

Northwestern College, Iowa

NWCommons

Master's Theses & Capstone Projects

Education

Fall 2022

Effect of Professional Learning Communities about Vocabulary Instruction on Student Achievement in Reading Comprehension in Rural Iowa

Danielle Hart

Follow this and additional works at: https://nwcommons.nwciowa.edu/education_masters



Part of the [Education Commons](#)

Effect of Professional Learning Communities about Vocabulary Instruction on Student

Achievement in Reading Comprehension in Rural Iowa

Danielle Hart

Capstone Project: An Action Research Project

Northwestern College, Orange City, Iowa

Abstract

The research question for this study is based on how a PLC of singletons can best affect student scores on reading comprehension by focusing on vocabulary instruction. For the purpose of this research, students who were considered High Risk of not ending the year on grade level were progress monitored biweekly to determine the effect size of two different forms of PLCs on vocabulary instruction. In the first round of PLCs, the teachers implemented the Frayer Model for vocabulary instruction into the first class of the day. The data was compared from before the intervention until the end of the one month intervention. The Dependent Samples T-test found the intervention to be insignificant. In the second round of PLCs, the teachers implemented the Frayer Model in their first class of the day, but also utilized different strategies to work on the same vocabulary words throughout every class of the day. The same Dependent Samples T-test found the second intervention to also be insignificant. Limitations of the study are discussed along with ideas for future investigations.

Keywords: professional learning community, vocabulary instruction, reading comprehension, rural community, singletons

Table of Contents

Abstract	1
Introduction	4
Literature Review	7
Methodology	15
Research Questions	15
Participants and Research Site	15
Intervention & Timeline	16
Variables	16
Measurement Tool(s)	17
Anticipated Statistical Analysis	18
IRB	18
Data Collection	19
Data Analysis	20
Discussion	
Findings	29
Impact on Teaching and/or Learning	29
Alignment to Research	29
Limitations	30
Future Research	30
Conclusion	31
References	34

Effect of Professional Learning Communities about Vocabulary Instruction on Student Achievement in Reading Comprehension in Rural Iowa

Professional Learning Communities (PLCs) have been implemented in multiple districts across the world in order to help teachers encourage great gains in student achievement (Feldman, 2020; Mansfield & Thompson, 2017; Linh & Kasule, 2022; Zhang & Sun, 2018). Typically, a PLC would consist of teachers who teach at the same district at the same grade level, teaching the same content. This group of teachers would sit down and walk through the assessments given to students about the content, and sort students into different groups based on their achievement of those concepts. Then, teachers share their teaching strategies that seem to have worked well for the student achievement, and other teachers attempt to implement those strategies with their students as well. One hundred percent of teachers found monthly meetings on data to be effective and helpful in analyzing student data (Pelusi, 2015). This view has already occurred among scholars in education because PLCs are currently being implemented as a highly effective teaching strategy. The problem is not all districts have multiple teachers at each grade level and content area. In one study by O’Byrne et al (2021), the use of PLCs across disciplinary perspectives allows educators to help students learn in the most effective manner. In order to make the implementation of PLCs relevant across multiple different districts, there needs to be more research completed on how to best effectively run a PLC when these general guidelines cannot be followed.

The goal of this action research is to determine the best scenario for implementing a PLC when the district is one of individual teachers per content and grade level. PLCs affect the teaching styles of the teachers because in a study by Brenneman et al (2019), 81% of teachers reported adjustments in their teaching strategies as a result of PLCs. However, teachers are not

the only ones benefiting from PLCs. “Professional learning communities (have) been shown to exert a positive impact (on) student achievement” (Brenneman et al, 2019, p. 22). Because PLCs have already been defined as increasing student achievement, there needs to be more focus on making PLCs available for districts of varying sizes. The objective of this research is to identify the most effective way (according to reading comprehension scores for students below grade level) to implement a PLC focused on vocabulary instruction.

In order to locate the relevant literature, the main focus is on PLCs within the last decade. This literature ranged from the typical implementation of PLCs (Brenneman et al, 2019; Feldman, 2020; Guarino, 2009; Kilbane, 2009) to the unique situations requiring the PLC to take on a different form (Gore & Rosser, 2022; O’Byrne et al, 2021; Mansfield & Thompson, 2017). Each of these pieces of literature was published in a scholarly journal and focused on education. Just one of the articles is focused on the effect of vocabulary instruction on reading comprehension (Wright & Cervetti, 2016). The focus is specifically how to best implement PLCs on vocabulary instruction across content areas. As multiple different content teachers are working together in a PLC, they require a certain level of cooperation with each other.

Teachers work best when they are working within a group. When teachers work together, they learn from each other and are better able to achieve maximum student learning (Feldman, 2020). Teachers in smaller districts are no exception; community is still needed in order to bring out the best possible teaching from our educators. PLCs across content areas are the most effective when they focus on the pedagogy used for instruction instead of the content being taught because no teacher is teaching the same content as another. These PLCs “produced positive effects in large part because of, rather than despite, the fact teachers focused on pedagogy as opposed to content” (Gore & Rosser, 2022, p. 226). Because the teachers are

focusing on implementing a PLC across content areas, the focus should be on the pedagogy instead of the content. The literature demonstrates a strong correlation between the vocabulary instruction and the scores on a student's reading comprehension. According to a study by Wright & Cervetti (2016), student comprehension improves the most when students are actively taught to keep track of their understanding of the vocabulary words in the reading passage. As a result, the measurement tool being used will be biweekly progress monitoring on reading comprehension scores.

The literature review mainly focuses on how PLCs have been implemented into other districts. The first step in the literature review is to define the aspects of effective PLCs. Then, focus shifts more specifically to how PLCs have been implemented by schools without a team of the same content and grade level teachers meeting in PLCs. Focus moves toward student achievement, then some of the barriers to effective PLCs. The literature review ends in focusing on the effect of vocabulary instruction on reading comprehension.

Review of the Literature

Effect of Professional Learning Communities in the Past

PLCs have been implemented in the past with great success. As a result of this success, they have gained attention from much of the research community. This attention has led to a wide variety of research topics surrounding the concept of PLCs. As PLCs have been researched, findings point to a few key elements of PLCs in order to achieve the greatest effect for students. The key elements of PLCs are the focus on a problem, collaborative solutions to those problems, reflection on the implementation of those solutions, and the ongoing learning of educators.

