Increasing Learning in Kindergarten Classrooms Through Use of a Sound Amplification System

by

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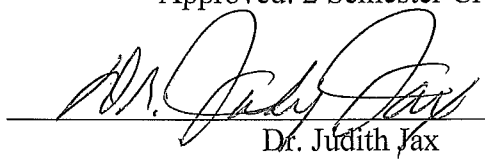
A Grant Proposal Project Report
Submitted in Partial Fulfillment of the
Requirements for the
Master of Science Degree
in

Education

Approved: 2 Semester Credits



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November, 2009

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Title: ***Increasing Learning in Kindergarten Classrooms Through Use of a Sound Amplification System***

Graduate Degree/Major: **MS Education**

Research Adviser: **Judith Jax, Ph. D**

Month/Year: **November, 2009**

Number of Pages: **44**

Style Manual Used: **American Psychological Association, 5th edition**

ABSTRACT

Young children are frequently plagued by middle ear infections, colds and allergies; all of which can have an accompanying temporary hearing loss that can hinder learning. Studies estimate that this type of hearing loss affects as many as 20% of lower elementary students on any given day (Larsen, 2008). There is a high need for technology that can help all students hear properly no matter what their temporary hearing loss. The goal of this grant is to improve student learning through the use of a sound amplification system.

Student learning will be assessed at three different times throughout the year by a team of kindergarten teachers using the Letter Recognition and Sound Assessment, Phonological Awareness Skills Test (PAST), and through observations. The results will be complied to show the effect of the sound amplification system on student learning. Results will be shared two times during the course of the grant with parents, staff and the

community. Findings will be disseminated through the district list-serv (on-line newsletter), local newspaper, and at staff meetings.

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Acknowledgements

I would like to thank my adviser Dr. Judith Jax. She has worked countless hours with me to help perfect and finalize my grant proposal. Her expertise and advice has helped me create an exceptional paper that combines all that I have learned while earning my Masters degree. Also Amy Patrick, Student Services Specialist of the School of Education at UW-Stout. I appreciate all the e-mail reminders and thorough information to help me stay on track with my Masters program and courses, thank you!

I would also like to take this opportunity to thank my wonderful husband, Erik. I appreciate your patience while I worked for hours on end to finalize my grant proposal. Thank you for helping me to maintain my focus, back up my computer so I would not loose any important information and for helping me to stay positive and upbeat after long hours! Also, I thank my amazing mom and great friends for your continued love and support. It was nice to know I had people surrounding me to be my cheerleaders and keep me going through the hard times.

Last, I would like to dedicate this paper in memory of my dad. He would be so proud to know I am finishing up the Master in Education program at UW-Stout. My dad always supported my education with enthusiasm and excitement.

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Chapter I: Introduction

Schools are primarily auditory-verbal environments, so being able to clearly hear spoken language is vital to learning (Rubin, 2007). A study in the Journal of the American Medical Association showed that 14.9% of children ages 6-19 have some degree of hearing impairment (Gordon-Langbein, 1999). This is because young children are frequently plagued by middle ear infections, colds and allergies; all of which can have an accompanying temporary hearing loss. Studies estimate that this type of hearing loss affects as many as 20% of a lower elementary school class on any given day, and that 80% of young learners will have this type of fluctuating hearing loss during the academic year (Larsen, 2008). Children are in the direct sound field only when relatively close to the teacher. Clearly, in the typical, average sized classroom, a large number of children will be listening in the indirect sound field, beyond the critical distance, where a reduced signal-to-noise ratio and excessive reverberation will impair speech perception (McSporran, 1997). Especially for those students seated in the back half of classroom, there is a high likelihood that the speech levels of the teacher are inadequate. If the poor acoustic conditions interfere with the academic performance of these students, they may become discouraged due to their poor performance (Larsen, 2008).

Statement of the Problem

The neurological components of a child's hearing do not fully develop until age 15, which means that children can not decipher differences in sounds and comprehend what they hear as well as adults (Sack-Min, 2007). More and more children are also suffering from colds, allergies and ear infections which impact their hearing every day. These are symptoms that might not be obvious to those that work with the child but will

greatly decrease what is heard over time. In 1994, 97% of classrooms in the ICA (Improving Classroom Acoustics) study of 33 schools in Florida failed the recommended acoustical standards for a good learning environment (Marrs Research Study, 1995). The typical elementary school classroom is an environment full of sounds. Learning is highly dependent on clearly hearing the verbal messages being communicated (Dahlquist, 1998). During the fall of 2008 10 of the 39 kindergarten students in the half-day program at Pine Hill Elementary School failed the hearing test given by the school nurse. Those 10 students were encouraged to see their pediatrician and find the cause of their hearing loss. One mother commented that her daughter has reoccurring ear infections which cause her hearing loss.

Academic lessons call for specialized teacher talk just as guiding children toward appropriate school behavior does (Diffily 2006). Being unable to hear individual sounds can interfere with the child's ability to understand what is being said (Boyles, 1997). Currently, no classrooms at Pine Hill Elementary School in Cottage Grove, Minnesota have a sound field amplification system. Two kindergarten teachers have reported that there are daily instances where kindergarten students have problems hearing.

Purpose of the Grant Proposal

The goal of this grant is to improve learning of kindergarten students at Pine Hill Elementary School through the assistance of a sound field amplification system. Students will:

- increase their ability to recognize letters and produce sounds
- be able to better blend and segment sounds
- hear and speak with greater ease

Pine Hill Elementary School has three sections of kindergarten; one full day section and two half-day sections. There is one teacher for the full day program and one teacher who teachers both sections of the half-day program. One section is in the morning and the other section is in the afternoon. There are sixty students currently enrolled for kindergarten for the 2009-2010 school year. Kindergarten numbers are projected to stay about the same for the following year as well. The kindergarten teachers, one of which is a grant partner, will work as a team with the grant projector director, to evaluate students and data and create a grant report to summarize the findings of the research.

