learning and teaching 21st century skills to students.

Eighteen teachers that responded to the survey did not see value in a collaborative learning space for various reasons. School leaders should consider re-educating all staff members on the importance of 21st century skills and active learning environments based on constructivist learning theory. Teachers need to be encouraged and supported by administration to take chances with active lessons that allow students to take the lead and actively participate in their learning. Fernando and Marikar (2017) stated, "Constructivist teaching and learning theory advocates a participatory approach in which students actively participate in the learning process" (p. 110). Fernando and Marikar explained Constructivist Learning Theory further by pointing to three main claims: first, learning is active; second, background knowledge or feelings students already have about a topic being taught will shape their learning with regard to this topic; and third, how students learn is ingrained in their social and cultural makeup. Helping all teachers

recognize and value constructivist learning theory will be critical for successful implementation and continued use of collaborative lessons and promotion of 21st century skills in classroom lessons.

Professional development and collaboration will be critical for teachers to develop needed skills and feel comfortable in creating lessons focused on 21st century learning and on using a collaborative learning space. Instructional rounds and the opportunity for teachers to observe their colleagues using a collaborative learning space is one option to promote 21st century learning among staff and students.

Recommendations for Future Research

Results of this study show high school students and staff participating in the study had an overall interest in having access to a collaborative learning space. The data used for this study was secondary and came from a general survey presented to students and staff earlier that did not collect specific information related to participant demographics. Recommendations for future research include:

1. Collecting demographic information of respondents related to content areas, years of teaching experience, and grade level of students.
2. Collecting statistical data focused on the frequency of media center usage by students and teachers once the collaborative learning space project is completed.
3. Asking respondents for their recommendations on what types of features a collaborative learning space should have based on projects and lessons performed in the collaborative space and media center.

4. Identifying the impact, a shift to 21st century learning and usage of the collaborative learning space will have on student achievement.

Conclusions

The purpose of this study was to look at space in the researcher's high school that could be converted into a collaborative learning space to promote 21st century instructional practices and learning. The study focused on 21st century learning and instructional practices and the type of learning environment needed to promote constructivist learning. Data from high school staff and student surveys with regards to their interest in using or having access to a collaborative learning space was analyzed to determine the need and desire for a collaborative learning space.

Based on results of this study, instructional practices at the time of the study, and the researcher's educational experience, it appeared high school students and staff had a strong interest in having access to an updated media center with a collaborative learning environment. It is the hope of the researcher that the data and evidence presented in this study will provide enough support to attain funding for the renovation project.

APPENDICES

Appendix A
Red River High School Instructional Framework
What We Believe

Should See and Hear Daily	**Could** See and Hear Daily	**Should NEVER** See or Hear

Positive, Safe Classroom Culture:
- Building relationships
- Consistent routines & procedures
- Enthusiasm
- Greeting students
- Inclusion
- Professionalism
- Welcoming environment
 	
Instruction:
- Checks for understanding/ Informal assessment
- Clear directions
- Physical movement to enhance learning
- Posted learning goals & objectives
- Preview/review content
- Rigorous content-chunked smaller
- Teacher withitness
 	
Promoting Essential Skills:
- Academic integrity
- Asking and answering questions
- Critical thinking/problem solving
- Engagement
- Good citizenship/respectful behavior
- Wondering/curiosity/growth mindset
	Educational Relationships:
	- Celebrating success
	- Collaboration
	- Goal setting
	- Openly communicating
	
	Variation of Instruction:
	- Academic games
	- Co-teaching/ Peer teaching
	- Debate & discussion
	- Formal assessments/rubrics
	- Hands-on learning
	- Modeling
	- Purposeful work, deepening knowledge
	- Real-life application
	- Technology that enhances learning
	- Timely, meaningful feedback
	- Tracking student progress
	
	Classroom Environments That Display:
	- Creativity & innovation
	- Cultural competence
	- School pride
		Unsafe Learning Environment:
		- Bullying
		- Discrimination
		- Violence/Drugs
		
		Unwelcoming and Disrespectful Environment:
		- Confidentiality issues
		- Disrespectful behavior
		- Inappropriate language
		
		Disengaged Instruction:
		- Busy work
		  - Easily copied homework
		  - Does not deepen knowledge
		- Low expectations
		- Unprepared lessons

Appendix B
Teacher Survey

RRHS Collaborative Learning Center

We are in the initial stages of planning and applying for grants and partnerships to renovate a portion of the Media Center at Red River High School to create a collaborative learning center and learning commons area. Please take a few minutes to answer the following questions related to renovating the Media Center to update the space and provide a learning commons/collaborative learning space.