The first major element of PLCs is the focus on a particular problem. Researchers have found when teachers come together to solve a problem, there is almost twice the effect on student achievement than when teachers try to solve the problem individually (Greene, 2015). Because there is a greater gain with multiple teachers, educators should constantly work with others in order to accomplish their tasks. By working with others, teachers can see the same problem from many different aspects and address multiple different solutions to those problems. According to Brenneman (2019), professional learning communities bring different teachers to the same table to work out a common problem. Because teachers are sharing their problems, there needs to be a large amount of trust built into the relationships among teachers. No teacher is going to share an authentic struggle in the classroom unless this trust has been built between the members of the PLC. Mehta & Peterson (2019) described this built trust as the backbone of effective PLCs. All of these researchers found teachers were able to influence student learning more when they worked together. However, working together as educators requires more than simply attending to a specific problem.

PLCs require teachers to collaborate on specific problems. While working as a team, one researcher even went so far as to describe the PLC as establishing unity (Meesuk et al, 2021).

This teamwork is also evident in seven different schools across Shanghai, where teachers scored high in areas of collaborative learning (Zhang, & Pang, 2016). In both of these research studies, teachers were required to work together in order to solve their focused problem. In a research study completed by Guarino (2009), the focus of the PLC was to set goals as a team and see how they achieved results on those goals. Similarly, Mehta & Peterson (2019) found PLCs to be a place of shared learning instead of one person communicating the answers. The teamwork demonstrated by teachers allows them to solve the problem in unique ways because the team is going to be unique. As teachers continue to learn from each other, they are better equipped to collaborate on creating the solutions to the problems. Another group of researchers described this shared learning as a “shared practice and shared responsibility” (Zhang, & Sun, 2018, p. 447). The responsibility of the group is to ensure the best success of the students. After the PLC works together to determine the best approach, there needs to be a time allowed for reflection.

The third aspect required for an effective PLC is the reflection piece. PLCs are not just about seeing what went well and what needed improvement; they are more about what teachers can do differently in the future. One research study pointed out a way to accomplish this is by having teachers provide feedback to each other (Brenneman et al, 2019). One other researcher has found PLCs use reflection to “inquire into the teaching and learning process” (Kilbane, 2009, p. 186). In contrast, another researcher found this reflection piece the most beneficial when teachers reflect on their own teaching practice (Feldman, 2020). Either way, teachers need the chance to decide what areas of their teaching they should change in the future. Sometimes that future is for the next class, and sometimes it is for the next year when teaching the same standard. Feldman (2020) found this social process needs to take place every day in order for

PLCs to be the most effective. If teachers need to be reflecting each day, they need more professional development about what has been proven to work for students in the past.

As a profession, teaching can never truly be mastered; there is always a new strategy or assessment to implement. As a result, teachers have to always be considering themselves as learners and constantly striving to improve their practice. According to Feldman (2020), this focus on professional learning is what defines a PLC. These findings are echoed across the world in different research studies. In Vietnam, secondary school teachers reported their professional needs were being satisfied through the use of PLCs (Linh & Kasule, 2022). Similarly, the international trends discussed by Brenneman et al (2019) were determined to enlighten learning experiences as a result of professional development. Saglam & Dikilitas (2020) also found effective PLCs provide enough support for teachers to have positive opinions about implementing PLCs within their schools. All of these positive remarks stem from the use of professional learning within a PLC. PLCs are effective tools for educators to implement, but it becomes more difficult when the teachers making up the team do not teach the same content and grade level.

Professional Learning Communities of Singletons on Pedagogy

Most small districts in rural Iowa are struggling to implement PLCs effectively because the districts are made up of singletons. Singletons are teachers who do not have a team of people teaching the same grade level and content area. As a result, PLCs have to expand beyond the content and focus more on strategies the teachers are implementing. This focus on strategies used in schools allows teachers to work with other teachers who may not teach the same content, or even in the same school.

When focusing on the strategies of teaching, PLCs can take on multiple new roles. One researcher pointed out the purpose of PLCs is to create the most effective learning environment for the students (O’Byrne et al, 2021). By running a PLC on the learning environment, teachers are able to learn from each other about how to provide scaffolding to set students up for success in any content area. According to Linh & Kasule (2022), PLCs become more effective when educators implement higher quality instructional strategies and techniques. These instructional strategies could also be the focus of a PLC among singletons. While studying the cross disciplinary perspectives of a PLC on the use of technology, O’Byrne et al (2021) found PLCs need to focus on results and how to help teachers attain those results. When PLCs adjust the focus to the pedagogy used by teachers to gain results in the content instead of the content itself, singletons can produce the same results in their own PLCs as other content area PLCs. Guarino (2009) describes four elements of effective PLCs: time set aside throughout the school day for teachers to work with each other, fewer students on each team, time to share what teachers found to be the best practices, and a focus on classroom instruction. Content is not a necessity in a PLC; singletons can focus on the pedagogy used to deliver classroom instruction.

By focusing on pedagogy instead of content, singletons can learn from the expertise within their buildings. According to a study by Mansfield & Thompson (2017), teachers engage in a professional learning community best when seizing the opportunity to work with other teachers from other schools. Similarly, Gore & Rosser (2022) found PLCs with a focus on pedagogy, instead of content produced positive results. In both of these situations, singletons can shift the focus from content to pedagogy and be successful with an increase in student achievement. In contrast, Guarino (2009) found PLCs produce better results when the focus is on the needs of the teachers instead of a set team of interdisciplinary teachers. This means PLCs

work the best when teachers decide who they need to meet with and how those meetings should occur to best benefit everyone. Because every building is unique, PLCs across buildings should look different. A PLC of singletons in one building may best take the form of a content area team, while PLCs of singletons in a different building may instead take the form of a grade level team. For this research study, the singletons decided to implement a PLC across content areas and focus on increasing the achievement of the seventh grade students.