Definition of Terms

Literacy Center: A literacy center is an area in the classroom where students work alone or in small groups using instructional materials to explore and expand their literacy. During literacy center time, Pine Hill Elementary School kindergarten students rotate every 15 minutes through literacy centers that each contain a specific activity. The focus of the literacy centers is to promote practice in literacy skills such as; spelling, word building, writing, and reading. Students visit two different literacy centers each day and work together with other kindergarten students in a small group of about four to five students.

Letter Recognition and Sound Assessment: This assessment is given to all kindergarten students, in a variety of forms, when they enter kindergarten to get a baseline reading for where the child is at in regards to letter name identification and letter sound production. At Pine Hill Elementary School the Letter Recognition and Sound Assessment is given during the fall, winter and spring. Teachers use the results of the

assessment to direct instruction and to help find the specific learning needs of each child. The Letter Recognition and Sounds Assessment and forms were created by a group of kindergarten teachers at Pine Hill Elementary School in 2000. Students are asked to identify the 26 capital and lower cases letters and 33 letter sounds.

PAST Assessment: The Phonological Awareness Skills Test (PAST) is an informal, diagnostic, individually administered assessment tool to help determine the point of instruction for students and monitor progress made from doing the activities select by the teacher (Zgonc, 2000). This assessment is given during the fall, winter and spring and will show growth in a student's ability to blend and segment sounds.

Sound Amplification System: According to the Trost Study (2008) classroom amplification is defined as "a speech intelligibility system that provides clarity of voice and even sound distribution throughout the learning environment." The sound amplification system will help the teacher have the ability to be more productive because there will be less time spent repeating directions or waiting for children to listen and settle down. The maintenance of a sound amplification system is minimal with the occasional dead battery or microphone repair (DeForest Janiga, 2006).

Methodology

Student learning will be evaluated using the Letter Recognition and Sound Assessment and the PAST Assessment during the fall, winter and spring of the 2010-2011 school year. The results of these assessments will be recorded on composite record sheets and percentages will be calculated. These percentages will be used to determine student improvement and/or student decline in recognizing letters, producing sounds, blending sounds and segmenting sounds. Informal observations will be done by

kindergarten teachers and the grant partner to record student hearing and speaking during with the use of the sound amplification system. All data will be used to analyze student learning at the closure of the 2010-2011 school year.

Chapter II: Literature Review

This chapter will support the need for sound amplification in the classroom setting and how it will be used to enhance student learning in the classroom. Pine Hill Elementary School is located in Cottage Grove, Minnesota. There are about 450 students in kindergarten through fifth grade . Pine Hill Elementary School has three sections of kindergarten, one all day section and two half-day sections. There are two kindergarten teachers; one who teaches the all day kindergarten section and one who teaches the two half-day sections. In total, Pine Hill Elementary School has 40 teachers and certified staff who help to increase student learning daily.

Support for Sound Amplification Systems

The classroom is an auditory verbal environment in which accurate transmission and reception of speech between the teachers and students is essential for effective listening and learning to occur (Smaldino, 2008). The benefits of a sound amplification systems are numerous; however among the most notable positive effects for students are: improvement in academic achievement, speech recognition, and attending and learning behaviors; increased seating options for students with hearing loss, improvement in listening and learning environments for "at-risk" learners; and increased self-esteem (Gegg Rosenberg, 1999). The sound amplification system lets every child clearly hear the teacher's spoken instruction, enhancing their ability to learn. Lightspeed Technologies began providing classrooms with sound amplification systems in 1994. Lightspeed

systems utilize leading-edge infrared technology to project the speaker's voice. The sound amplification system is a wireless microphone system that clarifies the speaker's voice and evenly distributes sound throughout the classroom, allowing every child to clearly hear the spoken instruction. When students hear, the benefits are more than academic. Reducing the barriers to verbal learning within the classroom sound scape is vital since learning is highly dependent on accurately perceiving communicated messages (Rubin, 2007).

Enhanced Student Learning

A sound amplification is a system for enhancing the voice of the person speaking so that the message is clearly heard over the background noise. Common background noises heard in the elementary classroom are: doors shutting, other students in the hallway, side conversations between students and other teachers in the room, and running electronic equipment. Teachers as well as students can use the hand-free microphone to help radiate and clarify their voice. A principal of an elementary school in Iowa states, "Classroom audio systems have more impact on student learning than any other single piece of technology in the district" (lighspeed-tek.com, 2009). Any students with minor hearing problems (ear inflections or blockage) will be able to hear clearly which will help them to understand concepts more easily. Most important, children benefit from classroom amplification, whether or not they have hearing problems (Marrs Research Study, 2008). Kevin Wenderoth, coordinator of education sales at SoundCom Systems states, "Research shows that the ability of students to hear more clearly correlates with improved retention rates and overall improvements in the educational process," (Reichert, 2005). There are currently 60 students that could improve their learning if they had the

opportunity to be in a classroom with a sound amplification at Pine Hill Elementary School. Wenderoth also states that unlike adults whose vocabulary enables them to fill in the blanks, young elementary students can not contextually decipher certain parts of a sentence that are missed. Not hearing fully can short-circuit the educational process. (Reichert, 2005).

Chapter III: Project Goal and Objectives

The goal of this grant is to improve student learning through the use of a sound amplification system. To meet this goal student will:

Objective 1: increase their ability to recognize letters and produce letter sounds

Objective 2: be able to better blend and segment sounds

Objective 3: hear and speak with greater ease

Objective 1

The foundation for learning to read and write requires students to be able to recognize letters and produce letter sounds. Using a sound amplification system can allow students to increase their ability to hear letter sounds more clearly so they accurately reproduce them verbally and are better able to participate in discussions.

Objective 2

In addition to learning letter names and sounds, students need to be able to better blend and segment letter sounds while reading and writing. A sound amplification system can help support students in learning these fundamental skills.

Objective 3

Students need to be able to speak clearly and hear with ease while in the classroom. Use of a sound amplification system can help students meet this objective when they may have otherwise missed important information due to ear infections, location in the classroom or background noises.

