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The Effects on Instructional Conversations on English Language Learners

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Abstract

This research examined the effectiveness that the Instructional Conversations (ICs) teaching method had on elementary-aged English Language Learning (ELLs) students. Specifically, how ICs impact student academic achievement, academic language usage, and student engagement. The study compared two first grade classrooms, 39 participants, consisting of majority ELL students. The experimental group received math instruction through Instructional Conversation activities while the comparison group was taught using traditional math instruction and centers. After controlling for initial ability in math, results indicated that ICs did not lead to an increase of academic achievement or academic language usage when compared to students taught through traditional instruction. Results did show that engagement increased when taught using ICs. With an increase in engagement combined with a decrease in academic acquisition, results suggest that ICs should be used with caution when teaching content related material.

Keywords

instructional conversation, collaboration, english language learners, math, early childhood education

Introduction

The Instructional Conversation (IC) pedagogy is based around an educational discussion in which the teacher adjusts their side of a conversation toward what they believe a student is trying to say about a topic. The student and the teacher work together through conversation to form an authentic idea or conclusion. The combination of ICs with Joint Productive Activities (JPAs) creates opportunities for students to complete a content-related task through the use of collaboration and conversation. The difference between IC-JPAs and other forms of class collaboration is the emphasis for students to create their own conversational goals, lead the conversations, and then work together to create a tangible product, such as a T-chart (Mellon, Hixon, & Weber, 2019). The emphasis on self-monitoring of conversational goals also helps teach children to work collaboratively without slipping into "social loafing" and losing motivation (Peterson, 2012). Kasper and Saundra (2005) discuss how the use of ICs contributes to building students' linguistic and academic literacy skills through the emphasis placed on communication.

The purpose in pursuing this research was to ascertain the effects that IC-JPAs have on English Language Learners' (ELLs) academic success in comparison to traditional collaborative activities and teaching strategies in mathematics. According to Mellon, Straubhaar, Balderas, Ariail, and Portes (2018), in order for ELL students to be able to develop both academically and socially, they must first be able to speak the language and feel as if they are in a welcoming environment. With this in mind, there has been a lack of research in how to bridge the gap between social emotional learning and content related concepts. These two concepts are often taught separately in the classroom, as opposed to cohesively in one unit with the ability for students to practice speaking their thoughts in a collaborative setting with respect at the center (Snow, 2015). The IC pedagogy aims to build learning by moving away from pencil and paper and more toward educational conversations and building relationships. IC-JPAs are expected to increase an ELL student's overall educational success, both academically and socially.

Influence of Culturally Responsive Classroom Environments

A study done by Snow (2015) noted that language deficits impact language interventions, specifically in reducing expressive vocabulary. He found that often times children who are unable to express their feelings with words show resistance to engagement in collaborative activities. As previously mentioned, there has been little research on how to combine social emotional needs in the classroom setting through collaborative activities. Research on best practices for ELLs has indicated

that IC are a possible intervention that can successfully meet the need to combine student needs into one activity, simultaneously increasing academic success. IC are not successful if they are not implemented correctly by an educator with a positive attitude towards ELL students. Mellon et al. (2019) mention the importance of lowering a child's affective filters by creating a safe classroom environment. Affective filters are factors that have an impact on a child's ability and desire to speak in their second language. Some of these filters include motivation and self-confidence. The more opportunities a teacher can provide for a child to practice his or her second language safely, the more comfortable the student will feel when offered the opportunity to speak outside the classroom.

A study conducted by Portes, Gonzalez Canche, Boada, and Whatley (2018) observed the influence of teacher attitudes and teaching in a small group setting with a student-centered model through ICs. It was noted that the ICs implemented by teachers who did not have meaningful exchanges in conversations where both parties to contribute to a common idea were unsuccessful. Students did not appear as comfortable sharing personal information or their ideas when they felt that the teacher did not have interest in the topic. This pattern heightened those student's affective filters and was a limiting influence to their desire to speak and practice their second language. Honeda and Wells (2012) found similar results, emphasizing the importance of creating an engaging environment that encourages discussion to allow ELL students to practice their linguistic skills. Both studies found that a way for this to be accomplished is through creating classroom discussion based on student interest. A student's interests in a topic directly influences his or her willingness to engage in speaking.

Learning a second language can lead to confusion of one's identity in the way that one views himself or herself and the way they believe that others perceive them (Cummins et al., 2005). In many cases, ELL students are learning and speaking a different language when they are at school than they speak at home. The influence that language learning can have on identity emphasizes the importance of creating a safe environment and including student culture in the classroom. By creating a safe environment for students to share their ideas, they are provided with a combination of social and cultural opportunities.

Similarly, Yamauchi and Mark (2013) suggest that children develop language skills through the environment in which they are exposed to that language. It has been shown that social-emotional learning and academic achievement can build upon one another (Doll, Brehm, & Zucker, 2014). The IC pedagogy provides opportunities for teachers to build a child's social-emotional learning through teaching them how to communicate effectively with others. Mellon et al. (2019)

found that ELL students involved in ICs showed a notable amount of growth in Language Arts and Mathematics, as opposed to students exposed to traditional classroom instruction. Within this realm of communication, students are taught strategies to share ideas, invite others into conversations, disagree with one another, and learn how to defend their reasoning for a conclusion.

Changes in student attitude and motivation.

ICs are centered around creating educational experiences between educators and students to arrive at a finished product from building upon one another's ideas through conversation while keeping conversational goals in mind. Differing from traditional collaborative activities, IC-JPAs aim to form a foundation built upon a positive relationship between the educator and student, where student motivation begins to grow (Oakley, Felder, Brent, & Elhajj, 2014). The IC pedagogy has been found to create positive changes in ELL students' attitudes toward school and academic motivation (Davin, 2013). Due to the fact that IC-JPA tasks are to be completed through group collaboration, the idea applies that no one can succeed unless everyone succeeds. This idea emphasizes mutual goals, team rewards, sharing of sources, and accountability for participation (Huiping, 2013). Though the research is indicative that collaboration is a positive tool for ELL students, Starr et al. (2019) found that students with language deficits have a low NED (Negative Emotion Differentiation). With NED, inner dialogue is often a simple as "good" and "bad", which can make it very difficult for children to share their ideas fluidly while being open to disagreement. This can often lead to frustration in collaborative settings, resulting in resistance to contributing effort. The teacher's role in IC-JPA tasks is to facilitate, creating a safe space, while students take ownership of their academic conversations. By allowing students to lead and share their feelings, Lin et al. (2015) found that student motivation and engagement in the subject increases.