* Required

Collaborative Learning Space example:

1. Do you believe RRHS's current mission and vision statements, and instructional practices support using 21st Century Skills (Collaboration, Communication, Critical Thinking, and Creativity)? *

   Mark only one oval.

   ◯ Yes
   ◯ No

2. How often do you currently use the Media Center for your class assignments or projects? *

Check all that apply.

- [ ] I do not use the Media Center for my classes.
- [ ] 1 – 2 times per semester
- [ ] 3 – 4 times per semester
- [ ] 5 or more times per semester

3. If a Collaborative Learning Space was available, would you be more likely to bring your classes to the Media Center? *

Mark only one oval.

- ◯ Yes
- ◯ No

4. If you responded "No" to the previous question, please give a brief reason for not seeing the value in using a collaborative learning space.

Check all that apply.

- [ ] Curriculum doesn't support collaborative learning
- [ ] I don't see the value in a Collaborative Learning Space
- [ ] Not sure/confident in how to use a Collaborative Learning Space

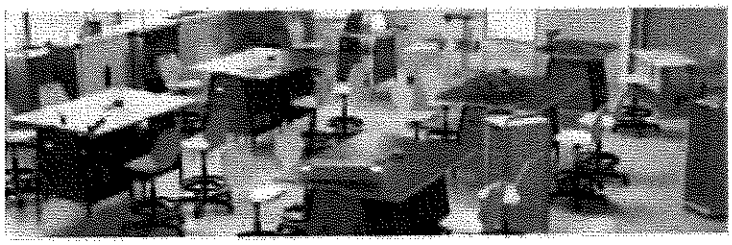
5. What features would you like to see included in a collaborative learning space? (Check all that apply)

Check all that apply.

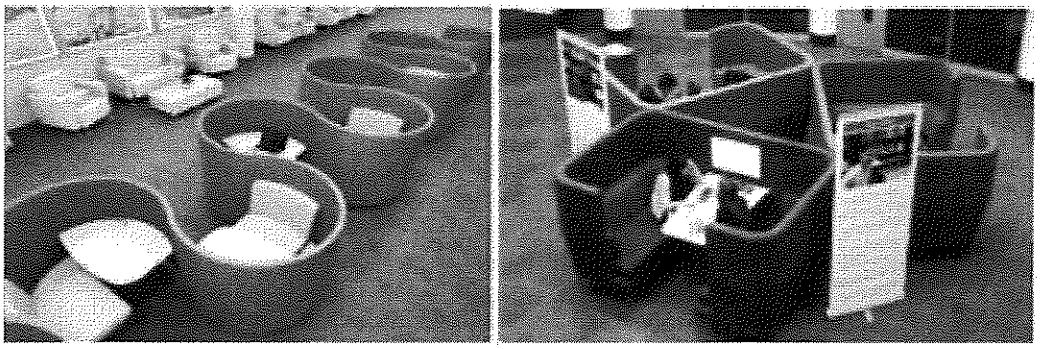
- ☐ Flexible settings (tables, chairs, pods, projection screens, charging stations)
- ☐ Big Screen/Stage area for presentations
- ☐ Media Production area (green screen, recording studio)
- ☐ Escape room (breakout room projects)
- ☐ Makerspace (building materials, art supplies, technology-coding, robotics, 3D printer, google expedition, VR glasses)
- ☐ Personal learning spaces (Private cubicle, study area, quiet space)

Media Production Area example:

Makerspace example:



Personal Learning Space example:



6. What type of support would you need to develop lessons to incorporate the use of a collaborative learning center? (Check all that apply) *

Check all that apply.

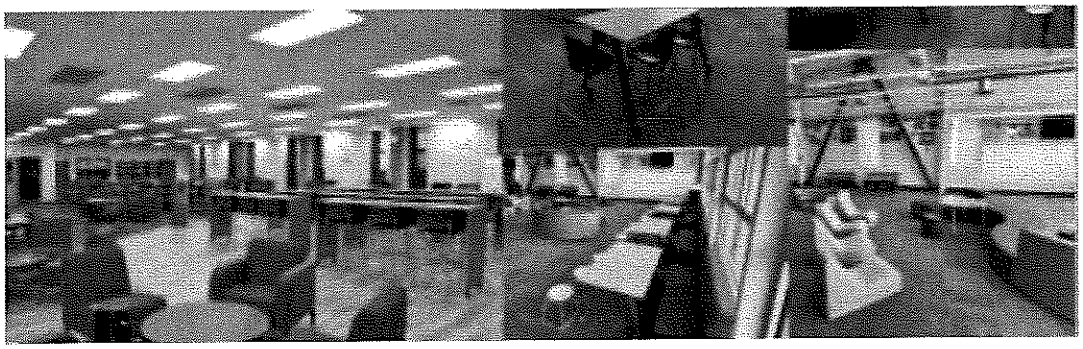
- ☐ Collaboration with colleagues for lesson planning
- ☐ Instructional strategies and activities
- ☐ Identifying standards that lend themselves to collaborative learning
- ☐ I feel confident in planning collaborative lessons

Appendix C
Student Survey

RRHS Collaborative Learning Center

We are in the initial stages of planning and applying for grants and partnerships to renovate a portion of the Media Center at Red River High School to create a collaborative learning center and learning commons area. Please take a few minutes to answer the following questions related to renovating the Media Center to update the space and provide a learning commons/collaborative learning space.