Chapter IV: Methodology

This chapter will outline how the project will be implemented upon receiving the grant. The timeline, budget, evaluation plan, and dissemination will be discussed in detail.

Timeline

Table 1 outlines a timeline for the completion of the project. The project is set up to be completed in one academic school year. Installation of the sound amplification system will be prior to the start of the school year. Parents of incoming kindergarten students will be notified of the grant and sound amplification system use during Kindergarten Information Night which will occur in February 2010, prior to the start of the 2010-2011 academic year.

Table 1: Time Line

Month	Activity	Expected Outcomes	People Involved
Feb. 2010	• Inform parents of upcoming kindergarten students at Kindergarten Information Night and pass out appropriate literature about the sound field amplification system • Have parent read and sign consent form.	Parents are notified of the upcoming technology for their incoming kindergarten student.	Kindergarten teachers, staff, parents, grant project director and grant partner
July 2010	• Install sound amplification systems in kindergarten classrooms at Pine Hill Elementary.	Sound amplification systems are installed and ready for use.	District technology staff
August	• Check sound field amplification	Kindergarten teachers	Kindergarten

2010	system and become familiar with how to use it. • Supply kindergarten teachers with instructional ideas on how to enhance learning with the assistance of the sound field amplification system. • Give letter i.d. and letter sound assessments and the PAST Phonemic Awareness assessment to incoming kindergarten students at beginning of the year kindergarten assessment days.	become familiar with the sound amplification system. Kindergarten students are given beginning of the year assessments to evaluate what they already know (Objectives #1 and #2).	teachers, district technology staff, kindergarten students, parents, project director and grant partner
Sept. 2010	• Review sounds field amplification system information with parent on PIE (Parent Information Event) Night and demonstrate how it works. Share with parents how the system will be used to help improve student learning. • Explain to students what the sound field amplification system is and how it will help them with their learning through out the year. • List rules about the sound field amplification system with students and model how to use the system for individual sharing. • Begin using the system daily.	Students and parents will become familiar with the sound amplification system.	Kindergarten teachers, parents, students, grant project director and grant partner
Oct. 2010	• Invite principal and other interested teachers to come during the school day to observe the sound field amplification system in use. • Allow students to begin using the system when sharing individually during morning meeting. • Instruct kindergarten teacher to choose five students to do observation on for three months. Track changes in listening and speaking with and without the sound amplification system.	Students will begin using the sound field amplification system to speak. Observations will begin on five students in each kindergarten section (Objective #3).	Principal, Pine Hill staff, kindergarten teachers, students, project director and granter partner
Nov./ Dec. 2010	• Have student hearing checked by school nurse. Nurse will pursue any issues and give hearing check data to classroom teachers. • Discuss positives and negatives to	The sound amplification system is used throughout the day in kindergarten when	School nurse, kindergarten teachers, students, project director and

	date with kindergarten team members during grade level meeting. • Use the system to demonstrate science lessons.	teaching a variety of subject.	grant partner
Jan. 2011	• Conduct winter letter i.d. and letter sounds assessments and PAST Phonemic Awareness assessment with students. • Begin using the sound field amplification system to share Writer's Workshop stories. Track student use so each student is able to share once a month. • Begin literacy centers. The sound field amplification system will be used to model each center.	Kindergarten students will be assessed and evaluated on what they have learned thus far (Objectives #1, #2, #3).	Kindergarten teachers, students, project director and grant partner
Feb.-April 2011	• Continue using the system daily during whole group discussion and modeling. • Meet with kindergarten staff and discuss how the sound amplification systems are working. Discuss, if any, concerns or technology needs. • Disseminate to the Pine Hill parents, staff and school board members through the District 833 list-serv in February. • Invite Judy Spooner of the Cottage Grove Bulletin to come and observe each classroom with the sound amplification system with the intention to write a story for the local newspaper. • Continue sharing stories during Writer's Workshop	Finds are disseminated to the school staff and area community. Students are using the sound amplification system daily during learning.	Kindergarten teachers, students, project director, grant partner, Pine Hill staff, school board members, member of the Cottage Grove Bulletin Newspaper
May 2011	• Conduct end of the year letter i.d. and letter sounds assessments and PAST Phonemic Awareness Assessment with students.	Final evaluations are done and recorded.	Kindergarten teachers, students
June 2011	• Compile student assessment data and observations into a word document/database(s).	Evaluation and analysis of data occurs.	Kindergarten teachers
July 2011	• Review and analyze data and documents from the school year. • Send a letter home to families to	Evaluation and analysis of data is finalized and shared.	Kindergarten teachers, project director, grant partner,

	share data found and to thank them for participating in the sound field amplification study and surveys • Write final report to grant agency • Disseminate findings to the community through another local newspaper article. • Create a newsletter, via the District 833 list-serv to inform staff, parents and school board members of the grant results.		members of the Cottage Grove Bulletin Newspaper
August 2011	• Meet with Pine Hill staff and share results verbally at the beginning of the year workshop days. • Discuss next steps in getting sound field amplification systems in more classrooms with staff and school employees.	Discussions about future sound amplification system use at Pine Hill Elementary School will occur.	Kindergarten teachers, Pine Hill staff, project director, grant partner

Budget

Table 2 outlines the funding needed to facilitate the grant project. The majority of the budget will be used to fund the sound amplification system. The following section will address the budget in greater detail.