Student Achievement (Including Vocabulary Comprehension)

PLCs are focused on student achievement. The goal of a PLC is to improve student learning. By focusing on student learning, teachers can adjust their curriculum to meet the needs of students. PLCs not only provide learning for the teachers, but also create positive learning environments for the students leading to higher student achievement. This can be seen clearly in teaching vocabulary for increasing student comprehension of a reading passage.

PLCs work for students because the teachers are working on learning and implementing better teaching strategies. According to Pelusi (2015), grade level teams utilizing a PLC positively impacted teachers planning lessons according to the student data. When teachers make instructional decisions based on the data provided by the students, the students are able to achieve higher levels of understanding. Another researcher found similar results and phrased it as “students ... develop their thinking skills which could be seen from students’ gaining a higher score on the national examinations” (Meesuk et al, 2021, p. 38). When teachers push students to develop their critical thinking skills, they are pushing their students to become the best learners they can be.

The focus on student achievement is the reason why teachers work together in a PLC. In a study by Prenger et al (2021), findings demonstrated teachers chose to participate in a PLC

because those teachers valued the focus on student achievement results. PLCs are results-oriented, and teachers like seeing the results in their students. Similarly, one researcher agrees with these results and even goes so far as to say teachers meeting in PLCs is the reason for the positive impact on student achievement (Brenneman et al, 2019). When teachers learn from other teachers, the students benefit.

In a research study completed by Wright & Cervetti (2016), findings also clearly point to this connection between teaching strategies and student achievement. In this research study, participants were provided with instruction on vocabulary. After receiving this instruction, students were able to score higher on comprehension of the reading passage. This effect on comprehension was even stronger when the students were performing below grade level (Wright & Cervetti, 2016). If students perform better on comprehension when provided with instruction on vocabulary, there should be a PLC surrounding this topic. However, there has currently been no research on the implementation of a PLC focused on vocabulary instruction in a district composed of singletons. But if PLCs are effective in improving student achievement, and vocabulary instruction is beneficial for students performing below grade level, there needs to be more research completed to demonstrate how singletons can accomplish this together.

Barriers to Implementing Effective PLCs

PLCs are not very easy to implement effectively. There needs to be a culture of teachers who are willing to work together and the time available for those teachers to meet with each other consistently. These barriers have kept schools from fully starting a PLC process in order to help student achievement. These schools choose to focus on the struggles of the PLC instead of focusing on the benefits for students. In reality, most of the barriers simmer down to two main struggles: available time and school leadership.

Kilbane (2009) found any change in schools takes time. Another researcher discovered similar findings because teachers need time to build relationships with each other in order to collaborate well with each other (Prenger et al, 2021). The barrier of time in schools is a struggle because teachers already have much on their plates. Taking on another meeting is difficult to schedule and motivate teachers to be fully present. However, in another study, Guarino (2009) found teams who were provided with time within the regular school day to meet were able to motivate teachers to be fully attentive if meetings took place once per week. Because the work of student achievement is valuable to teachers, Shanks (2016) found once PLCs were in place, teachers were discussing student achievement at additional times throughout the week informally in addition to the formal meetings being held each week. If teachers care about the topic, they will find the time to meet authentically without administration mandating those meetings.

Teachers also need to feel they have ownership of their meetings. According to Zhang & Sun, (2018), the leaders within the school need to be giving some leadership roles to the teachers in order to allow them to take part in the decisions made at the school. This means the teachers need to be the ones deciding they want to work on a PLC. If teachers are required to implement PLCs, they will become just another mandatory meeting. Instead, teachers need to feel they can choose to take part in a PLC, but not have them required.

The leadership within the school is not the only barrier the research studies have found. Teachers face many different barriers when practicing PLCs (Zhang & Sun, 2018). One of those specific barriers has been found to be the time within a teacher's day. One researcher found almost one quarter of teachers reported their largest barrier was the lack of time, but working with a supportive team helped alleviate that barrier (O'Byrne et al, 2021). Similarly, in a study by Prenger et al (2019), findings pointed toward the struggle of teachers completing a PLC when

the district did not provide them the time to meet within the regular school day. By working to eliminate these barriers, rural school districts can experience the same efficiency as urban school districts in their PLC process.

If PLCs are the best for student achievement, teachers should attempt to implement them into their regular school day. However, this can be tricky in a district of singletons. As a result, the research question for this study centers on how a PLC on vocabulary instruction can best be implemented in a rural community of singleton teachers in order to best support students who are performing below grade level.

Methods

Participants

The purpose of this research study is to identify the effect of professional learning communities emphasizing vocabulary instruction on student scores in reading as measured by biweekly progress monitoring scores for students performing below grade level in rural Iowa.

This research is taking place in a rural school district in the northern part of Iowa. There is a relatively large population of Hispanic or Latino at 13.3% (United States Census Bureau 2021). There is also a relatively large percentage of the student population learning to speak English at 37 students (Iowa.gov, 2021). Most of the students come from lower socio-economic homes. The middle school and high school relocated in 2009, so the different buildings could be in the same part of town (Estherville Lincoln Central Community School District 2020).

The school district started to incorporate Professional Learning Communities, but only a few teachers have been trained through Solution Tree. These trainings were intended to be implemented with all staff before the pandemic shut schools down for an extended period of time. However, since returning to schools full time, the administrators have not yet incorporated PLCs into every grade level team. As a result, the seventh grade team is working on implementing the PLC process, but without much certainty on the procedure for utilizing grade level teams instead of content and grade level teams with the smaller district.

The seventh grade class is composed of 89 students ranging from ages 11-13. Seven of these students are classified as English Language Learners, and nine of the students have Individualized Education Plans. Fourteen of the students are in the Talented and Gifted Program.

The seventh grade team is composed of four females and one male teacher, with one teacher per content area. The teacher in the English department has three years of experience

teaching Writing and Reading. The teacher in the Math department has five years of experience teaching, but some of those years were as a Science teacher. The teacher in the Science department has six years of experience teaching science in grades ranging from 6th-8th. The teacher in the Social Studies department has twenty years of experience teaching, but some of those years were as a Writing teacher. The teacher in the Resource department has eleven years of experience, with years teaching Preschool prior to starting 7th grade. Four of the teachers are working on a Standard License, with one teacher working on a Master License. All of the teachers have experience attempting to implement a PLC, but none of the teachers attended the district training with Solution Tree.