Collaborative Learning Space example:



1. How often do you currently use the Media center for your class assignments or projects?

   Check all that apply.

   - ☐ I do not use the Media Center for my classes.
   - ☐ 1 – 2 times per semester
   - ☐ 3 – 4 times per semester
   - ☐ 5 or more times per semester

2. If a Collaborative Learning Space was available, would you like to see more of your classes use the media center for projects?

   Mark only one oval.

   - ◯ Yes
   - ◯ No

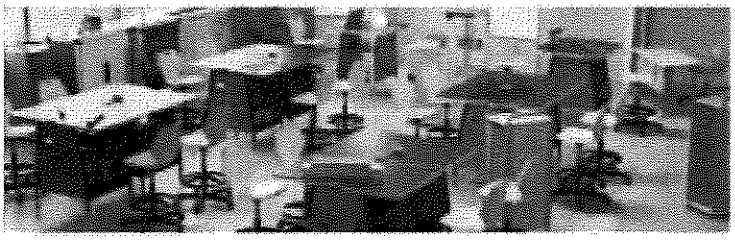
3. What features would you like to see included in a collaborative learning space? (Check all that apply)

Check all that apply.

- ☐ Flexible settings (tables, chairs, pods, projection screens, charging stations)
- ☐ Big Screen/Stage area for presentations
- ☐ Media Production area (green screen, recording studio)
- ☐ Escape room (breakout room projects)
- ☐ Maker space (building materials, art supplies, technology-coding, robotics, 3D printer, google expedition, VR glasses)
- ☐ Personal learning spaces (Private cubicle, study area, quiet space)

Media Production Area example:

Maker space example:



Personal Learning Space example:

Appendix D
Permission to Conduct Research

Request to Conduct Research in the Grand Forks Public Schools

Date: 3/23/2021	**Name:** Darin Walters	**Phone:** (701) 215-0789
Fax or Email: darin.walters50@gmail.co		**Research Advisor:** Dr. Sherryl Houdek
Address: 633 Mighty Acres Drive, Grand Forks ND, 58201		**College or Dept.:** UND - Ed Leadership
Research Title: Creating and Designing a Collaborative Learning Space in a Secondary School		
Give a brief description of your research. Attach additional papers if necessary. Please attach sample copies of assessment instrument, tests, or communications to be used: The purpose of this project is to look at current space in Red River High School that can be converted into a collaborative learning space to promote 21st Century instructional practices and learning. The study will focus on 21st Century Learning instructional practices and the learning environment needed to promote Constructivist Learning. Original surveys were completed by Red River staff January 28-31, 2021 and Red River students February 2-8, 2021 in conjunction with projects previously started in the Civil Engineering and Architecture class and discussions with buildings and grounds director Chris Arnold. The secondary survey data from staff and student surveys will be analyzed with regard to their interest in using or having access to a collaborative learning space for my dissertation in practice, which will include writing a grant. The grant will be used to renovate the current media center to meet the needs of a 21st Century Learning Environment. Survey data is currently stored in the Grand Forks Public Schools Google Drive.		
Number of students needed for research: RRHS Student body - 902 responses	**Number of teachers needed for research:** RRHS Instructional staff - 67 responses	**Grade Level or Dept.:** Grades 9-12
What schools are you interested in conducting the research in? Red River High School		
Will confidential records be required? (If yes, indicate type.) No, survey responses were collected anonymously		**Length of time required to complete the research:** March 1/December 1, 2021