Table 2: Budget

I. Personnel

Descriptions	Quantity and Cost	Budget Requested
Installation of sound amplification systems in classrooms	2 systems installed @ $300 per system (one in each kindergarten classroom)	$600.00
Professional development which will help implement the project	2 teachers and 1 project director will earn 7.5 hours of professional development which fulfills the requirements of the district professional development plan.	$0.00

II. Equipment

Descriptions	Quantity and Cost	Budget Requested
Sound amplification	(2) 820iR Classroom	$1,726.00

systems, 1 for each kindergarten classroom.	Amplification System (shipping included) @ $863.00	
Wall speaker	(2) speakers @ $970.00	$1,940.00
1 set of rechargeable batteries for each system	(2) package of 2 rechargeable batteries @ $10	$20.00
Second microphone for each classroom.	(2) additional microphones @ $171.00	$342.00

Total Budget Request	$4,628.00

Budget Narrative

I. Personnel

Installation is critical to the proper and intended use of the sound amplification system. The South Washington County School District has a technology team that has experience installing sound amplification systems. The technicians would need $600.00 to install two systems in the two kindergarten classrooms at Pine Hill Elementary School. The two kindergarten teachers, including the grant partner, and the project director, will participate in some professional development to help implement the grant project and learn how to use the sound amplification system. Part of the professional development will happen at the end of the grant timeline and will be a time to analyze data and discuss the effects of the sound amplification system on learning in the kindergarten classroom. The teachers, project director, and grant partner will fulfill the districts professional development requirement during this time period.

II. Equipment

The equipment budget requested is $4,028. This covers the cost of the sound amplification systems and speakers for the two kindergarten classrooms, extra

microphones for a second teacher or student use, and two additional rechargeable batteries for the extra microphones. It is important to have an extra microphone in each classroom because there are often times a second teacher in the room that could use the microphone to speak to the class or specific students that he or she is working with. Extra batteries are necessary for back-up just in case one of the microphones does not get properly recharged over night. The speakers, amplification system and microphones come with a five-year warranty. The rechargeable batteries come with a one-year warranty each. User manuals come with the product and no additional training for the system is needed. Customer support is available on-line if questions arise. Shipping is included in the cost of the system and speakers. The remaining items (additional microphones and batteries) would be shipped for free. The total budget for the grant proposal is $4,628.00.

Evaluation Plan

Table 3 will show the plan for evaluation of student learning while using the sound amplification system. Evaluation details are described following the table.

Table 3: Evaluation Plan

Objective	Assessment Tool	Timeline	Person Responsible
#1. All kindergarten students will increase their ability to recognize letters and produce letter sounds.	Letter Identification Assessment (Appendices A, B, C and D)	Done three times during the school year: September, January and May	Classroom teacher will give assessments and will work with the project director to analyze data.
#2. All kindergarten students will be able to better blend and segment sounds.	PAST Assessment (Appendices E, F and G)	Done three times during the school year: September, January and May	Classroom teacher will give assessments and will work with the project director to

			analyze data.
#3. Students will hear and speak with greater ease.	Individual daily observation of five students in each kindergarten classroom (Appendix H)	October- December 2010	Classroom teacher will do observation on an informal daily basis.

Instrumentation

All students in kindergarten will be assessed three times during the year (September, January and May) and the results of these assessments will be used to track student learning. The assessments that will be given are the Letter Recognition and Sound Assessment (Appendices A and B) and the PAST Assessment (Appendix E). Informal observations will also be done during a three month period on five students in each kindergarten section (Appendix H).

I. Data Collection

The Letter Recognition and Sound Assessment and the PAST Assessment are given together, one on one with each student, and should take no longer than 20 minutes per student to administer. Since these are assessments required by the school district, substitute teachers are hired to teach the class while the kindergarten teacher administers each assessment to one kindergarten student at a time in the office conference room. The kindergarten teacher will administer the Letter Recognition and Sound Assessment using the Student Letter Recognition Sheets (Appendices A and B). These sheets contain letters (uppercase on Appendix A and lowercase on Appendix B) that the student will look at to show which uppercase and lowercase letters they can recognize and can produce sound for. To administer this assessment, the teacher will cover all of the letters but the first row and point to each letter the child is to name and produce the sound for.

The teacher will record the student's responses using the Record of Individual Student Letter Recognition and Sound Assessment (Appendix C). If a student gives a correct response a check mark is put in the box. If a student gives an incorrect response, that response is listed in the box. For example, if the teacher points to the first letter, M, on the Student Capital Letter Recognition Sheet, but the student responds "N", an N will be written in the box so the teacher knows this is a letter the student can not name. For the PAST Assessment, the teacher verbally asks the student questions about sound blending and segmenting as indicated in Appendix E. There is no sheet for the student to look at during this process. The teacher will record the student responses on the Teacher Record of Student PAST Assessment (Appendix E). If the student gives a correct response the box next to the word will be checked. If an incorrect response is given, the box will remain unchecked. In addition to the Letter Recognition and Sound Assessment and the PAST Assessment, five students will be chosen in each kindergarten section (fifteen total) by their teacher to have observations done while working with and without the sound amplification system. The kindergarten teachers will take informal notes and record how the students hear and speak (Appendix H). The teacher may have to turn off the sound amplification system at times to observe the students when it is not in use.

II. Methods for Compiling and Recording Data

After the Letter Recognition and Sound Assessment is completed for each student. The teacher will add up the correct responses given for each student and then record that data on the front of the Composite Record of Student Letter Recognition and Sound Assessment (Appendix D). Percentages will be recorded which will be used to analyze student change at the end of the school year and will also show change for the

kindergarten class as a whole. After the PAST Assessment is given, results will be recorded on the Class Composite Record PAST Assessment for Blending Sounds and Segmenting Sounds (Appendices F and G). These percentages will also be analyzed at the end of the year. The observation forms (Appendix H) for the fifteen students that were observed informally will be collected and the information categorized by the project director.