Measures

The independent variable is the use of a PLC with a focus on vocabulary instruction. In the first round of data collection, teachers used the Frayer Model for vocabulary instruction to work on 7th grade vocabulary words. In the second round of data collection, teachers continued to use the Frayer Model, but also included more exposures to the vocabulary words in their instruction with each class throughout the week.

The dependent variable is the student achievement as measured by the reading passages given every other week for progress monitoring. The growth from the start of the first round to the end of the first round will be compared to the growth from the start of the second round to the end of the second round to determine which model of PLC implementation works best for students who are performing below grade level in reading comprehension.

As a part of the Professional Learning Community implementation, teachers are meeting together to determine the answers to the questions:

1. What do we want students to know?
2. How will we teach it to them?
3. How will we help the students who do not get it the first time?
4. How will we extend the learning for the students who get it the first time?

The teacher team will work together to identify the vocabulary words desired for special instruction throughout the grade level. Next, the teachers will work together to develop a Frayer Model for the vocabulary instruction. Then, teachers will provide feedback to the students on how their sentences compare to the standard for seventh grade sentences. For the first round of PLCs, this student work time will take place only in students' first period class. In the second round of PLCs, this instruction will take on different forms in every core class throughout the day. By comparing the two sets of data, the researcher will be able to determine which type of vocabulary instruction has more impact on student learning.

Student participants for collecting data will be determined by the fall FAST aReading scores. "aReading received the highest possible rating for validity, reliability, and diagnostic accuracy from the National Center on Multi-Tiered System of Supports" (Illuminate Education, 2022). This benchmark score will allow the researcher to identify which students are at High Risk of not ending the year at grade level in reading. The researcher will then use the biweekly progress monitoring program through FastBridge of this group of students to monitor their progress and collect data for the research.

Procedures

Student scores will be collected before each different round of PLC implementation, and their growth will be collected at the end of the four week intervention. The growth from the first round will be compared to the growth in the second round to determine which strategy for vocabulary instruction PLC models was more effective for students below grade level.

The data will be collected using the program FastBridge through the Iowa Education Portal. As a result, the data will be kept secure until the researcher is ready to compare the results of the student achievement.

After the data is collected and stored, the Dependent Samples T-test will be completed. This statistical test was chosen because the researcher will collect baseline data at the start of the PLC cycle, then collect data at the end of the cycle as well. Students can earn a range of scores on the progress monitoring, so there will be a compilation of interval data. The growth from one test to the other will help determine the effect of the PLC process on student achievement.

As a result of utilizing the same information provided throughout a normal school year, this research study has obtained an IRB exemption form. The data collected is necessary as a regular part of instruction required by the state of Iowa, and no additional students were progress monitored as a result of this research study.

Data Collection

The research site administered the FAST aReading assessment to students on September 1, 2022. Based on the scores of this benchmark assessment, students were divided into four groups: High Risk, Some Risk, Low Risk, and College Pathway. For the purpose of this action research, data was to be collected on the impact of PLCs focused on vocabulary instruction on High Risk students.

After collecting the data for students in High Risk of not finishing the school year proficient at grade level, teachers began a PLC process by implementing vocabulary instruction in the use of the Frayer Model into the first class of every day. Students were progress monitored every other week for the month-long intervention. The first score for progress monitoring was compared to the final progress monitoring score to determine the growth of students in this PLC process.

After the first set of data was collected, a second PLC was implemented. Teachers changed their implementation of vocabulary instruction by teaching every class throughout the day about the vocabulary word. The Reading teacher had students write a story including vocabulary words. The Social Studies teacher had students complete exit slips about the vocabulary. The Math teacher had the students use the words in a story problem they created. The Science teacher created a vocabulary game for the students to play in each class reviewing the words they had learned. As a result, students were receiving vocabulary instruction in each class throughout their day. Students were still progress monitored every other week, and the data before the PLC changed was compared to the data after the second round of PLC was completed to determine the growth of students.

After the data was collected, the researcher ran a Dependent Samples T-test on the data. This compared the students' scores at the beginning of the PLC to the end of the PLC. This same

test was run for both rounds of PLC work. This test then identifies the significance of the growth of the students from before the PLC to after the PLC.

Findings

Data Analysis

In the first set of data, students were given vocabulary instruction in the form of the Frayer Model in their first class of the day. Figure 1 displays the student scores for progress monitoring from the baseline data (M=91.17, SD=33.65) to the end of the intervention (M=94.17, SD=34.28). The data was analyzed using a Dependent Samples T-test on the data. This data analysis is shown in Figure 2. The analysis shows there was not a significant change in the averages of student scores. Figure 3 depicts the overall student growth with this first intervention. There was still positive growth even though the findings were not significant. However, this data was collected over a very short amount of time. In the future, the PLC process could be run for a longer amount of time while collecting benchmark scores from students to compare the results.

Figure 1

Student Progress Monitoring Scores within Action Research Implementation

Student Name	Pretest 1	Posttest 1
1. AH	114	116
2. JH	141	146
3. AJ	65	60
4. JJ	100	105
5. LLR	77	78

6. KM	50	60
-------	----	----

Note. Student 1. AH was absent and progress monitored back to back.