The idea that the use of collaborative classroom activities increases student motivation is challenged by findings that these activities can result in student frustration. Pauli, Mohiyrddini, Bray, Michie, and Street (2008) found that when group members assessed their experiences with collaborative activities, there were feelings of frustration from a lack of commitment and task disorganization by task partners. McKinney and Cook (2018) reported similar findings when assessing student conceptions of group work. These findings revealed feelings of frustration and an increase of stress. Students reported feeling overwhelmed by the idea that their hard work could be diminished from the effects of others, which drew into other implications leaning towards negative feelings of collaborative group work.

In effort to diminish the possibility of stress coming from students through group activities, IC-JPA's aim to keep the teacher involved through facilitation and

monitoring of tasks. A study done by Frykedal and Chiriac (2012) sought to determine how the use of teacher scaffolds throughout group activities influence students' abilities to work together collaboratively. After reviewing 500 minutes of footage from a classroom, it was observed that the group that received scaffolding from the teacher was more likely to be on-task and appear engaged throughout the assigned task. Additionally, the same group had a higher level of academic achievement at the end of the activity based on test scores.

Dornyei and Csizer (1998), sought to provide teachers with data regarding strategies that can be easily implemented with second-language learners emphasizing student motivation, linguistic self-confidence, and appraisal of the classroom environment. Teachers were asked to implement ICs by directly socializing with their students through modeling, task presentation, feedback, and intentional group discussions. Intentional group discussions are discussions that involve students setting conversational goals for that specific student-led task, opportunities for extension, and questions to consider. Simultaneously, educators were encouraged to create tasks that were built upon student autonomy and personal relevance. Through this study and the assessment of many well-known instructional strategies, it was found that ICs and verbalization were two interventions that led to an increase in student motivation. ELL students reported that they felt more confident in their linguistic abilities, allowing them to feel more comfortable in the classroom, resulting in an overall increase in academic motivation. Similarly, Meloy, Deville, and Frisbie (2002) found that by exposing students to correct language usage by reading problems aloud, students increased academically and felt more confident in academic language recognition. One study found similar results showing that through the use of ICs, student motivation increased. Todhunter (2007), observed a classroom to determine whether student behavior shifted during the times ICs were occurring. Student responsiveness, connected discourse, thematic focus, and questions with unpredictable answers were used to measure when the intervention occurred. It was found that when ICs occurred naturally in the classroom, students showed a tendency towards taking ownership of the topic and appeared to have confidence based on their responsiveness and participation in relation to the topic. Opportunities for children to practice language through collaboration in a safe environment amongst their peers and teachers is important. However, Pauli, et al. (2008) found that ELL students appeared less inclined to speak amongst their non-ELL peers when participating in collaborative activities, therefore, suggesting the possibility that collaborative activities can reduce discussion amongst ELL students.

As suggested by Drageset (2015), teachers must be considerate of the redirection and responses they deliver to students throughout the use of ICs in

attempt to build the child's confidence, rather than diminish his/her answers, especially when working amongst their peers. Conversations must lead to students learning new information while simultaneously benefiting from one another rather than becoming argumentative and hostile towards one another. The goal of ICs is centered around extending new knowledge and enhancing abilities that each child arrives with, in order for him or her to complete a complex task with effective collaboration (Oakley, et al., 2014). From the effective use of intentional task completion focused on student-led conversation, cognitive and social development occurs, increasing student motivation (Olsen & Finkelstein, 2017).

Academic growth using instructional conversations

For ICs, academic achievement can be viewed as the combination of increased test scores, correct academic language recognition and usage, and an increase in linguistic abilities for ELL students (Mellon et al., 2018). The IC pedagogy in combination with JPA activities has shown to be a very positive tool to promote growth for ELL students and helps assist educators in building relationships with those students through the emphasis of conversation. It is important for educators to provide students opportunities to engage and interact with academic concepts beyond independent seatwork. Franke, Kazemi, and Battey (2007) noted that by providing opportunities for intentional collaboration, students increase their academic thinking and build their confidence as a successful student.

Similar to the IC-JPA approach, studies have shown that general group collaboration has positive effects on student learning and academic achievement. IC-JPAs and general collaboration have shown similar effects, leaving the question, which one is better? Opitz, Grab, Wittich, Hasel-Weide, and Nuhrenborger (2018) found that when participating in general group work with students who spoke English as a first language, emergent bilinguals increased their academic knowledge and general language acquisition. Students in the treatment and control groups were taught twice a week for thirty minutes in student-centered activities where they had to work together to arrive at a conclusion. It was found that students who were exposed to the cooperative learning classroom environment were more successful on the posttest based on overall average. From these findings, it appears that the influence of working with English speaking students helps assist ELL students in their content areas. According to Portes, Canche, and Stollberg (2016), collaborative activities provide meaningful experiences that in turn allow children to practice English while building their confidence in the classroom. Through the building of confidence, academic growth follows closely behind through the use of this intervention.

Portes et al. (2016), sought to determine how instruction through the use of IC influences student academic achievement. It was found that when instruction is centered around questioning and conversation, students were provided more opportunity to verbally practice communicating their ideas. Hackling, Smith, and Murcia (2011), found similar results suggesting the importance of ICs and the use of open-ended questions that prompt students' ideas and contributions to a conversation. Through the use of this intervention, students increased their linguistic utterances while simultaneously building confidence and growing academically. Similarly, Saunders and Goldenberg (1999) found that the implementation of ICs increased the use of academic language and academic success when educators focused on creating lessons while keeping in mind the knowledge of the student and their personal experiences.

The use of IC-JPA tasks increases students' opportunity to use the correct, content related vocabulary. In a study done by August et al. (2014), it was found that through using visuals, graphic organizers, modeling, creating more opportunity for partner-work, and on-going conversations based on students' responses to open-ended questions, students' increased academic language recognition. Yusuf (2013) mentions that through understanding and listening of student responses throughout the activities, there is opportunity for more meaningful assessments in relation to language usage and overall success of the activity. This is important in terms of academic language by allowing the teacher to emphasize and use the expected vocabulary through intervention of the IC-JPA. Kasper and Saundra (2005), found that when students are exposed to collaborative projects, confidence in speaking and the ability to express their academic ideas increases when compared to those who have not have explicit opportunities for academic collaboration.

The influence that ICs have when centered around academic and linguistic skills was tested in a study done by Jordan, Glutting, Dyson, Hassinger-Das, and Irwin (2012). The goal was to increase number sense through three intervention groups: number sense, language centered, and a traditional teaching. It was found that students who received the number sense intervention scored higher on the posttest in comparison to students who were exposed to open-ended, discussion based, mathematical questioning. Though most students increased academically, this study, along with others, mention the need for additional research to be conducted in specific areas to create more authentic results and evidence that IC-JPAs are an effective instructional strategy for ELL students.