III. Analysis of Data

After all the data has been collected, compiled and recorded on the appropriate forms listed above, the two kindergarten teachers, grant partner and the project director will meet to discuss the results. During the year, the results from each assessment will be used to help guide instruction. At the end of the year the results will be used to see the over all effectiveness of the sound amplification system and if it helped student learning. The kindergarten teachers, grant partner, and project director will compare percentages for each student and look for growth over the school year. The data will also be analyzed to see if the project objectives were met. Objective 1 states that all of the kindergarten students will increase their ability to recognize letters and produce letter sounds. The data from the Letter Recognition and Sound Assessment will be analyzed to see if there was growth in this area. Percentages will be compared for each student to chart growth. Also, percentages will be compared for the whole class to document increased student learning over the school year. Objective 2 states that all of the kindergarten students will be able to better blend and segment sounds. The PAST Assessment data for all students will be analyzed to see if there is student growth in this area as well. Objective 3 states that the students will hear and speak with greater ease. This will be evaluated by the data

from informal observations that the project director will categorize to form patterns of student behavior when using and not using the sounds amplification system.

Limitations

It will be difficult to conclude if growth in student learning is due entirely to the use of the sound amplification system. Student learning will occur regardless but the hope is that the sound amplification system will make it easier for students to hear and speak and be more successful in recognizing letters and producing letter sounds. The kindergarten teacher observations and the Letter Recognition and Sound Assessment and the PAST Assessment used together should show growth due to the use of the sound amplification system.

Dissemination Plan

Dissemination of this experience will occur twice during the grant timeline. The first will be through the use of a list-serv (on-line newsletter) to inform parents, staff and school board members of the NEA grant how it will be used to increase student learning. The local newspaper, Cottage Grove Bulletin, will also be contacted and invited to each classroom to develop a story about the student learning in kindergarten and the benefits of using the sound field amplification system in the early elementary classroom. Dissemination will also occur at the end of the grant to share the results and feedback from staff, parents and students. The grant agency will also receive a final report. The kindergarten teachers will work together with the project director and grant partner to disseminate this grant.

REFERENCES

Boyles, N. & Contadino, D. (1997). *Learning difference source book.* Los Angels: Lowell House.

Dahlquist, L. (1998). Classroom amplification: Not just for the hearing impaired anymore. Los Angeles, CA: CSUN 1998 Conference. Retrieved September 25, 2008, from ERIC database (ED420964).

DeForest Janiga, E. (2006). Bringing sound field to your school. *The ASHA Leader Online.* Retrieved September 27, 2008.

Diffily, D. & Sassman, C. (2006). *Positive teacher talk for better classroom management.* New York: Scholastic.

Gegg Rosenberg, G., Blake-Rahter, P., Heavner, J., Allen, L., Myers Redmond, B., Phillips, J., et al. (1999). Improving classroom acoustics (ICA): A three-year FM sound field classroom amplification study. *Journal of Educational Audiology*, 7, 8-28.Retrieved September 26, 2008, from ERIC database.

Gordon-Langbein, A. & Metzinger, M. (1999). Using audio systems in schools. *Media & Methods*, 36(2), 18.Retrieved September 27, 2008, from Academic Search Elite database.

Key studies on sound-field amplification. (1995). *Marrs Research Study.* Retrieved September 25, 2008, from http://www.edtech.sandi.net/index.

Larsen, J., Vega, A., & Ribera, J. (2008). The effect of room acoustics and sound- field amplification on word recognition performance in young adult listeners in suboptimal listening conditions. *American Journal of Audiology*, 17(1), 50-59. Retrieved September 27, 2008, from Academic Search Elite database.

LightSPEED Technologies, Inc. (2008). *The Trost Study*. Retrieved September 27, 2008, from http://www.lightspeed-tek.com/

McSporran, E., Butterworth, Y., & Rowson, V. (1997). Sound field amplification and listening behaviour in the classroom. *British Educational Research Journal*, 23(1), 81-96. Retrieved September 25, 2008, from EBSCOhost database.

Reichert, S. (2005). Classroom Soundfield System Supports NCLB. Retrieved September 25, 2008, from http://www.teachlogic.com/

Rubin, R., Flagg-Williams, J., & Aquino-Russell, C. (2007). Benefits of sound field amplification in kindergarten through grade 3: A New Brunswick Provincial study. Retrieved September 25, 2008, from http://www.caslpa.ca/english/index.asp

Sack-Min, J. (2007). Can you hear me now? *American School Board Journal*, 194(6). 58-59. Retrieved September 26, 2008, from Academic Search Elite database.

Smaldino, J. (2008). Students and soundwaves: Five strategies to promote good classroom acoustics. *The ASHA Leader, 13*(13), 14-17.

Zgonc, Y. (2000). *Sounds in Action: Phonological Awareness Activities and Assessment.* Crystal Spring Books.

Appendix A: Sample Student Capital Letter Recognition and Sound Assessment Sheet

Appendix B: Sample Student Lowercase Letter Recognition Sheet

m	t	n	l	v	z
s	k	w	c	e	f
b	d	h	q	p	g
j	u	y	a	i	o
r	x				

Appendix C: Record of Individual Student Letter Recognition and Sound Assessment

Student #:_____

Capital Letters					
Date					
M					
T					
N					
L					
V					
Z					
S					
K					
W					
C					
E					
F					
B					
D					
H					
Q					
P					
G					
J					
U					
Y					
A					
I					
O					
R					
X					
Score	/26	/26	/26	/26	/26

Lowercase Letters					
Date					
m					
t					
n					
l					
v					
z					
s					
k					
w					
c					
e					
f					
b					
d					
h					
q					
p					
g					
j					
u					
y					
a					
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g					
a					
Score	/26	/26	/26	/26	/26

Sounds					
Date					
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a [/a/]					
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s					
t					
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o [/o/o/]					
o [/o/]					
f					
p					
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g [/g/]					
g [/j/]					
i [/i/i/]					
i [/i/]					
b					
w					
l					
r					
c [/k/]					
c [/s/]					
u [/u/u/]					
u [/u/]					
k					
v					
y					
Q [/kw/]					
x [/ks/]					
z					
e [/e/e/]					
e [/e/]					
Score	/33	/33	/33	/33	/33

Appendix D: Composite Record of Student Letter Recognition and Sound Assessment

Student #	Letter Recognition %			Sound Assessment %			Totals (Between Fall 2009 and Spring 2010)	
	Sept. 2010	**Jan. 2011**	**May 2011**	**Sept. 2010**	**Jan. 2011**	**May 2011**	% of increase	% of decline

Total number of students who improved:_____

Total number of students who declined:_____

Total number of students who stayed the same: _____

Appendix E: Teacher Record of Student PAST Assessment

Student #:_____ Date:_____

Syllable Blending:

Tell the child you are going to say a word in a funny way. The job of the student is to put the parts together and say the whole word. Give these examples, pausing between syllables: out-side (outside), ro-bot (robot). Have the child say the sample words normally. Then do the following words and put a check in the box to the right if he/she says them correctly.