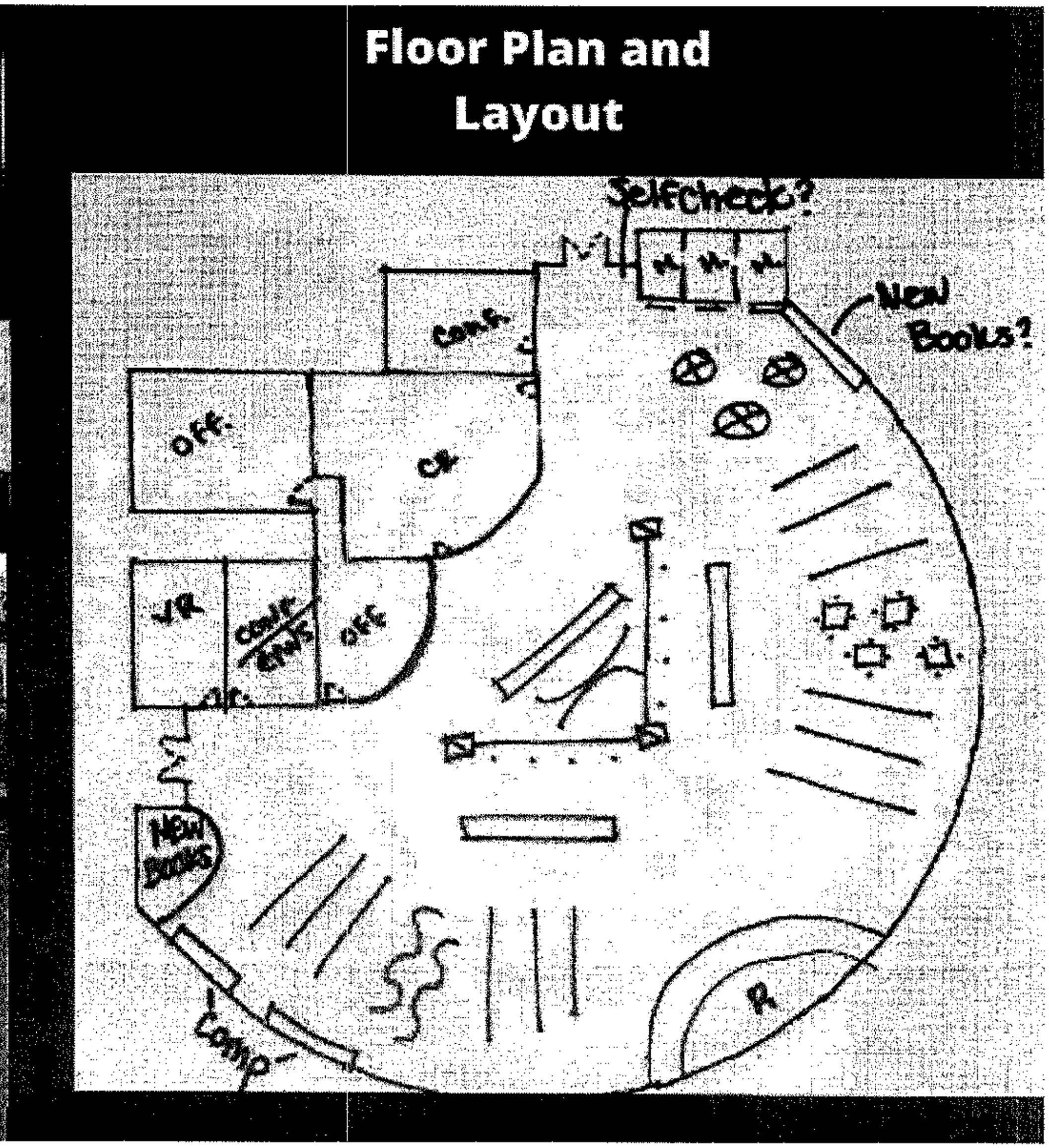
To be completed by School District Official:

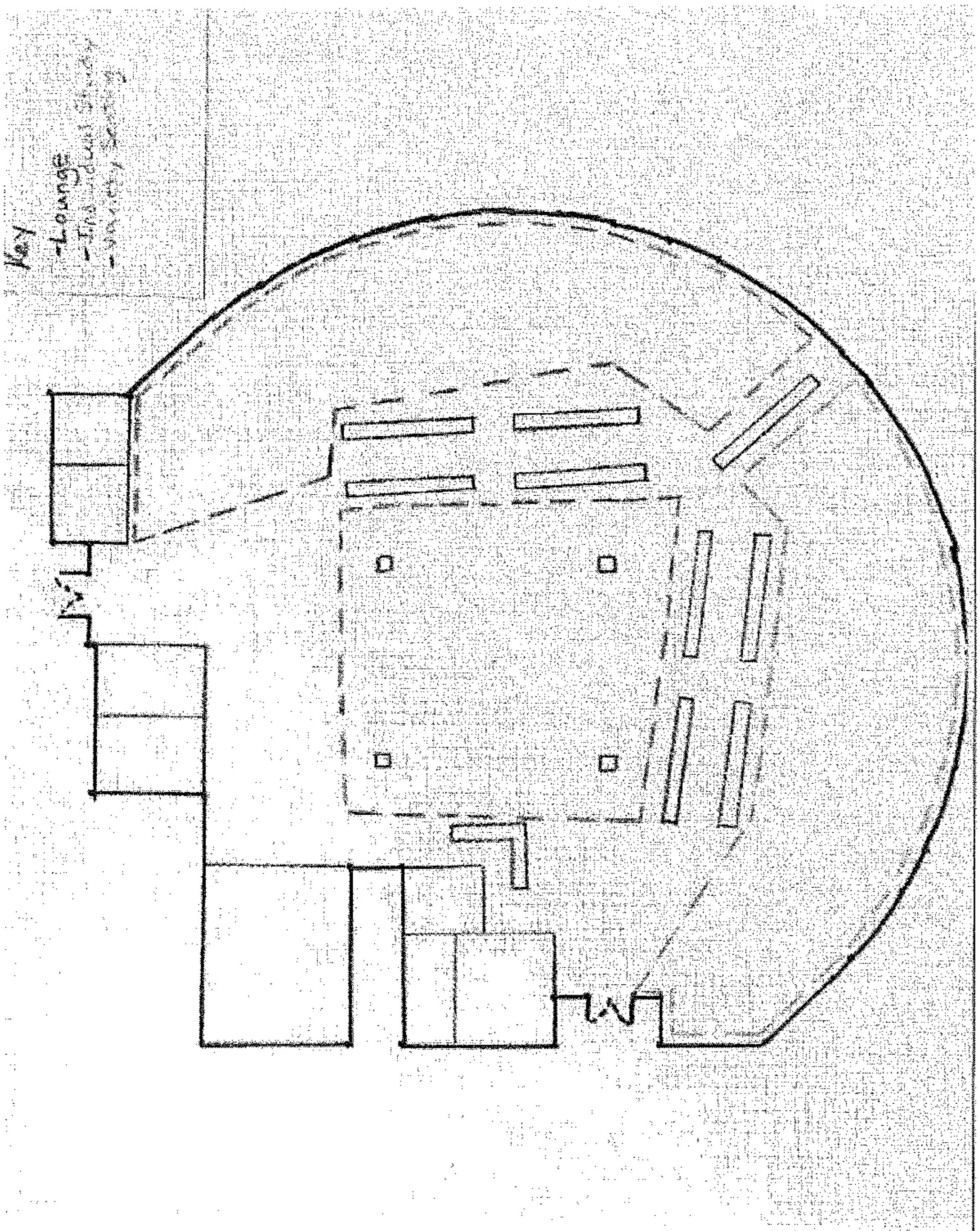
Approved: **Not Approved:**	
Assistant Superintendent Signature:	**Date:** 31 MAR 21
Approved to conduct research in the following schools:	

Send completed form to: Grand Forks Public Schools, Box 6000, Grand Forks, ND 58206-6000
Attn: Assistant Superintendent's Office

Appendix E
Project Design - Students


Furniture Ideas
FURNITURE
LEARNING


Floor Plan and Layout
Selfcheck?
New Books?
CONF.
OFF.
CR
VR
OFF
New Books
Comp
R


Key
-Lounge

Appendix F
Project Design – JLG Architects

Red River High School Library Renovation
RE: Project Summary
June 14th, 2021

Red River High School Library Renovation Summary:

To/CC: (CC if not checked)
☒ Darin Walters
Red River High School
☒ Tawya Schleicher
Grand Forks Public Schools

In the spring semester of 2021, the Red River High School Project Lead the Way students broke into four separate groups to develop options for how they would like to reinvent their library to meet 21st Century Learning. They were also tasked to design a space that reflects current student engagement and use of a modern library space. The following is a summary of the scope of work based on the commonalities between the four different student options:

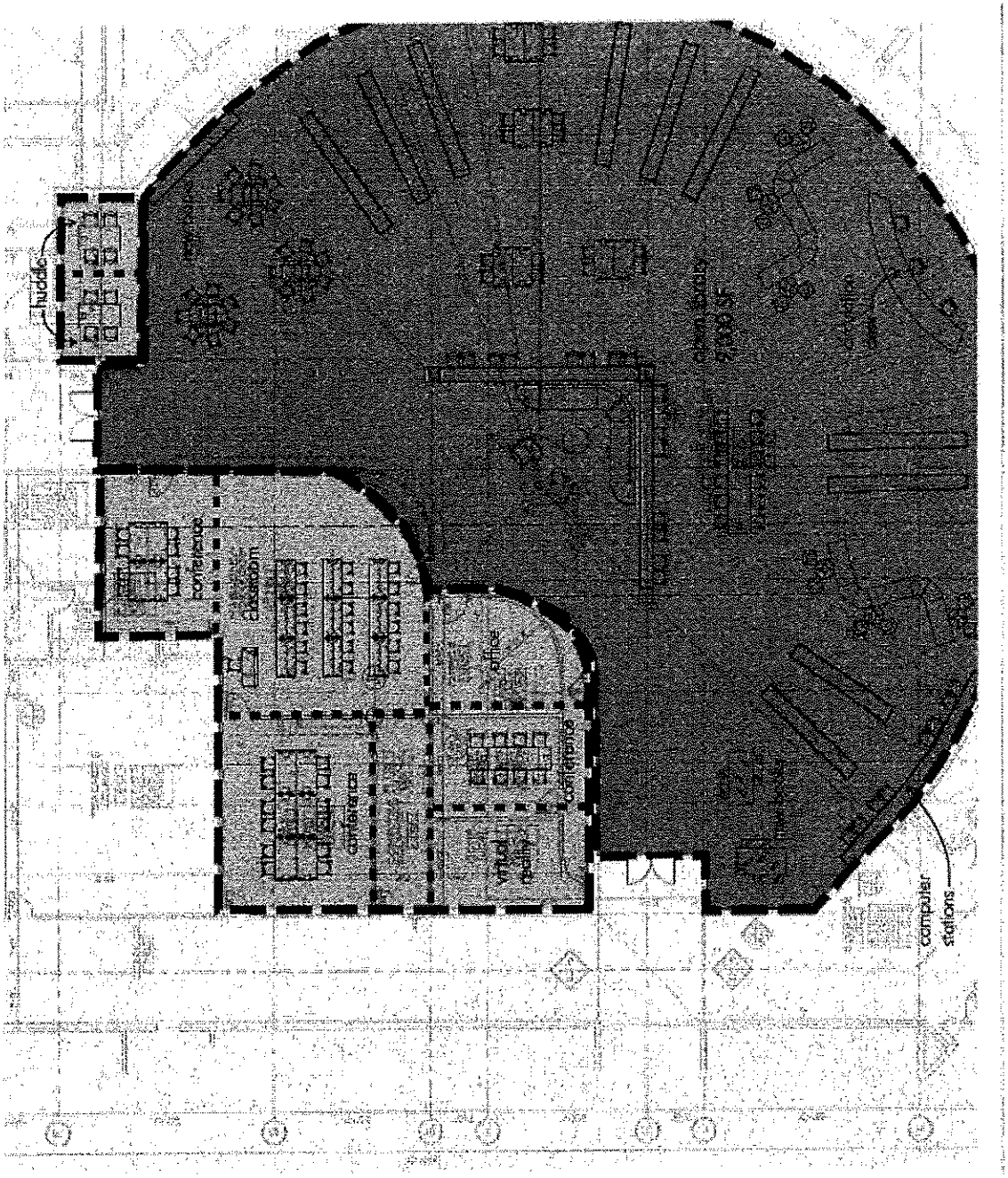
1. RRHS Classroom, Conference Room, Huddle Rooms, Office – The students desired to have a mix of learning spaces in the library. This includes a small classroom (720 square feet), three conference rooms for 8-12 students, two to three small huddle rooms that would fit 2-4 students each, a Virtual Reality room (VR), and reconfiguration of the offices around at the core of these spaces. The construction scope of this work would be the most significant, including demolition of some walls, addition of new walls and doors, finishes, reconfiguration of ceilings, lighting fixtures, and modifications to the HVAC distribution. These improvements are budgeted to be around $65 per square foot.

2. Open Library Space Improvements – The students were able to creatively imagine the main library space that has traditionally been used for housing books in long, tall library stacks with some minimal and static furniture. They imagined a space that was refreshed and open (some carpet tile, accent lighting, accent paints, some upgrades to power and data, and new reception desk casework at a central location). These upgrades would help support current student needs, help zoning in the space, and bring a RRHS student touch with some input on new finishes.

3. Casework – Reuse – Through student input, there was still recognition that there is a need for relevant and new books for them to access and check out. Each group envisioned a reduction of the size and height of the current book stacks, as well as implementing rows of lower stacks (at about bar top height of 42"). This way, they could improve visibility and access to natural light throughout the space, and also use the top of the stacks as a secondary place for students to stand and collaborate and use the top of the shelves for a work-surface (set notebook or laptop on). This is also useful for students that want to browse books that they might be interested in. About a third of the existing stacks are already at this height, so there is an allowance ($10,000) to take some of the existing taller stacks and modify them to also be at this lower height, instead of purchasing new library stacks.