Figure 2

Dependent Sample T-test

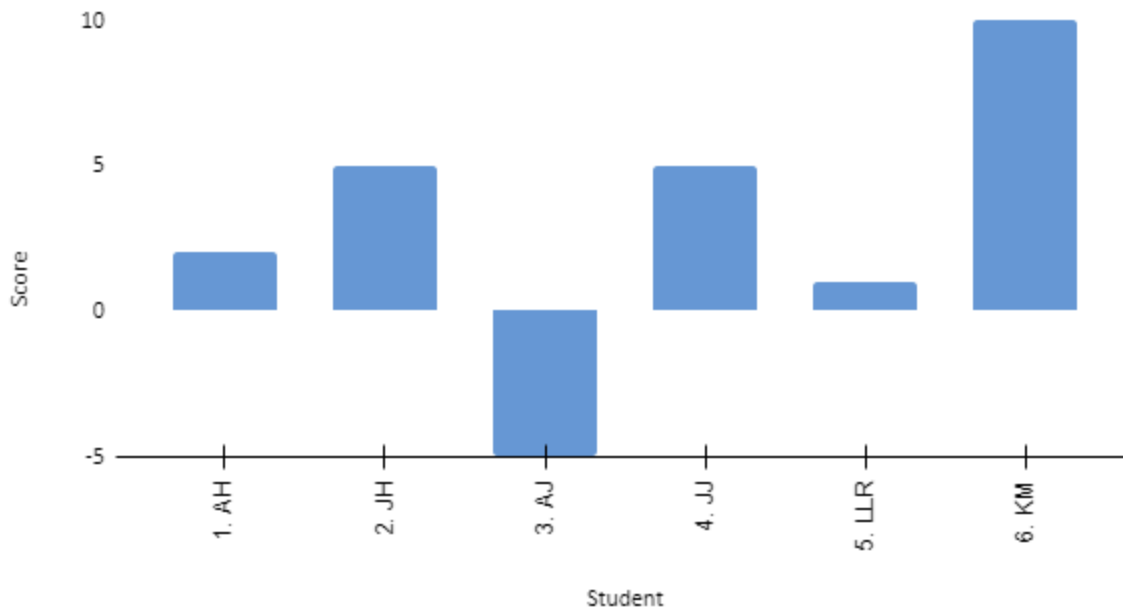
t-Test: Paired Two Sample for Means		
	Variable 1	Variable 2
Mean	91.16666667	94.16666667
Variance	1132.566667	1175.366667
Observations	6	6
Pearson Correlation	0.9892512603	
Hypothesized Mean Difference	0	
df	5	
t Stat	-1.463850109	
P(T<=t) one-tail	0.1015553319	t(5) = -1.46, p < 0.25
t Critical one-tail	2.015048373	
P(T<=t) two-tail	0.2031106637	p < .25
t Critical two-tail	2.570581836	Finding was insignificant

Note. Because the value of p is found to be less than .25, the findings are insignificant.

Figure 3

Graph of Growth in Student Progress Monitoring Scores within Action Research Implementation

Student Growth for PLC Part 1



Note. Student 1. AH was absent and progress monitored back to back.

* $p < .25$

Similarly, in the second set of data, students were given vocabulary instruction in the form of the Frayer Model in their first class of the day. The difference was the exposure to the same vocabulary words students were receiving throughout the day. In each class, students were continuing their work on the same vocabulary words in different contexts. Figure 4 displays the progress monitoring scores from the baseline data ($M=93$, $SD=36.08$) until the end of the second intervention ($M=97$, $SD=38.77$). The data was analyzed using a Dependent Samples T-test on the data. Figure 5 displays this data analysis. Again, the data was found to be insignificant in changing student scores. The growth in student achievement is displayed in Figure 6. Most students showed little to no growth for this second intervention.

Figure 4

Student Progress Monitoring Scores within Action Research Implementation

Student Name	Pretest 1	Posttest 1
1. AH	112	128
2. JH	146	149
3. AJ	60	69
4. JJ	110	112
5. LLR	79	76
6. KM	51	48

Note. Student 1. AH was absent and progress monitored back to back.

Figure 5

Dependent Sample T-test

t-Test: Paired Two Sample for Means		
	Variable 1	Variable 2
Mean	93	97
Variance	1301.6	1503.2
Observations	6	6
Pearson Correlation	0.9831475701	
Hypothesized Mean Difference	0	
df	5	
t Stat	-1.328422328	
P(T<=t) one-tail	0.120720113	t(5) = -1.33, p < 0.25

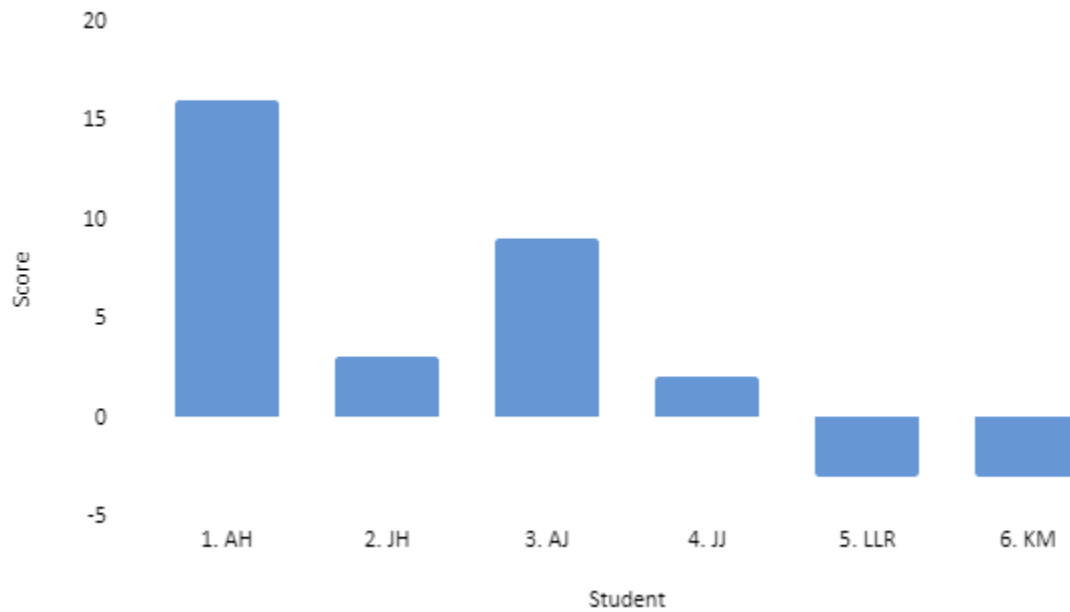
t Critical one-tail	2.015048373	
P(T<=t) two-tail	0.2414402259	p < .25
t Critical two-tail	2.570581836	Finding was insignificant

Note. Because the value of p is found to be less than .25, the findings are insignificant.