1. pen-cil ☐
2. rain-bow ☐
3. pop-corn ☐
4. black-board ☐
5. side-walk ☐
6. pa-per ☐

Total correct: _____

Syllable Segmentation:

Tell the student hat you are going to say a word and then break it into parts, or syllables. First say *rainbow* normally. Clap out the two parts in *ranbow* while saying each part. Then push up a chip as you say each syllable. Read each of the following words and ask the child to push up a chip while saying each syllable. It is not necessary to clap the syllables again unless the skills need to be re-taught. Put a check in the box to the right if the child does it correctly.

1. sometimes (2) ☐
2. basket (2) ☐
3. bedroom (2) ☐
4. fantastic (3) ☐
5. maybe (2) ☐
6. helicopter (4) ☐

Total correct: _____

Appendix F: Class Composite Record PAST Assessment for Blending Sounds

Student #	Blending Sounds %			Totals	
	Sept. 2010	Jan. 2011	May 2011	% of increase fall to spring	% of decline fall to spring

Total number of students who improved:_____

Total number of students who declined:_____

Total number of students who stayed the same: _____

Appendix G: Class Composite Record PAST Assessment for Segmenting Sounds

Student #	Segmenting Sounds %			Totals	
	Sept. 2010	Jan. 2011	May 2011	% of increase fall to spring	% of decline fall to spring

Total number of students who improved:_____

Total number of students who declined:_____

Total number of students who stayed the same: _____

Appendix H: Observation Form

Student #:_____

Date	Was the sound amplification system in use?	The curriculum being taught was….	At the time of observing the child was…..

Appendix I: Parent Consent Form

Title: *Sound Amplification in the Classroom*

Investigator:
Julie Andracek
715-426-3396

Research Sponsor:
Judith Jax., Ph. D.
715-232-1088

Description:

A sound amplification system has been installed in your child's classroom. This will be used daily by the teacher to enhance his or her voice and improve student learning, behaviors and time on task. Students will have the opportunity to use the sound field amplification system to speak during morning meeting and to share their Writer's Workshop writing beginning in January.

Risks and Benefits:

Some students may be unwilling to share their writing verbally in front of the class. Students will be given a choice of when to share and will be given the option to pass. For students that do share they will take pride in their work and be motivated to write more stories. All students will benefit from hearing each others stories and will gain ideas for future writing.

Special Populations:

Parents, your child will only participate in this study if you sign below. If you are will to give you consent, please sign on the backside of this consent form.

Time Commitment and Payment:

There is no additional time commitment for your students or yourselves.

Confidentiality:

Your name and your child's name will not be included on any documents. We do not believe that you can be identified from any of this information. This informed consent will not be kept with any of the other documents completed with this project.

Right to Withdraw:

Your participation in this study is entirely voluntary. You may choose not to participate without any adverse consequences to you. Should you choose to participate and later wish to withdraw from the study, you may discontinue your participation at this time without incurring adverse consequences.

Appendix I: Continued

IRB Approval:

This study has been reviewed and approved by The University of Wisconsin-Stout's Institutional Review Board (IRB). The IRB has determined that this study meets the ethical obligations required by federal law and University policies. If you have questions or concerns regarding this study please contact the Investigator or Advisor. If you have any questions, concerns, or reports regarding your rights as a research subject, please contact the IRB Administrator.

Investigator:
Julie Andracek
715-426-3396
andracekj@uwstout.edu
Adviser:
Judith Jax., Ph. D
715-232-1088
jaxju@uwstout.edu

IRB Administrator
Sue Foxwell, Director, Research Services
152 Vocational Rehabilitation Bldg.
Menomonie, WI 54751
715-232-2477
foxwells@uwstout.edu

Statement of Consent:

By signing this consent form you agree to participate in the project entitled, ***"Sound Amplification in the Classroom"***.

_____
Signature..... Date

_____
Signature of parent or guardian:..... Date
(If minors are involved)

Appendix J: Cover Letter

December, 2009

The NEA Foundation
1201 Sixteenth Street NW
Washington, DC 20036

Dear To Whom It May Concern:

This is our submission of the grant proposal titled "Increasing Learning in Kindergarten Classrooms Through Use of a Sound Amplification System" for the fall 2010 grant cycle. The grant proposal components follow your guidelines outlined on your website.

The aim of this grant proposal is to improve the learning of kindergarten students at Pine Hill Elementary School in Cottage Grove, Minnesota through the use of a sound amplification system. The issue of hearing impairment in education is an important one because studies show that young children are frequently plagued by middle ear infections, colds and allergies; all of which can have an accompanying temporary hearing loss. As teachers, we have observed that students are not hearing everything they should. Students frequently need directions repeated and reminders about the general classroom rules. Your support would help kindergarten students learn to the best of their ability and not be hindered by a simple ear infection or temporary hearing loss. When students are able to clearly hear they will be able to better recognize letters, produce letter sounds, blend and segment sounds and hear and speak more clearly. Funding for this grant would benefit the kindergarten students at Pine Hill Elementary School throughout their entire educational career. They would learn more in kindergarten because the quality of their hearing would be so much better. The following year, kindergarten students would be more ready for first grade and ready to continue their learning. Our hope at Pine Hill Elementary School is to eventually install sound amplification systems in all classrooms in the building for adding hearing support at the elementary level

Please find the following materials for your review. We look forward to hearing from you. If you have any questions, please do not hesitate to contact us.