4. Furniture – In every group, the students envisioned a Library that had different types of furniture to fit different needs. This included a lounge furniture zone in the center of the library below the skylights, flexible/movable tables and chairs for group work and individual study, booth seating, and options for more private individual seating and studying. This also included flexible classroom and conference room tables and chairs that could be set up for typical settings or combined together for more collaboration. Some new interesting shelving and displays for new books was also discussed.

Based on the students input and direction, a budget summary for these four different line items is attached.


huddle
computer
stations

Appendix G
Project Budget

BUDGET SUMMARY

Red River High School Library

Issued: Date January 2021

CONSTRUCTION COSTS			
Renovation Cost	**Cost/SF**	**Area (SF)**	
Classroom/Conference/Huddle Room	$65	2,700	$175,500
Open Library Space	$15	9,000	$135,000
Casework - Reuse			$10,000
		SUBTOTAL	**$310,500**
Furniture			
Lounge, Classroom, Seating/tables, Huddle, Conf.			$225,000
			$0
			$225,000
Contingency	15%		$80,325
Escalation Fall 2021 Start			$0
		SUBTOTAL	**$80,325**
TOTAL CONSTRUCTION COSTS			**$615,825**

SOFT COSTS (OWNER)	
Professional Fees	$0
Reimbursable Expenses	$0
Owner Fees	$0
Furniture, fixtures and equipment (FFE)	$0
Technology Security and Equipment	$0
Site Survey	$0
Geotechnical Report	$0
Hazardous Material Abatement	$0
Temporary Heat	$0
Special Inspections and Testing	$0
Permits	$0
Tapping Fee	$0
Legal, Admin or Miscellaneous Cost	$0
Moving Cost	$0
*All softcosts are estimated at 8%	
TOTAL SOFT COSTS	**$49,266**

TOTAL PROJECT COST	
TOTAL PROJECT COST	**$665,091**

Appendix H
Grant Application

ENGELSTAD FOUNDATION
GRANT APPLICATION FORM

Please be sure to fill out the application completely, all fields are required. Your organization's total grant submission can be up to a maximum of 10 pages. The page count includes this application and your organizational budget. Please feel free to attach additional pages to your application keeping the 10-page limit in mind.

Background Information:

Program or project title: Red River Media Center Collaborative Learning Space Project

Organization: Grand Forks Public Schools

Address: 2400 47th Avenue South

City, State, Zip: Grand Forks, ND 58201

Phone: 701-746-2200 Fax: 701-772-7739

E-mail: dwalters150@mygfschools.org Website: www.gfschools.org

Contact person: Darin Walters Title: Associate Principal

Information about the Request:

Date of application: 06/01/2021 Amount Requested: $665,091.00

Type of Support (please check):
☑ Project ☐ General Operating ☐ Capacity Building ☐ Technical Assistance ☐ Emergency

What geographic area will be served? High School Students Grade 9-12

What is the approximate number of people served by this project? 1,000 students per year

What is the period of time covered by the project? 15-20 years

Organizational Information:

How long has the organization been in existence? 140 years

How many people are served annually overall? 7,900

Number of paid staff: Full-time 892 Part-time 435

Number of volunteers involved in your organization we do not track this number

Organization name Grand Forks Public Schools

Are there other non-profit agencies that your organization is partnered with? Please list:

Not applicable at this time.

How often does your board meet? 2 times per month

Please list the members of the Board of Directors:

Please see attachment

Please list the names and titles of the leadership of your organization:

Dr. Terry Brenner, Superintendent of Schools
Mr. Jody Thompson, Associate Superintendent of Elementary Education
Ms. Catherine Gillach, Assistant Superintendent of Secondary Education
Mr. Scott Berge, Business Manager

Organization name Grand Forks Public Schools

What is your organization's mission statement?

Our mission at Grand Forks Public Schools is to provide an environment of educational excellence that engages all learners to develop their maximum potential for community and global success.

Financial Information:

Total income of organization (most recent fiscal year): $108,092,846.00

Total expenses of organization (most recent fiscal year): $113,811,271.00

If your application is for a project:

Total expenses budgeted for the project: $665,091.00

Amount raised for the project so far: $0.00

Please list the other funding sources with the amount funded per source.

Not applicable at this time

What is the end goal of the possible grant? What do you hope to achieve?

Reinvent the Red River Media Center to meet 21st Century Learning. This project will be student driven with students developing concepts and designing the spaces. The media center space will provide a mixture of learning spaces including a virtual reality room. The collaborative learning space will promote the use of 21st Century Learning and provide a space for project based learning and collaboration between teachers, students, and community organizations. The redesign of the media center will provide open spaces for natural light and furniture that is flexible and movable to provide collaboration.