Figure 6

Graph of Growth in Student Progress Monitoring Scores within Action Research Implementation

Student Growth for PLC Part 2



Note. Student 1. AH was absent and progress monitored back to back.

*p < .25

The third set of data was not able to be completed because the testing site did not start Progress Monitoring the students at Some Risk until after the teachers started implementing the first round of PLCs. The data was still compiled for the second round of PLCs from baseline data

($M=140.14$, $SD=24.67$) until completion of the process ($M=141.46$, $SD=27.11$) and displayed in Figure 7, but was not fully included in the results of this action research. The data was still analyzed using a Dependent Samples T-test on the data and Figure 8 displays the data analysis. The growth in student scores is displayed in Figure 9. However, these findings were also found to be insignificant.

Figure 7

Student Progress Monitoring Scores within Action Research Implementation

Student Name	Pretest 1	Posttest 1
7. AH	155	154
8. AA	146	138
9. APG	146	168
10. BA	140	123
11. BF	133	121
12. CT	120	128
13. DR	177	189
14. DRR	68	70
15. DB	140	129
16. ER	136	161
17. EJR	127	129
18. GR	121	129
19. GF	121	142

20. JH	123	134
21. JC	114	113
22. JSt	140	143
23. Jsa	142	170
24. JMM	148	145
25. JV	136	149
26. JAG	129	126
27. JE	146	131
28. JH	125	123
29. JV	129	136
30. KBi	138	136
31. KL	94	97
32. KR	132	123
33. KBI	172	156
34. KH	141	154
35. LFL	157	158
36. MRC	150	129
37. MaA	212	227
38. MiA	181	190
39. NCM	157	170
40. NK	140	136
41. RA	138	146

42. SA	177	126
43. SM	134	135

Note. Student 42. SA was not in class for the full intervention.

Figure 8

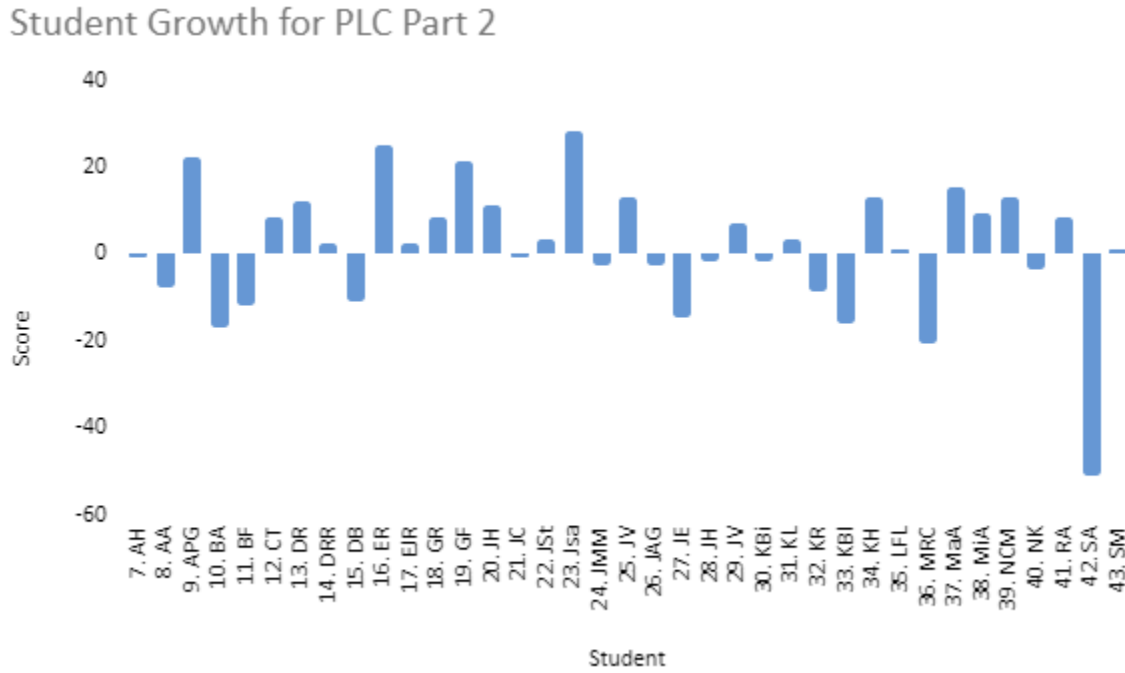
Dependent Sample T-test

t-Test: Paired Two Sample for Means		
	Variable 1	Variable 2
Mean	140.1944444	145.2777778
Variance	626.1039683	674.4349206
Observations	36	36
Pearson Correlation	0.8035652963	
Hypothesized Mean Difference	0	
df	35	
t Stat	-1.90553237	
P(T<=t) one-tail	0.0324758763	t(35) = -1.90, p < 0.065
t Critical one-tail	1.689572458	
P(T<=t) two-tail	0.0649517526	p < .065
t Critical two-tail	2.030107928	Finding was insignificant

Note. Because the value of p is found to be less than .065, the findings are insignificant.

Figure 9

Graph of Growth in Student Progress Monitoring Scores within Action Research Implementation



Note. Student 42. SA was not in class for the full intervention.

*p < .065

While the findings for these results are insignificant, data collected over a longer period of time may find different results. The important aspect to gain from this data is students should receive vocabulary instruction. The way vocabulary is taught does not have as much of an effect on students as long as they are receiving some form of instruction in new vocabulary words throughout their school day.

Discussion

Summary of Major Findings

Overall, the findings for this action research were not significant gains for student learning. In both rounds of different PLCs, the student scores were unpredictable. A part of the explanation is they are children- so scores will be unpredictable from one week to another. However, this does not mean the students were not benefiting from the PLC focused on vocabulary instruction. The teachers were still committing to helping students learn and make gains in their achievements. Students still benefited from this action research even if the data does not support one form of PLC over another.

The impact of this action research extends to the teaching of all educators. No matter the size of the district, educators can benefit from working together to improve student learning. The PLC process encourages teachers to open their classrooms and have discussions about what is best for students. By learning from each other, teachers can benefit even if the conversations are more about pedagogy than teaching content. Because teachers are striving to be better, the students reap the benefits in their learning as well.