Sincerely,

Julie Andracek- Project Director
9015 Hadley Avenue S.
Cottage Grove, MN 55016
jandrace@sowashco.k12.mn.us
651-768-3955
Fax: (651) 768-3940
Enclosures

Scott Alton- Grant Partner
9015 Hadley Avenue S.
Cottage Grove, MN 55016
salton@sowashco.k12.mn.us
651-768-3955
Fax: (651)768-3940

Appendix K: Grant Foundation Proposal Request

Student Achievement Grants from: *The NEA Foundation*

Overview: The vision of the NEA Foundation is a great public education for every student.

Purpose: The NEA Foundation provides grants to improve the academic achievement of students in U.S. public schools and public higher education institutions in any subject area(s). The proposed work should engage students in **critical thinking** and **problem solving** that deepen their knowledge of **standards-based subject matter**. The work should also improve students' habits of inquiry, self-directed learning, and critical reflection.

Proposals for work resulting in low-income and minority student success with honors, advanced placement, or other challenging curricula are particularly encouraged.

The *Student Achievement Grants* replace the Foundation's *Innovation Grants*, which have been discontinued.

Amount: The grant amount is **$5,000**.

Grant funds may be used for resource materials, supplies, equipment, transportation, software, or scholars-in-residence. Although some funds may be used to support the professional development necessary to implement the project, the majority of grant funds must be spent on materials or educational experiences for students.

Restrictions: Grant funds may **not** be used to

- support after-school, weekend, or summer programs
- pay indirect costs, grant administration fees, or salaries
- pay stipends to the applicants
- support conference fees for more than one person

Funds may not be used for lobbying or religious purposes. Identical applications will not be considered.

Notification: Applications may be submitted at any time. Applicants are encouraged to plan ahead. Applications are reviewed three times per year, every year.

Application RECEIVED by	**Notification**
February 1	April 15
June 1	September 15
October 15	January 15

Appendix K: Grant Foundation Proposal Request Continued

Please give careful attention to the timeline of your grant. **Applications that include activities scheduled prior to the date of notification will not be considered.**

All grant applicants will be notified in writing. Please do not contact the foundation regarding the status of your application prior to the Notification Date.

Duration: Grants will fund activities for twelve months from the date of the award.

Eligibility: Applicants must be practicing U.S.

- **public school teachers in grades PreK–12,**
- **public school education support professionals, or**
- **faculty or staff at public higher education institutions.**

Preference will be given to applicants who serve economically disadvantaged students. Preference will also be given to members of the National Education Association.

The NEA Foundation especially encourages grant applications from

- **teachers with less than seven years of experience in the profession**
- **education support professionals**

The National Education Association uses the following job categories to classify education support professionals: para-educators, school bus drivers, maintenance and custodial staff, food services staff, school nurses and student services workers, clerical and office assistants, school security officers, and technicians. For additional information about jobs classified as education support professionals consult www.nea.org/esphome/.

Employees, members of the board of directors, and immediate family members of the staff and board of the NEA Foundation are not eligible to receive grants. Employees of the National Education Association are not eligible to receive grants.

Appendix L: Grant Foundation Proposal Guidelines

Applicant Information

Lead Applicant: The lead applicant will be the NEA Foundation's contact person for award notification, reporting, publicity, and other grant-related activities.

Partner Data: The applicant must collaborate with one partner. The partner should be prepared to assume leadership of the project should the lead applicant be unable to complete the work.

Fiscal Agent Note: If no fiscal agent is designated on the applicant data sheet, grant funds will be made payable to the lead applicant and reported to the Internal Revenue Service. Because the grant funds may be considered taxable income, the lead applicant may wish to consult with a tax advisor before submitting the application. NEA members who elect to designate a fiscal agent are encouraged to consider their local NEA affiliate for this role.

Applications missing lead applicant and/or partner data will not be considered.

Narrative and Budget

Please consult our **Student Achievement Grant Writing Tips**.

The narrative must address the following items:

1. Provide an abstract/summary of your proposed work (For examples, please see the descriptions of our recently funded grants. Failure to comply with the character limit may lead to disqualification of your application.
2. Describe your goals for student achievement and how you will measure each outcome.
3. Describe the student need for this work.
4. Describe the activities in which you and your students will engage to reach your goals.
5. Provide a line-item budget for the proposed work. Your request must total $5,000. Identify any additional support (cash or in-kind) that will be provided by other sources.

Selection Criteria

- Proposed goals for student achievement are challenging and rigorous
- Proposed work engages students in critical thinking and problem solving
- There is alignment between goals, assessment, activities, and budget

The NEA Foundation may allocate a number of grants based in part on geographic considerations.

Appendix M: Applicant Data Sheet

Please type.

Applicant Data Sheet, page 1

Grant Category

Indicate the grant category your application addresses. **Select only one category,** and follow the guidelines for that category.

(1) ☐ Learning & Leadership (☐ Individual or ☐ Group)

(2) ☒ Student Achievement

Lead Applicant

Lead applicant: ☐ Ms. ☒ Mrs. ☐ Mr. ☐ Dr. Full name: Julie Andracek

Home address: 1206 State Street

City: River Falls | State: Wisconsin | Zip: 54022

Home telephone: 715-426-3396 | NEA Membership Number or the last 6 digits of your *Social Security Number: 0004580671

School/institution: Pine Hill Elementary

Work address: 9015 Hadley Avenue South

City: Cottage Grove | State: Minnesota | Zip: 55016

Work title: Teacher | Work telephone: (651)-768-3995

Work fax: | E-mail address: andracekj@uwstout.edu

For teachers, what do you teach? Subject(s): All | Grade(s): Kindergarten

If applicable, what is the percentage of free and reduced school lunch students in your school?