Creating and Designing a Collaborative Learning Space

Englestad Foundation Grant Application

The focus of schools is being reformed to meet the needs of the 21st Century. Schools are developing ways and instructional strategies to provide students with the skills necessary to be prepared and successful in today's world. The business world and post-secondary educational setting are looking for employees and students who are able to use critical thinking skills, collaboration skills and creativity to solve problems. Teachers and school leaders are examining instructional strategies and practices and adapting instruction to provide lessons and learning opportunities that will develop and improve these skills. As schools transition their instructional approaches, one issue they are facing is the ability to provide an educational setting that allows for the promotion of 21st Century learning.

The 21st century requires students, employees and citizens to think critically and solve problems using a variety of methods. Twenty-first century skills may include (but are not limited to) competencies such as flexibility, creativity, being literate in terms of technology usage and the understanding of media and the use of these two components in what has now become everyday life. Other 21st century skills include effective communication and the ability to collaborate with others. The need for students to recall information and facts has decreased because of the digital society we live in and the information available to them through electronic devices, thus leading to the need for different approaches to education. Silva (2009, p.630) states, "An emphasis on what students can do with knowledge, rather than what units of knowledge they have is the essence of 21st century skills." The world of work has evolved from people working in isolation, focused on one task, working in one location to nearly all and any employment position today requiring the use of effective communication, collaboration and the navigation of at least some, if not multiple, means of technology. Education is, therefore,

beginning to focus more on teaching students how to use the information available to them to develop their own ideas and how to use that information successfully.

Creativity, communication, collaboration and critical thinking are skills today's learners depend on as they navigate our world today. These skills intertwine with one another and grow stronger as they become more deeply developed. It is, therefore, critical for educators to develop and incorporate innovative programs that focus on all of the skills and not in isolation. Critical thinking and creativity are closely related and often are stressed through innovative lessons, which then need to be communicated effectively (National Education Association, p.9). Educators should include collaboration in daily lessons to foster the development of student communication and inspire creativity and critical thinking.

Active-learning classrooms and collaborative learning spaces should be considered as schools transition to instructional strategies focused on 21st century skills. Historically, classrooms were designed and created to promote learning that hinged upon teacher direction or the standard lecture style and structure with straight, forward-facing rows of desks. Today, restructuring (or constructing new) learning environments to better meet the changing needs of students may take many physical forms. According to Merse (2018), the importance is not found in the specifics of how the environment is constructed as much as it is found in the fulfillment of a set of needs. These needs include the accommodation of all types of learning, the availability of flexible space, the insurance that users (students and teachers) feel comfortable navigating among uses and finally, the overall goal, that critical thinking, creativity and communication is enhanced by the environment (p.2).

Collaborative learning spaces lend themselves to opportunities for students to research and break into groups to solve real world problems, but teachers must change their instructional approaches to allow this. Krahenbuhl (2016, p.102) states "diverse approaches to instruction are

crucial in any classroom." Teachers need to understand there can be more than one way to solve a problem and students need to be in control of their learning (Sahin, 2009). In essence, teachers need to be able use a variety of instructional strategies to provide students the opportunity to use 21st century skills. Collaborative learning spaces create the opportunity for students to learn in a variety of methods and activities compared to traditional classroom settings.

An introductory survey was provided to students and staff at Red River High to gauge interest in having access to a collaborative learning space. 67 of approximately 100 certified teachers completed the original survey for a response rate of 67%. 76.1% of teachers who completed the survey indicated they did not use the media center at all with their classes. In contrast, 73.1% of teachers stated they would be more likely to use the media center if it were updated and contained a collaborative learning space. 902 of approximately 1000 students completed the original survey for a response rate of 90.2%. Demographic information regarding the background information of students was not collected during the survey, and some surveys had questions that were not answered. 61.3% of students who completed the survey stated they did not use the media center at all for their classes. In contrast, 76.9% of students indicated they would be more likely to use the media center if it were updated and contained a collaborative learning space.

Additional questions on the survey related to what features of a collaborative learning space teachers and students would like to see included in design plans. The features of having flexible setting options, a big screen/stage or presentation area, and media production room had significant responses for both staff and students. The survey results were shared with students in the Civil Engineering and Architecture class as they worked with JLG Architects to design an updated media center with a collaborative learning space design.

The project designs completed by the students in partnership with JLG Architects was a working example of 21st Century Skills being applied and constructivist learning in action. Students identified a problem, developed solutions, collaborated with peers and industry professionals, and communicated their designs to stakeholders. The Civil Engineering and Architecture teacher stated "I cannot stress enough how much work the students put into this project. They were highly engaged and had only positive feedback and gratitude for being able to work with JLG and receive as they called it a"REAL" problem. Thank you very much for giving them that experience." The development of a collaborative learning space would provide opportunities for more students and staff to engage in similar projects and partnerships in a variety of fields.

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