The data from this research does not reflect the findings of other published literature. The literature supported the expectation for vocabulary instruction to improve student comprehension throughout progress monitoring. Even though this research did not end in similar results, direct vocabulary instruction should still be considered an important part of the school day. The literature also pointed towards a larger effect size when teachers work together in PLCs. By shifting the focus from one classroom to transferring the positives across the school buildings, teachers working together should still have a positive impact for students.

Limitations of the Study

Time was a major limitation of this action research. Because of the lack of time allowed for each PLC process, students may not have shown the amount of growth they could have with a longer action research. Four weeks is not quite enough time to adequately gather data to determine the full effect on students. Because of the lack of time in this action research, the data may be skewed or incomplete because the students were not given enough time with either intervention.

Another common limitation to this study was human error. Throughout the course of the action research, there was one teacher who forgot to teach the vocabulary word at the beginning of the week. This resulted in some students having more exposure to the vocabulary words than other students and could have skewed the data. There was another teacher who was gone for an extended time with illness and the substitute did not fully understand the expectations for the vocabulary instruction for the week. Both of these cases could have caused the data to look different than had the mistakes not occurred.

The final limitation was the test subjects. Because this study was about the effect on children, there are some inconsistencies in the data. Students have a lot going on outside of the school day which can affect their focus at school. Some of the students had been struggling with illness, changes in family dynamics, or concerns related to the lower socio economic status of the families in the building. Because of these outside factors, some students may not have been showing their maximum growth throughout the action research.

Further Study

It would be interesting to see the results if the PLC process were used throughout the entire year. The first baseline data could be collected by the aReading score in the fall. After the

baseline data, teachers could spend multiple months working through one PLC process. Data would be collected at the aReading score in the winter to compare the growth. Then, the second PLC process could begin with teachers implementing vocabulary instruction throughout their entire day of different classes. In the spring, the aReading scores could be compared to the winter aReading scores to determine effectiveness of each strategy.

This was also a very small sample size of students. Instead of focusing solely on the students at High Risk of not ending the year proficient at grade level, there should be more studies on the students at Some Risk or Low Risk of not ending the year proficient at grade level. This could even extend to the students on path for college.

Conclusion

Professional learning communities have been proven to help student achievement by helping teachers work together. In a district of singletons, the PLC may take the form of working on pedagogy instead of content. The problem this action research addresses is which type of PLC on vocabulary instruction has the best effect on student reading comprehension scores.

The literature supported that PLCs of singletons should focus on pedagogy. Because the test site is a smaller school district without multiple content teachers per grade level, the grade level teachers came together to work on the vocabulary instruction. The reason for the vocabulary instruction was because of the literature's strong connection between vocabulary instruction and student reading comprehension scores. The literature also pointed out two main barriers to effectively implementing PLCs: time and leadership. These barriers were addressed by utilizing the available common planning time among seventh grade teachers and obtaining leadership approval prior to starting the PLCs.

The independent variable was one of two different types of PLCs focused on vocabulary instruction. The dependent variable was the student scores on the biweekly progress monitoring for reading comprehension. The hypothesis of the researcher was to expect that the more exposure the students received on the same vocabulary, the greater the effect on the student scores. However, this hypothesis was not supported by the data collected in this action research. Even though many students did demonstrate improvement over the time of the PLC, there was not large enough growth to be determined to be significant in the Dependent Samples T-test.

In order to collect data on this problem, the research site ran two different types of PLCs. First, baseline data was collected from the student's fall benchmark in aReading. Based on these scores, students were separated into groups of risk levels of not finishing the year on grade level. The students in the High Risk category were progress monitored every other week in reading comprehension. These progress monitoring scores were compared to the ones collected at the end of the first round of PLCs. For the first round of PLCs, the teachers implemented a Frayer Model of vocabulary instruction during their first class of the day. This resulted in every student receiving the vocabulary instruction during one class throughout the day. Based on the student progress monitoring scores from the start to the end of this first round of PLCs, the intervention was found to be insignificant.

The second round of PLCs used the same progress monitoring scores of students from the start of the intervention until the end of the intervention. In this second round, the teachers continued to use the Frayer Model for vocabulary instruction at the start of each school day. However, in addition, students received additional support in every class throughout the day with the same vocabulary word. This means throughout the day, students were receiving five different

forms of vocabulary instruction, including the Frayer Model at the start of the day. The data from the second round of PLCs was also found to be insignificant.

Even though both sets of data were found to be insignificant, students still benefited from the vocabulary instruction. Moving forward, vocabulary instruction should still be an important part of the school day. Even though there is no conclusive evidence for one type of PLC over another, teachers should still work together to encourage the maximum achievement from students.

References

- Brenneman, K, Lange, A, & Nayfeld, I. (2019, Jan). Integrating STEM into Preschool Education; Designing a Professional Development Model in Diverse Settings. *Early Childhood Education Journal*, 47 (1), p. 15-28. Retrieved 18 July 2022 from <https://www.proquest.com/education1/docview/2086905214/D569ABC8CBA248BEPQ/6?accountid=28306>
- Estherville Lincoln Central Community School District. (2020). About Us. Retrieved June 30, 2020, from <http://www.estherville.k12.ia.us/index.cfm?nodeID=30978>
- Feldman, J. (2020). The role of professional learning communities to support teacher development: A social practice theory perspective. *South African Journal of Education*, 40(1). Retrieved 29 August 2022 from <https://doi.org/10.15700/saje.v40n1a1668>
- Gore, J & Rosser, B. (2022). Beyond Content-Focused Professional Development: Powerful Professional Learning through Genuine Learning Communities across Grades and Subjects. *Professional Development in Education*, 48(2), p. 218-232. Retrieved 29 August 2022 from <https://www.proquest.com/education1/docview/2674234413/DD33C06E11114E82PQ/8?accountid=28306>
- Greene, L.A. (2015). The use of professional learning community protocols to improve professional learning community and professional development practices. ProQuest LLC. Retrieved 2 September 2022 from <https://www.proquest.com/docview/1672752526/fulltextPDF/DDEE0185184E4B51PQ/3?accountid=28306>
- Guarino, J.A. (2009). The Transformation from Interdisciplinary Team to Professional Learning

Community: The Perspective of the Middle School Principal. ProQuest. Retrieved 10 September 2022 from

<https://www.proquest.com/docview/304981831?fromopenview=true&pq-origsite=gscholar>

Illuminate Education. (2022). aReading. Retrieved 3 August 2022 from

<https://www.illuminateed.com/products/fastbridge/reading-assessment/areading/>

Iowa.gov. (2021). Estherville Lincoln Central Middle School. *Iowa Department of Education*.