Summary of Literature

Many ELL students come into schools feeling intimidated by peers, self-conscious rooted in linguistic barriers, and carrying academic disadvantages. The

use of collaborative activities has shown to be a positive tool for helping build academic and social success in ELL and non-ELL students. In comparison to these mainstream collaborative activities, research suggests that the combination of ICs and JPAs has a positive impact on emergent bilinguals specifically. Though these ideas and findings are indicative of the success of this intervention, research has shown that there is a missing piece with bridging social emotional learning and academic content areas into one cohesive and fluid unit, as they are typically taught in separate segments. This research will investigate an applicable strategy that may better bridge this gap of instruction and reach students' social emotional and educational needs, simultaneously. The purpose of IC-JPAs is for students to come together to form an authentic and completed task through the use of small-group collaboration, while keeping conversational formalities in mind. As mentioned by Mellon, et al. (2019), IC-JPAs are based upon the foundation of positive student-teacher relationships that work towards building student success through purposeful conversation and engaging in challenging and complex activities.

Current Study

An IC is an instructional strategy that encourages students ask questions and work as a team with classmates while keeping conversational goals in mind. This provides and encourages the opportunity for every child to speak and contribute to the conversation. This IC pedagogy is used in combination with Joint Productive Activities (JPAs) to help support students in collaborating to create a tangible finished product. Examples of tangible finished products are worksheets, t-charts, sorts, Venn diagrams, etc. The IC-JPA model has clear academic and linguistic instructional goals. By allowing students to lead activities and conversations, teachers are given more opportunities to informally assess student knowledge to adjust further instruction.

The IC-JPA intervention was expected to increase ESOL students' mathematical skills while simultaneously increasing academic language usage. This study was conducted in an attempt to determine the effects that IC-JPAs have on students in different areas:

1. Is there a measurable difference in student academic achievement in mathematics that can be seen through the implementation of IC-JPAs?
2. Do IC-JPAs have an impact on academic language usage in elementary ELL students?
3. Does the use of IC's impact student engagement in mathematics instruction?

In the current study, we have assumptions. It was hypothesized that when exposed to IC-JPAs, students may increase academically in the area of

mathematics. The use of IC-JPAs may increase students' academic language usage. IC-JPAs may also increase student engagement in mathematics.

Contextual Factors

This action research was conducted in two first grade classrooms at a Title One elementary school within Hall County, Georgia. Hall County ranges from rural to suburban throughout the area, with 16.1% of its population living in poverty, which is 1.2% higher than the state average (Georgia Household Income, 2019). According to the United States Census Bureau (2018), the median income for Hall County was $55,622 between the years of 2013-2017, lying just below the state income of $56,183 as of 2017. In 2017, DataUSA reported that 61.1% of the population was "White", 27.8% was "Hispanic/Latino", and 7.28% was "Black or African American alone". Out of these percentages, 27.4% of the Hall County population are non-English speakers.

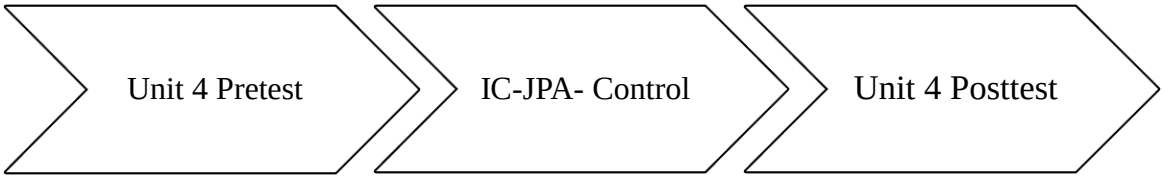
When looking at socioeconomics and race, this elementary school is not representative of the county. Hallco.org (2019) reported that as of 2015, 85% of students in this school were Hispanic, 10% were White/Non-Hispanic, 3% were Black/Non-Hispanic, and 2% were considered "other". Many students in the school are identified as "economically disadvantaged", with 97% of the students qualifying for free and reduced lunches. The school population consists of 79% ELLs (English-Language Learners) receiving ESOL (English as a Second Language) services. This school contains a dual-emergent Pre-K program and grade levels K through 5th consisting of approximately 760 students. According to SchoolDigger, as of 2018, this school was ranked 1,070th out of 1,209 schools in the state. For the 2018 Milestones Assessment in English Language Arts, it was reported that for grade levels 3rd through 5th, this school scored 24.3% lower than the state average for this assessment. Additionally, less than 20% of students met the state standard.

This study took place in two first grade classrooms, both being an accurate representation of the school composition and demographics. Students ranged from ages 6 to 7. Every student in the study qualified for free and reduced lunch. Class A consisted of 20 students and Class B consisted of 19. Out of 39 participants, 76% (n = 29) received ESOL services. The total sample consisted of approximately 46% females (n = 18) and 54% males (n = 21). In Class A, 9 students were on or above the expected reading level. In Class B, 7 students had reached the expected reading level. The remaining 23 students fell below the expected reading level. Class A was the treatment (IC-JPA) and Class B was the comparison, both classes having already been determined by the school. All participants were given the same mini lesson and whole-group instruction. The treatment group, *n* = 20, received strategy

group instruction through the IC-JPA treatment. The comparison group, *n* = 19, were taught through traditional teaching of small groups, with the primary conversation being teacher led.

Materials and Measures

Materials. During the given math strategy group time period, the treatment group was taught using the combination of ICs and JPAs, following The Arch of Collaborative Conversation-Based Instruction outline created by Mellom, Weber, and Gokee (as cited by Mellon, Hixon, & Weber, 2019). The IC-JPA Lesson Plan and Task Card checklist created by Mellon, Weber, Boada, and Hixon (as cited by Mellon, Hixon, & Weber, 2019) was used by the teacher to create activities following the county pacing guide for mathematics. These task-card lesson plans consist of contextual and language goals, materials, questions to consider, lesson reflections, and follow-up activities. Student task cards were created based on lesson plans made by the teacher and were distributed to students to refer back to throughout activities. Examples of The Arch of Collaborative Conversation-Based Instruction, the IC-JPA Lesson Plan and Task Card template, and ETRC (Elementary Teacher Resource Center) Academic Language cards can be found in Appendix A through Appendix C.



The pacing guide for instruction consisted of Unit 4. Unit 4 was centered around sorting, comparing, and ordering through measurement and telling time. Unit 4 consisted of a pretest and posttest. The unit pretests and posttests consisted of the same questions. Both the comparison and treatment groups were given the same assessments.