Are you a member of the National Education Association (NEA)? ☒ Yes ☐ No

Are you a graduating NEA Student member with a signed teaching contract? ☐ Yes ☒ No

Are you a member of the American Federation of Teachers (AFT)? ☐ Yes ☒ No

Years work experience in education: 9

Fiscal Agent

Grants payable to individuals will be reported to the Internal Revenue Service and may be considered taxable income. For approved applications, The NEA Foundation will make the grant payable to the lead applicant unless you designate a fiscal agent in this section. Grant funds may not be used to pay indirect costs.

Name of the organization serving as fiscal agent: South Washington County School District

Address: 7362 East Point Douglas Road South

City: Cottage Grove | State: MN | Zip: 55016

I agree to act as fiscal agent for this grant and to comply with the following conditions:

- to maintain separate records of disbursements related to this grant
- to keep receipts for at least three years
- to make financial records available as requested
- to disburse funds:
  (1) in accordance with the purpose of this application
  (2) solely at the direction of the grantee(s)

Signature of an authorized representative of the organization: _____

Please print or type the name of the authorized representative: _____

Required Signatures

Lead applicant's signature: _____ Date:

Principal or dean's signature: _____ Date:

*The last six digits of the Social Security Number are needed to verify NEA membership.

6.1.06

Appendix M: Continued

Applicant Data Sheet, page 2

Please type. This section must be completed if you are applying for a *Student Achievement Grant* or a group *Learning & Leadership Grant*. Please provide information for only one partner.

Partner Info

Partner name: Scott Alton

Home address: 9245 Dartford Rd

City: Woodbury | State: Minnesota | Zip: 55125

Home telephone: (651) 690-2866 | NEA Membership Number or the last 6 digits of your *Social Security Number: 0004350842

School/institution: Pine Hill Elementary

Work address: 9015 Hadley Avenue South

City: Cottage Grove | State: MN | Zip: 55016

Work title: Teacher | Work telephone: (651) 768-3933

Work fax: | E-mail address: salton@isowashco.k12.mn.us

For teachers, what do you teach? Subject(s): All | Grade(s): Kindergarten

If applicable, what is the percentage of free and reduced school lunch students in your school?

Are you a member of the National Education Association (NEA)? ☒ Yes ☐ No

Are you a graduating NEA Student member with a signed teaching contract? ☐ Yes ☒ No

Are you a member of the American Federation of Teachers (AFT)? ☐ Yes ☒ No

Years work experience in education: 3

The last six digits of the Social Security Number are needed to verify NEA membership.

Appendix N: Vita for Project Director

JULIE ANDRACEK

1206 State Street River Falls, WI 54022 715-426-3396

EDUCATION

Jan. 2008- Present University of Wisconsin-Stout Menomonie, WI
Education, M.S.,

June 2006-Dec. 2008 University of Wisconsin-Stout Menomonie, WI
Reading Teacher Certification (WI316), 4.0/4.0

Sept. 1995- May 2000 University of Wisconsin-Stout Menomonie, WI
Early Childhood Education, B.S., 3.357/4.0

- Graduated Cum Laude
- Received Chancellor's Award of Academic Excellences for 3 semesters.

WORK EXPERIENCE

July 2006- Present South Washington County Schools
Cottage Grove, MN
Kindergarten and First Grade Teacher *Pine Hill and Crestview Elementary*

- Taught kindergarten and first grade full time.

August 2003- Present School District of the Menomonie Area
Menomonie, WI
First Grade Teacher *River Heights Elementary*

- Taught first grade full time independently for the 2005-2006 school year and in a team-teaching position with a 2:30 ratio for the 2003-2004 and 2004-2005 school years.

August 2001-July 2003 School District of the Menomonie Area
Menomonie, WI
Reading Resource Teacher *River Heights Elementary*

- Taught reading one to one to first grade students

EXTRACURRICULAR ACTIVITIES

Targeted Services After School Program: Cottage Grove, MN

Coordinator After School Program: Menomonie, WI

LEADERSHIP ACTIVITIES

Delta Kappa Gamma: Sorority for Women Educators

Appendix O: Vita for Grant Partner

Scott W. Alton

Address
9245 Dartford Rd.
Woodbury, MN 55125
(651) 690-2866

ska1770@hotmail.com

EDUCATION

Bemidji State University Bachelor of Science Degree Major: **Elementary Education** Specialty: **Communication Arts & Literature, Social Studies** Licensure: **K-6, K-8 English**	Bemidji, MN December 2005
Rochester Community & Technical College	Rochester, MN 1994-1995
Red Wing Central High School High School Diploma	Red Wing, MN June 1994

EXPERIENCE RELATED TO TEACHING

Kindergarten Teacher, So. Wash. Co. Schools, Cottage Grove, MN	2009-2010
	2008-2009
First Grade Teacher, So. Wash. Co. Schools, Cottage Grove, MN	2007-2008
Kindergarten Teacher, So. Wash. Co. Schools, Cottage Grove, MN	2006-2007 2007-2008
First Grade Teacher, So. Wash Co. Schools, Cottage Grove, MN	2006-2008
Summer School Instructor: Grades K, 2, 4, So. Wash Co. Schools, Cottage Grove, MN	2006 1/24/06 -03/7/06
Summer Kid's Club Supervisor, Cottage Grove Community Education, Cottage Grove, MN	Fall 2005 Spring 2005
Substitute Teacher, So.Wash.Co. Schools, Cottage Grove, MN	Spring 2005 Fall 2004
Long Term Substitute, Pullman Elementary, St. Paul Park, MN	Fall 2004
Student Teaching, Cottage Grove Elementary, Cottage Grove, MN	Fall 2004 2003-2004
Central School Volunteer, Central Elementary, Bemidji, MN	2003-2004
Central Block Teaching Assistant, BSU, Bemidji, MN	Fall 2003
Circle Communication Training, Bemidji, MN	
Central Collaborative Block Student, BSU, Bemidji, MN	
STAR Youth Advocate, Bemidji, MN	
BEST Program Volunteer, Central Elementary, Bemidji, MN	
Bemidji Middle School Tutor, Bemidji, MN	