Retrieved 27 May, 2022 from

<https://www.iaschoolperformance.gov/ECP/StateDistrictSchool/SchoolSummary?k=12375&y=2021>

Kilbane, J.F. (2009, Sept). Factors in Sustaining Professional Learning Community. National Association of Secondary School Principals, 93(3), p. 184-205. Retrieved 2 September 2022 from

<https://www.proquest.com/education1/docview/216030678/E5925A0F6979401CPQ/3?accountid=28306>

Lesar, P.V. (December 2013). The Relationship Between Grade-Level Team Implementation of Professional Learning Communities and Student Achievement. ProQuest. Retrieved 2 September 2022 from

<https://www.proquest.com/docview/1492721750/fulltextPDF/57D6241924724F5BPQ/1?accountid=28306>

Linh, D.N., Kasule, G.W. (2022 March). Status of professional learning communities in

- developing countries: Case of Vietnam and Uganda. *International Journal of Evaluation and Research in Education*, 11(1), p. 61-68. Retrieved 2 September 2022 from <https://files.eric.ed.gov/fulltext/EJ1341095.pdf>
- Mansfield, C. and Thompson, G., 2017. The value of collaborative rounds for teacher professional learning in Australia. *Professional development in education*, 43 (4), 666–684. Retrieved 29 August 2022 from <https://researchrepository.murdoch.edu.au/id/eprint/33797/1/collaborative%20rounds.pdf>
- Meesuk, P., Wongrugsu, A., & Wangkaewhiran, T. (2021). Sustainable Teacher Professional Development Through Professional Learning Community: PLC. *Journal of Teacher Education for Sustainability*, 23(2). Retrieved 29 August 2022 from <https://www.proquest.com/education1/docview/2622295642/fulltextPDF/6A56A048D5214CC3PQ/15?accountid=28306>
- Mehta, J. & Peterson, A. (2019, Aug). International learning communities: What happens when leaders seek to learn across national boundaries? *Journal of Educational Change*, 20 (3), p. 327-350. Retrieved 18 July 2022 from <https://www.proquest.com/education1/docview/2259113072/1A181A4EE0414E71PQ/14?accountid=28306>
- O’Byrne, W. I., Keeney, K., & Wolfe, J. (2021, July). Instructional Technology in Context: Building on Cross-Disciplinary Perspectives of a Professional Learning Community. *Tech Trends*, 65 (4), p. 485-495. Retrieved 18 July 2022 from <https://www.proquest.com/education1/docview/2549837782/1A181A4EE0414E71PQ/4?accountid=28306>
- Pelusi, L.A. (August 2015). The Impact of Professional Learning Communities on Student

- Achievement, Data Driven Instruction, and Instructional Culture. ProQuest. Retrieved 2 September 2022 from <https://www.proquest.com/docview/1727124414/fulltextPDF/57D6241924724F5BPQ/4?accountid=28306>
- Prenger, R, Poortman, C. L., & Handelzalts, A. (2021, Feb). Professional learning networks: From teacher learning to school improvement? *Journal of Educational Change*, 22 (1), p.13-52. Retrieved 18 July 2022 from <https://www.proquest.com/education1/docview/2495184950/1A181A4EE0414E71PQ/10?accountid=28306>
- Prenger, R., Poortman, C. L., & Handelzalts, A. (2019). The effects of networked professional learning communities. *Journal of Teacher Education*, 70(5), p. 441-452. Retrieved 30 August 2022 from <https://journals.sagepub.com/doi/pdf/10.1177/0022487117753574>
- Saglam, A.L.G., & Dikilitas, K. (2020 November). Evaluating an Online Professional Learning Community as a Context for Professional Development in Classroom-based Research. *The Electronic Journal for English as a Second Language*, 24(3), p. 1-17. Retrieved 2 September 2022 from <https://eric.ed.gov/?id=EJ1275846>
- Shanks, J. (2016, Spring). Implementing Action Research and Professional Learning Communities in a Professional Development School Setting to Support Teacher Candidate Learning. *School-University Partnerships*, 9(1), p. 45-53. Retrieved 5 September 2022 from <https://files.eric.ed.gov/fulltext/EJ1107086.pdf>
- United States Census Bureau. (2021). Quick Facts: Estherville city, Iowa. Retrieved 27 July 2022 from <https://www.census.gov/quickfacts/fact/table/esthervillecityiowa/IPE120218>
- Wright, T.S & Cervetti, G.N. (2016 July 12). A Systematic Review of the Research on

Vocabulary Instruction that Impacts Text Comprehension. *Reading Research Quarterly*, 52(2), p. 203-226. Retrieved 30 August 2022 from https://deepblue.lib.umich.edu/bitstream/handle/2027.42/136457/rrq163_am.pdf;jsessionid=3B74C0C3C338435E5DFE04FBBB11CBA3?sequence=1

Zhang, J. & Pang, N.S. (2016, Feb). Exploring the Characteristics of Professional Learning Communities in China: A Mixed-Method Study. *The Asia-Pacific Education Researcher*, 25(1), p. 11-21. Retrieved 29 August 2022 from <https://www.proquest.com/education1/docview/1762635854/fulltext/28D09F52EFD24F86PQ/1?accountid=28306>

Zhang, J. & Sun, Y. (2018, Dec). Development of a conceptual model for understanding professional learning communities in China: a mixed-method study. *Asia Pacific Education Review*, 19 (4), p. 445-457. Retrieved 18 July 2022 from <https://www.proquest.com/education1/docview/2065629264/1A181A4EE0414E71PQ/17?accountid=28306>