Academic achievement measure. To measure student achievement, both groups were measured the same. The ETRC unit assessments were administered as pre and posttests to students to compare growth between the treatment and comparison groups after treatment had been given. Pretests and posttests were given on a piece of paper in a small group setting, and all questions were read aloud to students. The Unit 4 assessment contained a total of 17 questions, with a total of 21 sought out answers, being that several questions had multiple components. The unit assessment, as seen in Appendix E, contained questions including one word/number fill in the blanks, identifying answers through circling/coloring,

multiple choice, drawing answers based on descriptions given, and explanations of answers.

Academic language measure. For academic language measurement, the ETRC academic language cards were used to assess language usage in both IC-JPA settings and when answering open-ended questions on assessments. The same unit pretests and posttests used to measure academic achievement were used to measure academic language usage. Each unit assessment several questions that prompted students to explain the reasoning for their answers. Through their responses, students' academic language usage was assessed following a teacher-created rubric, which can be found in Appendix D. The goal of this rubric was to analyze: 1. Did the student appropriately use academic language to explain their answers? 2. How frequently did the student use academic language correctly, in the right context? The rubric was analyzed for both the treatment and comparison groups. Each portion of the pretest and posttest that was used to assess academic language was graded by two teachers with students' names hidden to prevent biases while grading.

Engagement measure. To measure student engagement, students in both the comparison and treatment groups were observed by a teacher for ten minutes, two days a week, within the mathematics block. The observer monitored students by taking qualitative, observational notes about student behaviors throughout the math block. Engagement was defined as when the student was participating in discussion, actively listening to others through body language and eye-contact, asking questions, etc. Disengagement was defined as a child who was distracting others, having off-topic conversations, looking around the room, not participating in the group discussion, etc.

Procedures

Comparison and treatment groups occurred during a sixty-minute math block, four days a week over eight weeks. Classroom A was the treatment group, while Classroom B was the comparison group. Students covered two math units, Unit 4 (Measurement and Telling Time) and Unit 5 (Operations and Algebraic Thinking). These units followed in accordance with the ETRC Unit pacing guide. The ETRC pacing guide provided unit assessments, corresponding standards, academic language cards, and sentence stems for each unit. Teachers in both classes followed the same pacing guide and used the same lesson plans throughout the study.

At the beginning of both Unit 4, all participants were given the same content pre-test made from the ETRC unit assessments to provide baseline data on students'

mathematical knowledge and academic language usage. Following the administration of pretests, treatment occurred in Classroom A through weekly teacher-led IC-JPA, and the comparison group was taught in Classroom B through traditional teacher-led small group rotations. Both classrooms followed the same structures and timeframes for content delivery: whole group mini-lesson (15 minutes), strategy groups (40 minutes), and closing (5 minutes). Based on class sizes, each class contained four groups. Each group spent one day a week with the teacher in the 40-minute strategy group block. While the teacher met with their group of the day, students worked in other stations throughout the classroom. Following each unit, all participants were administered a posttest containing the same questions as the pretest to track academic growth between the comparison and treatment groups.

Comparison group. The comparison group followed the same unit of study pathway covering two mathematical units: Unit 4 (Measurement and Telling Time) and Unit 5 (Operations and Algebraic Thinking). All participants received the same whole group lessons and closings. As opposed to participating in the IC-JPA small group, the comparison group participated in traditional teacher-led small groups. As previously mentioned, each group met with the teacher once a week for 40 minutes. For this study, traditional small groups worked through a worksheet with the teacher. This most often entailed going over the first few questions together with the teacher, while the teacher gradually released questions throughout the remainder of the small group time. Through the process of gradual release, the teacher observed student responses and took time to discuss misconceptions within the group. While the teacher met with their small group, other students worked independently in groups on content-related worksheets, hands-on tasks, and school-approved online math activities. Daily strategy group blocks for the comparison group can be seen as below:

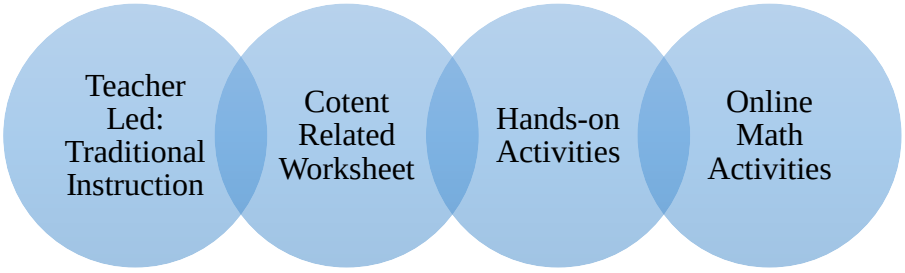


Figure 1. Comparison Classroom Instructional Design

Treatment group. The purpose behind IC-JPAs is for students to be given a content related question or task and collaborate with one another to arrive at a finished product. The treatment class participated in the teacher-led IC-JPA group once a week for 40 minutes. The teacher's role throughout these activities was to

create activities and lessons following the IC-JPA outline, give students a topic or question that provided them the opportunity to answer more than "yes" or "no", and provide clear expectations and materials needed to complete the task. The teacher was not be an active participant in the students' conversations, rather students took the responsibility in asking one another questions and discussing the given topic to arrive at a conclusion.

While one group was meeting with the teacher, all other groups participated in independent IC-JPAs. The only difference between independent IC-JPA and teacher led IC-JPA is that in the independent groups the students were collaborating together without the teacher providing further questions. Each independent IC-JPA group completed the same task card through collaboration. Group structures in Classroom A can be seen below:

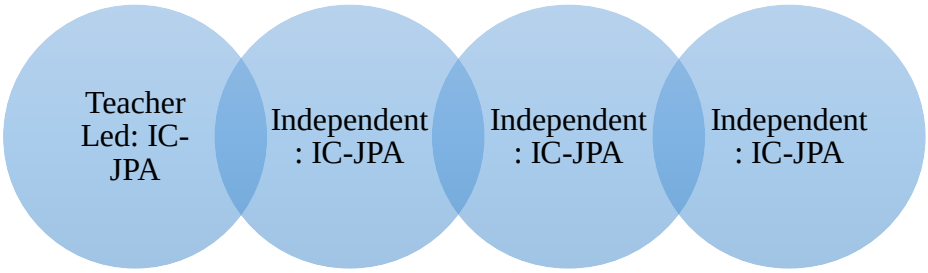


Figure 2. Treatment Classroom Instructional Design

IC-JPAs followed lesson plans that involved building students' conversational skills while simultaneously learning academic content. IC-JPA lesson plans involved the following components: contextualizing the lesson, instructional content and language goals, task structure, task materials, task activities, questions to consider, lesson reflections, and follow up activities (Mellon et al, 2019). The lesson plans were then put into a student-friendly task cards which students had access to for every activity, transferring the responsibility from teacher to student to take ownership of the task. Directions for each task were given to students on a task card written at the language level of the students with pictures to help with task expectations. For example, if the teacher wanted students to complete a t-chart, a picture of a t-chart was used in the directions. Prior to beginning IC-JPAs, it was necessary for students to determine their individual conversational goals for the activity. For example, one student may realize that they need to contribute to the conversation more, while another student may need to give others the opportunity to speak.

Throughout the eight weeks of treatment, the IC-JPA small group followed the outline previously mentioned. Each lesson began with the teacher asking students to share their conversational goals with one another. From here, the teacher

presented the student-friendly task cards and had students discuss what their learning goals were for the lesson. Throughout the treatment period, each individual lesson may have had different objectives. For example, one day students may have had to create a t-chart while another day the goal was to create a sort based on the content discussed during the mini-lesson. From here, students began and completed the task by conversing with one another about their ideas of the academic content. The teacher listened and assessed student knowledge during this time, with minimal contribution. Once students arrived at their finished product, the teacher was then given the opportunity to ask questions that may change student perspective, which may have led into new conversations. Before transitioning into the whole group closing, the teacher debriefed with students regarding whether they believed they met their conversational goal throughout the activity and gave ideas for new goals during the next lesson.

Plan of Analysis

In order to determine the effects that IC-JPAs have on academic achievement in mathematics, pretests and posttests were scored. Differences in means scores from Classroom A and Classroom B were analyzed using ANCOVA to comparison for the initial skill levels. For academic language usage, each student's written response to open-ended questions was assessed by two different raters following the administration of assessments. To determine the effects of the treatment on student engagement, data were reviewed and initial codes were created to find themes and patterns. Patterns found amongst the two classes were compared to determine possible variations of engagement between the two groups.

Results

The first analysis was completed to compare the effects that the treatment of IC-JPA's had on student achievement. An ANCOVA analysis was conducted with the Unit 4 math posttest score as the dependent variable, condition as the treatment and comparison groups, and Unit 4 math pretest as the covariate. Results indicated that, when controlling for initial ability in math, there was a statistically significant difference in growth in math skills, with the comparison group significantly outperforming the treatment group, p = .047. The difference approached the threshold for being considered a large effect size, n_p^2 = .118. These effects can be seen below in Table 1.

Table 1

Tests of Between-Subjects Effects

Dependent Variable: Unit4Post

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared

Math	860.500	1	860.500	4.287	.047	.118
Language	.049	1	.049	.011	.919	.000

a. R Squared = .600 (Adjusted R Squared = .575)

Students receiving traditional instruction indicated a significant increase in scores on the math assessment (M = 79.38, SD = 15.85) when compared to the students that received IC-JPA instruction (M = 66.68, SD = 24.58). Based on these scores, the treatment was ineffective in stimulating math learning.

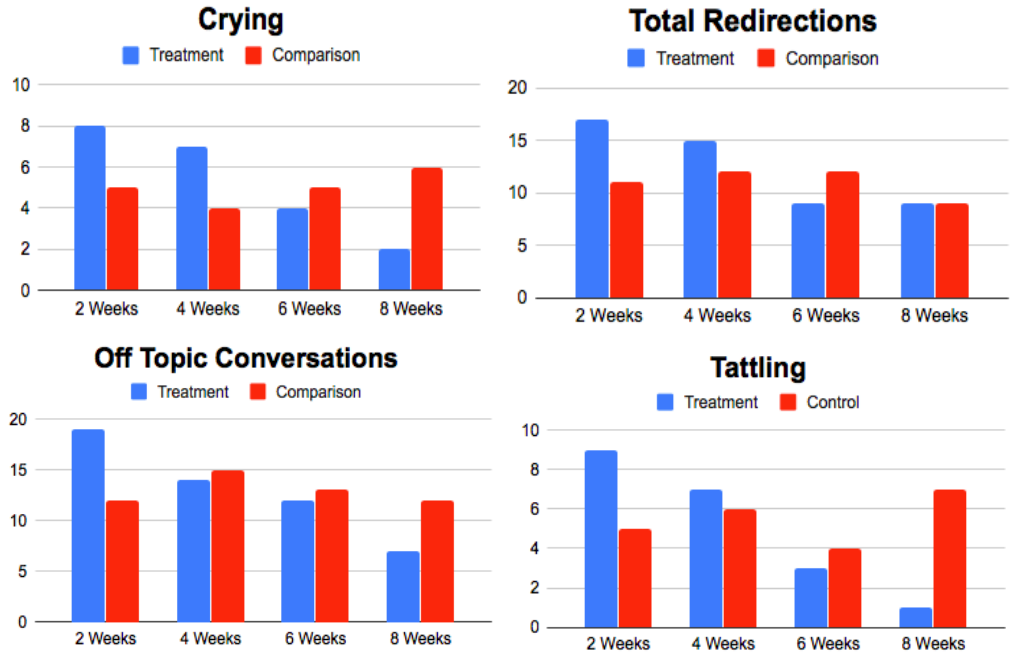
Academic Language

In order to measure the impact of academic language usage in the content area of math, an ANCOVA analysis was conducted. The Unit 4 language usage posttest score was entered as the dependent variable, condition as the grouping variable, and Unit 4 language usage pretest score as the covariate. When controlling for the initial language usage, the result was $F(1,32) = .011$, $p = .919$. These results indicate that there was not a statistically significant difference in correct academic language usage between the two groups.

Student Engagement

Student engagement was measured through qualitative notetaking in both classes by an external teacher, twice a week throughout the eight weeks of the intervention. When determining the effects that IC-JPA's had on student engagement, similar behaviors emerged between the two groups. These behaviors and their occurrences showed the frequency of disengaged behaviors and consisted of crying, off-topic conversations, tattling, and redirections given. The frequency of behaviors can be seen in the following charts in Figure 3:

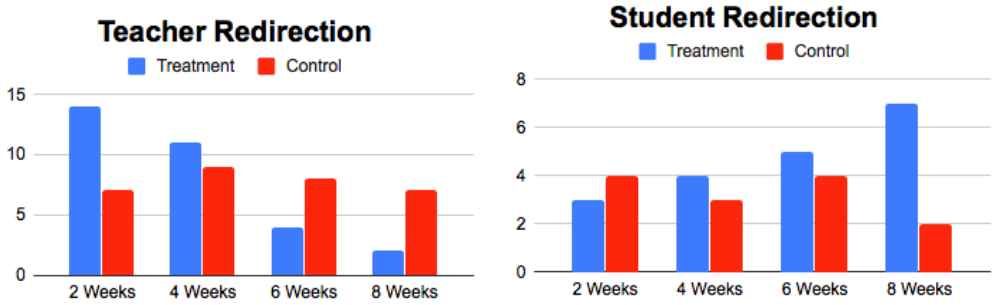
Figure 3: Engagement Patterns



The figures indicate that the treatment group began with higher occurrences of disengaged behavior in all categories when compared to the comparison group. As the intervention progressed, these occurrences decreased. When looking at the comparison group, the frequencies of disengagement maintained a consistent level throughout the eight weeks. From observing the behaviors at the latter end of the study, it can be concluded that the IC-JPA intervention increased student engagement when compared to traditional instruction. This is an incongruent finding because typically the more engaged students are, the better they score on assessments. This was not the case of the current study.

Another pattern that was noticed in behavior was the frequency of redirections given by the teacher versus redirections given from students to other students in their groups. These patterns can be seen in Figure 4.

Figure 4: Redirection Patterns



When comparing the two groups and the number of redirections needed, it was noted that in the treatment group, the number of redirections needed by the teacher decreased, while the number of redirections from the students increased. This indicates that students increased their self-autonomy, showing ownership and reliance upon one another as the intervention continued.

Again, this is an unusual finding. Though the treatment group increased engagement and autonomy, the comparison group learned substantially more. This increase of engagement may have come from the student interest in conversational goals and using the sentence stems. It was noted that students used these materials frequently when speaking, but the depth of math discussion did not follow.

Discussion

This research was conducted in order to investigate the effects that the IC-JPA intervention had on students' academic achievement, academic language usage, and engagement in the subject area of math when compared to students exposed to traditional group instruction. It was hypothesized that IC-JPAs would increase academic achievement, academic language usage, and student engagement. Results showed that this intervention did not increase academic achievement or academic language usage but did increase student engagement, which may have derived from the small sample size.

The findings from the current study related to student academic achievement suggest that IC-JPAs were not beneficial for students in the subject are of math. The students who received instruction through IC-JPAs as a group, scored lower on the posttest than the group that received traditional instruction. This shows a lack of student growth in math skills from the use of IC-JPA's. Again, these findings contrast many of the results from similar studies. August et al. (2014) researched the influence that IC-JPAs have on ELL students in their literacy understandings and ability to apply those understandings in different subject areas, such as science. It was found that students who were involved in joint productive activities were better able to decipher text for understanding when given different informational pieces. Similar to the previous study mentioned, Saunders (1999)

found an increase in reading scores when students were involved in IC-JPAs. Though the findings of the current study were not indicative of the success of IC-JPAs in the subject area of math, it is possible that this intervention may have a more substantial impact when used in literacy and reading.

Similar to academic achievement, student growth in this study related to academic language usage was not affected by the treatment. Research implemented by Hackling et al. (2011), emphasized the importance of providing open-ended questions. The findings of his study showed that the use of open-ended questions during instruction increased student academic language recognition and usage in the subject of reading. These results parallel the findings of August et al. (2014) that IC-JPAs were found to be effective in reading. Therefore, the findings of the current study do not mean that IC-JPA's are entirely ineffective, though. They may be effective in other subject areas and environments.

The results from student engagement confirmed the hypothesis that IC-JPAs would increase student engagement. Findings indicated that engagement increased as the intervention progressed. Additionally, students took responsibility for their participation by redirecting other students in their groups to stay on task throughout the activities. These findings are similar to those of Dornyei and Csizer (1998), which indicated that the use of intentional group discussions in student-led tasks in combination with student-created conversational goals increase student engagement. Again, these results are highly unusual. When student engagement increases, it is typical to coincide with an increase in academic achievement. This was not the case in the current study. Engagement was observed when strategy groups were occurring. Mini-lessons, one-on-one help, and the closing were not accounted for. The anomaly in results may have come from the quality of the additional segments received by the comparison group, as the teacher in the treatment group was unable to assist students one-on-one as frequently throughout the treatment. Additionally, at the beginning of study, it was observed how frequently the teacher had to stop instruction to redirect the off-task behaviors. This can be very distracting for students. The time being taken away from instruction towards the first half of the study to adjust student behaviors and expectations may have also led to the strange results of this study.

Limitations

With the hypothesis that IC-JPAs would increase academic achievement, academic language usage, and student engagement, the only hypothesis that was confirmed was the increase in student engagement. There are several limitations that occurred throughout the study.

This action research was limited by the small sample size. This study consisted of 39 participants, split between two first grade classrooms. Prior research done on IC-JPAs contained the population of entire schools, and in some cases, counties.

Additionally, the length of the intervention and data collection was a short duration of eight weeks. Other studies that found increases in academic achievement and language usages lasted several months, some being the length of the school year (Opitz et al. 2018., Portes et al. 2016). Within the eight weeks of the current study, it was planned to have two pretests and two posttests, Unit 4 and Unit 5, to collect additional data to determine the effects of the intervention. Due to the COVID-19 pandemic and school closures, data for Unit 5 were incomplete.

Implications and Future Research

The IC-JPA intervention did not show success in achievement and language usage. In education, this is the primary goal of teaching, to create academic growth and teach children. This did not occur from this study. Students showed no academic success from the use of this intervention. Outside of academic success, students have social-emotional needs. IC-JPAs did show positive results for student engagement and willingness to work with their peers through respectful conversation. This increase of engagement is beneficial for future research, indicating that when students participate in collaborative work, engagement and participation increase. Though participation increased, it resulted in no academic growth. This instructional strategy should be used with caution when teaching academic material and may be better suited for teaching conversational skills and social-emotional needs. In education today, there is a gap between teaching social emotional skills and academics in one cohesive activity (Mellon et al. 2019). The findings from the student engagement piece of this study are important for future research in this area by showing that elementary-aged students are capable of making conversational goals, creating normalities for social interactions, and holding one another accountable in a positive light. It would be beneficial for future research if the duration of the study could be extended to determine additional effects of the intervention.

In terms of achievement and language usage, future research is needed in the use of IC-JPAs in the subject of math without the limitations of the current study. Research done by Drageset (2015) found positive changes in student discourse in math through the use of student-led collaborative activities. Additionally, Franke et al. (2007), found an increase in academic achievement when reviewing posttest scores between classes in math. He also mentioned that after his treatment of creating a collaborative environment, students reported higher

confidence in the subject area. Based on the results of the current study, further research about the influence that IC-JPAs have in math would be necessary. Based on prior research, results could differ if used in other content areas, age groups, and length of a study. The use of IC-JPAs in these different areas is worth studying.

Conclusion

The findings of this study showed no success in the use of IC-JPAs to improve academics or academic language usage. This instructional strategy should be used with caution when intended to teach content-related material. The implementation of IC-JPAs did show growth in student engagement and willingness to participate with peers. The increase of willingness to participate with peers could be the result of being put in groups where students have more opportunity to speak with their classmates, as opposed to doing seat work or working on computers. Though students were more engaged with one another, the redirections needed from the teacher to get conversations on topic reduced instructional time. This could have been a reason there was little to no impact on academic achievement. The findings of this study tell us that teachers should be careful in using this instructional strategy when delivering content-related materials. It may have potential benefits to elementary educators seeking to teach social-emotional skills unrelated to academic areas.

Future research would be beneficial when implemented with elementary-aged students in different subject areas such as reading, science, or social studies, where there are more opportunities for open conversations. By extending these findings into future research studies, teachers of elementary aged, ELL students would have new-found opportunities for reaching both their social-emotional needs in combination with their academic needs. Additionally, future studies would benefit from an increased sample size.

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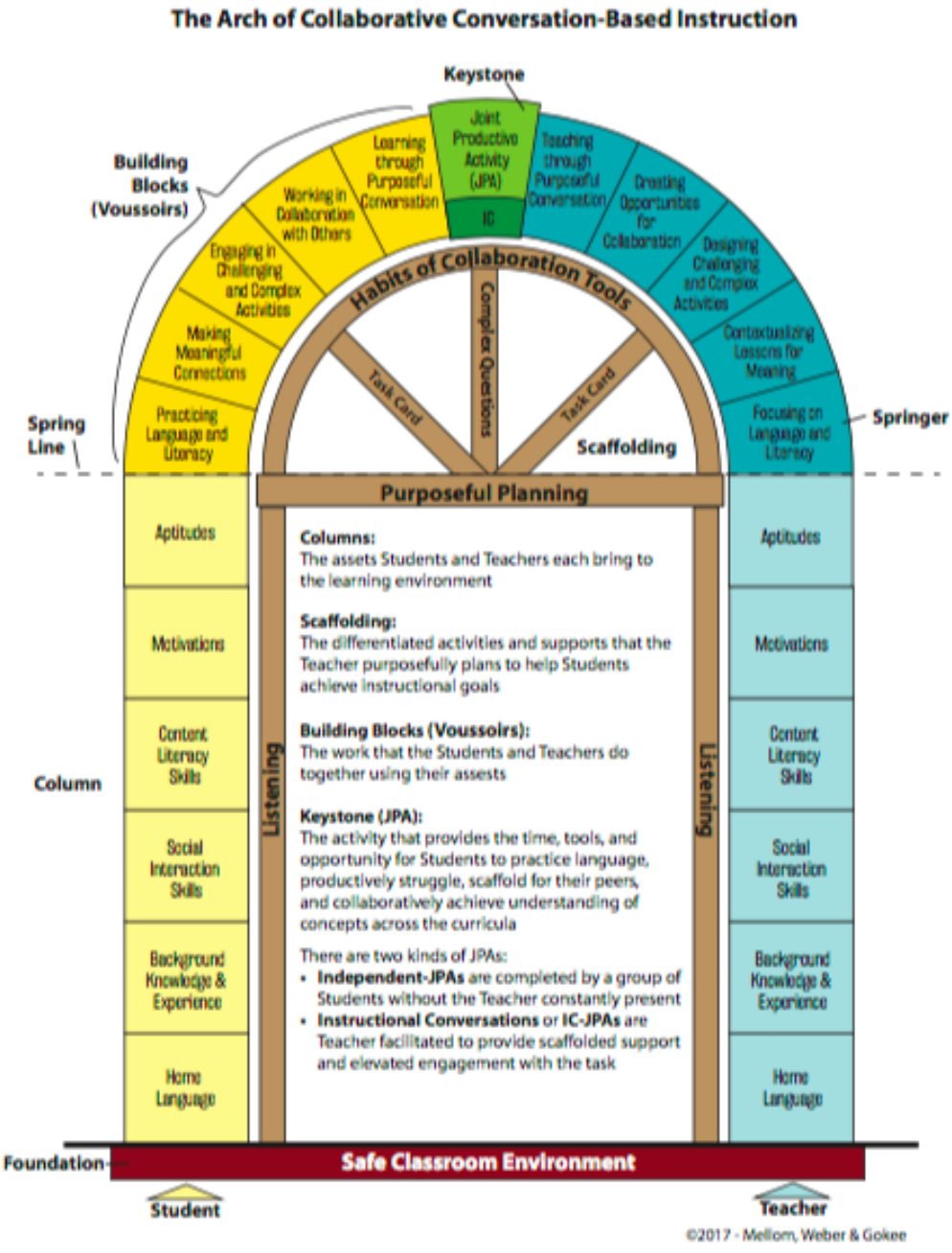
Appendix A


The Arch of Collaborative Conversation-Based Instruction
Keystone
Joint Productive Activity (JPA)
IC
Building Blocks (Voussoirs)
Learning through Purposeful Conversation
Working in Collaboration with Others
Engaging in Challenging and Complex Activities
Making Meaningful Connections
Practicing Language and Literacy
Teaching through Purposeful Conversation
Creating Opportunities for Collaboration
Designing Challenging and Complex Activities
Contextualizing Lessons for Meaning
Focusing on Language and Literacy
Habits of Collaboration Tools
Complex Questions
Task Card
Task Card
Scaffolding
Spring Line
Springer
Purposeful Planning
Aptitudes
Motivations
Content Literacy Skills
Social Interaction Skills
Background Knowledge & Experience
Home Language
Column
Listening
Listening
Columns:
The assets Students and Teachers each bring to the learning environment
Scaffolding:
The differentiated activities and supports that the Teacher purposefully plans to help Students achieve instructional goals
Building Blocks (Voussoirs):
The work that the Students and Teachers do together using their assests
Keystone (JPA):
The activity that provides the time, tools, and opportunity for Students to practice language, productively struggle, scaffold for their peers, and collaboratively achieve understanding of concepts across the curricula
There are two kinds of JPAs:
Independent-JPAs are completed by a group of Students without the Teacher constantly present
Instructional Conversations or IC-JPAs are Teacher facilitated to provide scaffolded support and elevated engagement with the task
Foundation
Safe Classroom Environment
Student
Teacher
©2017 - Mellom, Weber & Gokee

Appendix B

IC-JPA Lesson Plan and Task Card Template

JPA Name: *Created By*:
Contextualizing the Lesson: *(may or may not be included on the Student Task Card)*
Instructional Goal(s): Content: Language:
JPA Task Structure:
Task Materials:
Task Activities: **Step 1)** Go over conversational norms. **Step 2)** Each member of the group chooses and shares their conversational goal. **Questions to Consider:** *(questions to ask during the task)*
Debrief/ Lesson Reflection: *(questions to ask after the task/may or may not be included on the Student Task Card)* Content: Process: *(be sure to include reflecting on individual/group goals)*
Follow-up Activities: *(may or may not be included on the Student Task Card)*

Mellom, Weber, Roads, Hixon (with Carter, Fish, & Hall) (June, 2018)

Appendix C

ETRC Academic Language Card

partition

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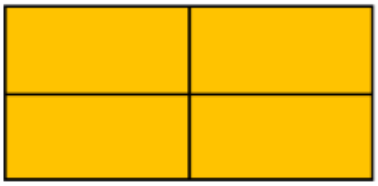
partition



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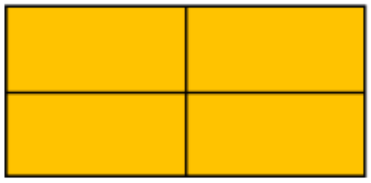
partition



A partition describes an action to divide shapes into smaller parts.

Appendix D

Academic Language Rubric

	Attempted to answer using no academic language vocabulary. 0 pts.	Attempted to answer question using academic language vocabulary though in incorrect context. 1 pt.	Answered question using correct/appropriate academic language vocabulary. 2 pts.
Question 1			
Question 2			
Question 3			

Total _____/

6 pts.

Appendix E

Name _____

Unit 4 First Grade Math Assessment

Use the table to answer the questions.

What's your favorite fruit?

apples	𝍸 II
bananas	𝍸
oranges	𝍸 𝍸 I

(1) Which fruit is the **least** favorite?

a. Apples

b. Bananas

c. Oranges

How do you know?

_____

_____

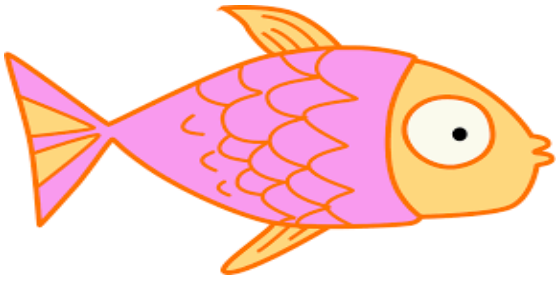
(2) How many **more** people liked apples than bananas as their favorite fruit?

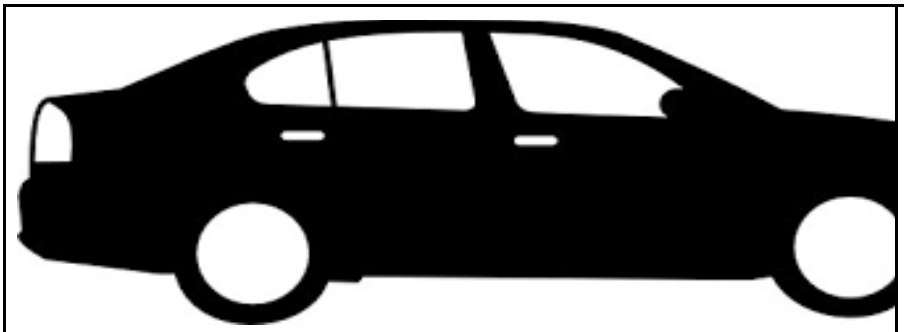
a. 2

b. 5

c. 4

Use paper clips to measure the length of these objects. Write the number to show the length. (MGSE1.MD.2)

Object	Length
	**(3)** _____
	**(4)** _____



(5) _____

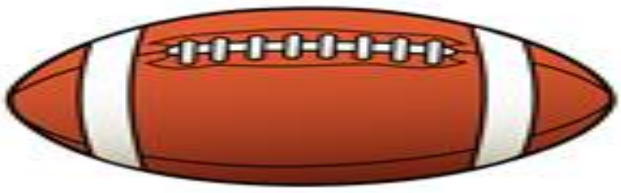
(6) Arrange the objects by length from shortest to longest (use their name). (MGSE1.MD.1)

_____, _____, _____

(shortest) (longest)

(7) The pencil is longer than the _____.(MGSE1.MD.1)

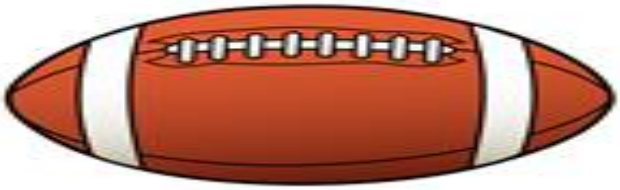
(8) Measure the football using a non-standard unit.



I used _____ (units).

(MGSE1.MD.2)

(9) Now measure the football using a different non-standard unit.



I used _____ (units).

(10) When you measured the football  with two different units of measurement, did you get the same results? _____

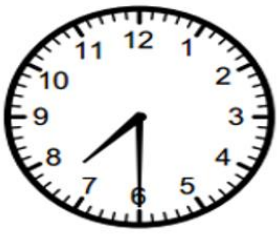
Why or why not? Explain your answer. (MGSE1.MD.2)

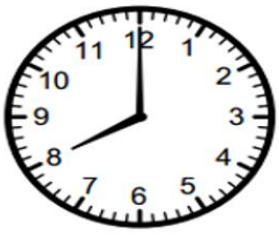
_____

_____

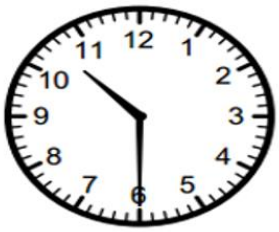
_____

Write the time. (MGSE1.MD.3)

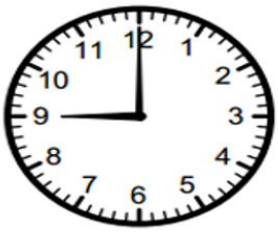
(11) 

(12) 

Explain how you know that the given times below are correct. Use the word bank. (MGSE1.MD.3)

(13) 

10:30

(14) 

9:00

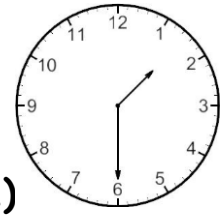
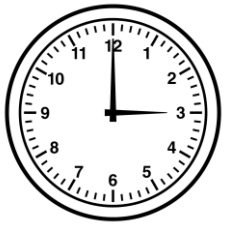
I know that the clock reads as 10:30 because	I know that the clock reads as 9:00 because
_____	_____
_____	_____
_____	_____

Word Bank

*hour hand / short hand *between

*minute hand / long hand *pointing

Draw a line to match the digital clock to the analog clock.
(MGSE1.MD.3)

(15) **3:00**	**(A)** 
(16) **1:30**	**(B)** 
(17) **2:00**	**(C)**